MATEMATIKA MASTER

J. S Toshpo'latov

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I

Xalq ta'limi vazirligi Respublika ta'lim markazi qoshidagi Matematika fani bo'yicha ilmiy-metodik kengashning 2018-yil 23- iyun qaroriga ko'ra nashrga tavsiya etilgan.

@today_math

2000 dan ortiq misollarning yechimi videorolik holida yuqoridagi kanalda berilgan.

"Bolani o'qitishdan maqsad – o'qituvchisiz rivojlanishni davom ettirish imkoniyatini berish".

Elbert Xabbart

«YANGI NASHR»
TOSHKENT - 2020

UO'K: 541.1(075)
KBK: 22.36
T-U-98

Toshpo'latov, J.S.
Matematika master [Matn] : testlar to'plami / J.S. Toshpo'latov. - Toshkent : Yangi nashr , 2020. - 424 b.

T a q r i z c h i l a r :

H.Z. Axralov – Islom Karimov nomidagi Toshkent davlat texnika universitetining oliy matematika fani o'qituvchisi.

R.O. Rozimov – Sergeli tumani 237- umumta'lim maktabi matematika fani o'qituvchisi.

S.R. Sumberdiyeva – Sergeli tumani 6 – ixtisoslashtirilgan maktabi matematika fani o'qituvchisi.

T u z u v c h i m u a l l i f :

Jaloliddin Toshpo'latov Sodiqjon o'g'li –Toshkent shahri Mirzo ulug'bek tumanidagi "71[A]" maktabining matematika fani o'qituvchisi.

"Ushbu qo'llanmani tayyorlashdan asosiy maqsad – o'quvchilarning *matematika bazasini rivojlantirishga* qaratilgan".

Ushbu testlar to'plami 2 qismdan iborat bo'lib, qo'lingizdagi ushbu qism matematika kursiga bag'ishlangan. To'plamning ikkinchi qismida esa geometriya kursi yoritiladi. Ushbu to'plam Davlat test markazi (DTM) tomonidan tavsiya etilgan darsliklar asosida tayyorlangan. Bu kitob abituriyentlar, umumta'lim maktab o'quvchilari, akademik litsey va kasb-hunar kollejlari o'quvchilari, matematika faniga qiziquvchilar, shuningdek, matematika fani o'qituvchilari va repetitorlari uchun noldan boshlab o'rganish uchun mo'ljallangan.

Mazkur metodik qo'llanma 5843 ta testdan iborat bo'lib, testlar soddalikdan mu-rakkablikka, izchillikka, mantiqiylikka asoslangan. Bundan tashqari 1500 ta ga yaqin misol va masalalarni yechish namunalari, qo'llanma oxirida barcha test savollarining javoblari keltirilgan.

Fikr va mulohazalaringizni **@test_today** telegram guruhiga qoldirishingiz mumkin

UO'K: 541.1(075)
KBK: 22.36
ISBN 9789943223325

Natural sonlar ustida amallar

✓ $13+34+16+27$ ni hisoblang.

A) 80 B) 90 C) 70 D) 100

Yechimi:

$\overbrace{13+\underbrace{34+16}_{50}+27}^{40}=40+50=90$ **Javob:90**

Izoh: Sonlarni sherik-sherik qilishda oxiri "0" bilan tugaydigan qilib tanlab chiqish lozim.

1. 28+35+22+15 ni hisoblang.

A) 80 B) 90 C) 70 D) 100

2. 81+22+19+37+18+33 ni hisoblang.

A) 200 B) 190 C) 220 D) 210

3. 94+95+63+76+25+137 ni hisoblang.

A) 470 B) 490 C) 480 D) 500

✓ 70300–36810+43098–29708 amallarni bajaring.

A) 46880 B) 46890 C) 36880 D) 56890

Yechimi:

$\underbrace{70300-36810}_{33490}+\underbrace{43098-29708}_{13390}$ **javob: 46880**

33490+13390=46880

4. 692503 – 243497 + 720002 –362701 amallarni bajaring.

A) 906307 B) 906317 C) 806317 D) 806307

5. 200000 –198545 + 700000 –699754 amallarni bajaring.

A) 1801 B) 1001 C) 1701 D) 1901

6. 60718+5967+20016–9324 amallarni bajaring.

A) 77387 B) 77377 C) 87376 D) 87377

Manfiy va musbat sonlar

✓ Manfiy sonlar berilgan qatorni toping.

1) $-1,-2,2,1$ 2) $-2,-5,-60,-17,-9$

3) $22,-33,-44,-55$ 4) $-1,-\frac{2}{7},-79,-3$

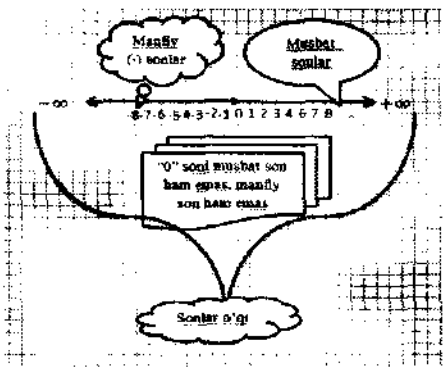
5) $10,11,12,13,...$

A) 1; 4 B) 2; 4 C) 5 D) 3

Yechimi:

Manfiy son: $-\frac{2}{7},-5,-4\frac{7}{11},-9...$

Musbat son: $\frac{5}{6},7,4\frac{7}{11},25...$



1) $-1,-2,2,1$ 2) $-2,-5,-60,-17,-9$

3) $22,-33,-44,-55$ 4) $-1,-\frac{2}{7},-79,-3$ **javob: 2 ; 4**

5) $10,11,12,13,...$

Izoh: Sonlar o'qini qanday ekanligini eslash lozim.

7. Manfiy sonlar berilgan qatorni toping.

1) $-\frac{1}{4},-2\frac{3}{5},6,0$ 2) $\frac{1}{4},8\frac{7}{9},6,17,19$

3) $-5,-2\frac{7}{15},-19,-26$ 4) $5,4,3,2,1$

5) $10,11,12,13,...$

A) 1; 4 B) 4; 5 C) 1 D) 3

8. Manfiy sonlar berilgan qatorni toping.

1) $-77,-66,-44$ 2) $2,5,6,17,19$

3) $0,-33,-44,-55$ 4) $-4,-\frac{23}{36},-16,-44$

5) $10,11,12,13,...$

A) 1; 3 B) 1; 4 C) 1; 3; 4 D) 5

9. Manfiy sonlar berilgan qatorni toping.

1) $10,11,12,13,...$ 2) $2,5,6,17,19$

3) $-4,-\frac{13}{14},16,-44$ 4) $-3,-2018,-55$

5) $-1,-6,-44$

A) 4; 5 B) 3; 4; 5 C) 2; 4; 5 D) 3

✓ Musbat sonlar berilgan qatorni toping.

1) $10,11,12,13,...$ 2) $2,5,6,17,19$

3) $-4,-\frac{13}{14},16,-44$ 4) $-3,-2018,-55$ 5) $-1,-6,-44$

A) 1;2 B) 2;4 C) 5 D) 3

Yechimi:

Manfiy son: $-\frac{2}{7},-5,-4\frac{7}{11},-9...$

Musbat son: $\frac{5}{6},7,4\frac{7}{11},25...$

1) $10,11,12,13,...$ 2) $2,5,6,17,19$

3) $-4,-\frac{13}{14},16,-44$ 4) $-3,-2018,-55$ 5) $-1,-6,-44$

Javob: 1; 2

10. Musbat sonlar berilgan qatorni toping.

1) $-\frac{1}{4},-2\frac{3}{5},6,0$ 2) $\frac{1}{4},5\frac{7}{9},6,0$

3) $-5,-2\frac{7}{15},-19,-26$ 4) $5,4,3,2,\frac{1}{7}$ 5) $10,11,12,13,...$

A) 1;4 B) 4;5 C) 1;3 D) 2

11. Musbat sonlar berilgan qatorni toping?

1) $3\frac{5}{41},2,6$ 2) $\frac{1}{4},-2\frac{17}{59},-6$

3) $-2,-9\frac{4}{8},-14,26$ 4) $5,4,3,2,\frac{1}{7}$ 5) $-22,-33,-44,...$

A) 1;4 B) 4;5 C) 2;4;5 D) 4

12. Musbat sonlar berilgan qatorni toping?

1) $\frac{17}{44},42\frac{3}{5},8$ 2) $\frac{1}{4},3\frac{2}{5},78$

3) $19,32\frac{17}{35},-19,-26$ 4) $5,43,-2\frac{1}{7}$ 5) $11,22,-33,44,...$

A) 1;4 B) 3;5 C) 1;2 D) 3

Har xil ishorali sonlarni hisoblash

✓ –23–14 ni hisoblang.
A) –27 B) –37 C) –12 D) –47
Yechimi:

$$\overbrace{-23-14}^{-} = -37$$
$$23+14=37$$
javob: –37

Izoh: ikkita "–" (minus) kelsa, ularni qo'shamiz va oldiga "–" qo'yamiz.

13. –69–88 ni hisoblang.
A) –127 B) –137 C) –147 D)–157

14. –76–29 ni hisoblang.
A) –105 B) –107 C) –115 D)–155

15. –49–93 ni hisoblang.
A) –122 B) –132 C) –142 D)–152

✓ –886–442 ni hisoblang.
A) –1338 B) –1328 C) –1228 D)– 1348

Yechimi:

$$\overbrace{886+442=1328}$$
$$\underbrace{-886-442}_{-} = -1328$$
Javob: –1328

Izoh: bu murakkabroq ya'ni 3 xonali son bunda ham ikkita "–" (minus) kelsa, ularni qo'shamiz va oldiga "–" qo'yamiz.

16. –166–329 ni hisoblang.
A) –595 B) –475 C) –495 D) –485

17. –734–655 ni hisoblang.
A)–1359 B) –1389 C)–1369 D) –1379

18.–598–923 ni hisoblang.
A)–1521 B) –1721 C)–1621 D) –1821

✓ –58–103–22 ni hisoblang.
A) –142 B) –163 C) –193 D) –183
Yechimi:

$$\overbrace{-58-103-22}^{-} = -183$$
$$58+103+22=183$$
javob: –183

Izoh: Uchtasini ham oldida "–" (minus) kelsa, ularni qo'shamiz va oldiga "–" qo'yamiz.

19. –96–88–44 ni hisoblang.
A)–228 B) –248 B)–238 D) –288

20. –77–66–33 ni hisoblang.
A)–176 B) –248 C)–278 D) –168

21. –22–128–38 ni hisoblang.
A)–128 B) –148 C)–138 D) –188

✓ –23+14 ni hisoblang
A) –8 B) –7 C) –9 D) –6
Yechimi:

$$\overbrace{-23+14}^{-} = -9$$
$$23-14=9$$
javob: –9

Izoh: kattasidan kichigini ayrib kattasini ishorasini qo'yamiz.

22. –69+48 amallarni bajaring.
A) –21 B) –19 C) –11 D) –18

23. –76+29 amallarni bajaring.
A) –57 B) –37 C) –47 D) –27

24. –93+49 amallarni bajaring.
A) –54 B) –44 C) –34 D) –64

✓ 442–886 amallarni bajaring.
A) –444 B) –434 C) –344 D) –1348
Yechimi:

$$\overbrace{886-442=444}$$
$$\underbrace{442-886}_{886>442\Rightarrow -} = -444$$
javob: –444

25.166–329 amallarni bajaring.
A)–173 B) –263 C)–153 D)–163

26. 655–734 amallarni bajaring.
A) –79 B) –89 C) –69 D) –59

27. 598–923 amallarni bajaring.
A)–335 B) –305 C)–325 D) –315

✓ 58–103–22 amallarni bajaring.
A) –77 B) –87 C) –67 D) –47
Yechimi:

$$\overbrace{58-103-22}^{-} = 58-125 = -67$$
$$103+22=125$$
javob: –67

28. 96–88–44 amallarni bajaring.
A) –26 B) –28 C) –38 D) –36

29. 77–66–33 ni hisoblang.
A) –17 B) –24 C) –27 D) –22

30. 22–128–38 ni hisoblang.
A) –124 B) –154 C) –134 D) –144

✓ –39+84 ni hisoblang.
A) 43 B) 45 C) 35 D) 15
Yechimi:

$$\overbrace{84-39=45}$$
$$\underbrace{-39+84}_{39<84\Rightarrow +} = 45$$
javob: 45

31. –33+48 amallarni bajaring.
A) 26 B) 33 C) 15 D) 16

32. –35–89 amallarni bajaring.
A) 44 B) 41 C) 47 D) 54

33. –27+94 amallarni bajaring.
A) 53 B) 63 C) 67 D)57

✓ –442+886 amallarni bajaring.
A) 444 B) 434 C) 344 D) 1348
Yechimi:

$$\overbrace{886-442=444}$$
$$\overbrace{-442+886}=444$$
$$\Rightarrow +$$

javob: 444

34. –166+329 amallarni bajaring.
A)173 B) 263 C)153 D) 163

35. –655+734 amallarni bajaring.
A) 79 B) 89 C) 69 D) 99

36.–598+923 amallarni bajaring.
A) 335 B) 305 C) 325 D) 315

✓ –58+103+22 amallarni bajaring.
A) 77 B) 87 C) 67 D) 47
Yechimi:

$$-58+\overbrace{103+22}=-58+125=67$$

Javob: 67

37. –96+88+44 amallarni bajaring.
A) 26 B) 28 C) 38 D) 36

38. –77+66+33 amallarni bajaring.
A) 17 B) 22 C) 27 D) 24

39. –22+128+38 amallarni bajaring.
A) 124 B) 154 C) 134 D) 144

✓ –12+(–14) amallarni bajaring.
A) –16 B) –2 C) 16 D) –26
Yechimi:

[+][+]=[+] [−][+]=[−]
[+][−]=[−] [−][−]=[+]

$-12+\underbrace{(-14)}=-12-14=-26$

Javob: –26

\+ − = −

Izoh: ishoralar orasidagi munosabatni eslab qoling.

40. –24+(–48) amallarni bajaring.
A) –24 B) –72 C) 72 D) 24

41. –67+(–92) amallarni bajaring.
A) –25 B) 159 C) 25 D)–159

42. –39+(–25) amallarni bajaring.
A) 14 B) –14 C) 64 D)–64

✓ –562–(–268) amallarni bajaring.
A) –444 B) –294 C) –344 D)– 1348
Yechimi:

$$\overbrace{-562+268=-294}$$
$$-562-(-268)=-294$$

Javob: –294

− − = +

Izoh: ishoralar orasidagi munosabatni eslab qoling.

43. –166–(–329) amallarni bajaring.
A) 495 B) 1389 C) 153 D) 163

44. – 655–(–734) amallarni bajaring.
A)79 B) 89 C)69 D) 1389

45.–598–(–923) amallarni bajaring.
A) 335 B) 1521 C) 325 D) 146

✓ $18-10:5+3\cdot4$ ifodaning qiymatini toping.
A) 20 B) 28 C) 18 D) 30
Yechimi:

$$18-\underset{2}{10:5}+\underset{12}{3\cdot4}=18-2+12=28$$

javob: 28

Izoh: amallar bajarish tartibi:
birinchi ":" (bo'lish)
ikkinchi "•" (ko'paytirish)
uchunchi "–", (ayrish)
to'rtinchi"+" (qo'shish)

46. $12-6:3+4\cdot2$ ifodaning qiymatini toping.
A) 16 B) 10 C) 18 D) 48

47. $15-9:3+4\cdot3$ ifodaning qiymatini toping.
A) 24 B) 18 C) 6 D) 48

48. $18-12:2+5\cdot3$ ifodaning qiymatini toping.
A) 51 B) 24 C) 27 D) 54

✓ 2017 *va* 2026 Sonlarining yig'indisini toping.
A) 4003 B) 4033 C) 4023 D) 4043
Yechimi:

yig'indisi $\Rightarrow +$ (*qo'shish*)

$2017+2026=4043$

javob: 4043

49. 3017 *va* 2626 Sonlarining yig'indisini toping.
A)5643 B) 5543 C)5633 D) 4643

50. 6014 *va* 5225 Sonlarining yig'indisini toping.
A) 10239 B) 12239 C) 11229 D) 11239

51. 8015 *va* 8828 Sonlarining yig'indisini toping.
A) 16833 B) 16843 C) 15843 D) 16743

✓ Qaysi javobdagi sonlarning yig'indisi 36 ga teng?
A) –62; 98 B) –68; 98 C) –32; 98 D) –62; 96
Yechimi:

A) $-62+98$ B) $-68+98$

C) $-32+98$ D) $-62+96$

A) $\overbrace{\underbrace{-62+98}_{62<98}}^{98-62=36}=36$

Izoh: har bir javobni ishlab chiqish lozim.

52. Qaysi javobdagi sonlarning yig'indisi 35 ga teng?
A) –71; 96 B) –21; 106 C) –81; 106 D) –71; 106

53. Qaysi javobdagi sonlarning yig'indisi 48 ga teng?
A) –221; 209 B) –221; 269 C) –211; 269 D) –201; 269

54. Qaysi javobdagi sonlarning yig'indisi 88 ga teng?
A) –840; 918 B) –830; 928 C) –840; 928 D) –840; 908

Son va raqam haqida tushuncha

✓ Qaysi qatorda raqamlar keltirilgan?
1) 0,1,2,3,22,33 2) 2,5,6,7,9 3) 22,33,44,55
4) 1,2,5,6,7,9 5) 10,11,12,13,...
A) 1;4 B) 2;4 C) 5 D) 3
Yechimi:
Raqam: 0,1,2,3,4,5,6,7,8,9. *Son*: 10,11,12,13,14,15,16...
1) 0,1,2,3,22,33 2) 2,5,6,7,9 3) 22,33,44,55
4) 1,2,5,6,7,9 5) 10,11,12,13,...
Javob: 2; 4

55. Qaysi qatorda raqamlar keltirilgan?
1) 10,11,12,13,... 2) 2,5,16,17,9 3) 22,33,44,55
4) 1,2,5,6,7,9 5) 2,3,5,7,9
A) 1; 4 B) 4; 5 C) 1 D) 3

56. Qaysi qatorda raqamlar keltirilgan?
1) 22,33,44,55 2) 0,2,5,6,7,9 3) 10,11,12,13,...
4) 1,2,5,6,7,9 5) 2,3,5,7,9
A) 1; 3 B) 4; 5 C) 2; 4; 5 D) 3

57. Qaysi qatorda raqamlar keltirilgan?
1) 0,1,2,53,74,5 2) 0,2,5,6,7,9 3) 10,11,12,13,...
4) 1,2,5,6,7,9 5) 2,13,5,7,9
A) 1;3 B) 3;5 C) 2;4 D) 3

✓ Qaysi qatorda raqamlar keltirilmagan?
1) 0,1,2,3,22,33 2) 2,5,6,7,9 3) 2017,2018
4) 1,2,5,6,7,9 5) 10,11,12,13
A) 1;4 B) 2;4 C) 3;5 D) 3
Yechimi:
Raqam: 0,1,2,3,4,5,6,7,8,9. *Son*: 10,11,12,13,14,15,16...
1) 0,1,2,3,22,33 2) 2,5,6,7,9 3) 2017,2018
4) 1,2,5,6,7,9 5) 10,11,12,13,...
Javob: 3; 5 (C)

58. Qaysi qatorda raqamlar keltirilmagan?
1) 10,11,12,13,... 2) 2,5,16,17,9 3) 22,33,44,55
4) 1,2,5,6,7,9 5) 2,3,5,7,9
A) 1;4 B) 4;5 C) 1;3 D) 2

59. Qaysi qatorda raqamlar keltirilmagan?
1) 82,65,41,55 2) 0,2,5,6,7,9 3) 1,2,5,6,7,9
4) 10,11,12,13,... 5) 2,3,5,7,9
A) 1;4 B) 4;5 C) 2;4;5 D) 4

60. Qaysi qatorda raqamlar keltirilmagan?
1) 0,1,2,3,4,5 2) 0,2,5,6,7,9 3) 10,11,12,13,...
4) 1,2,5,6,7,9 5) 2,3,5,7,9
A) 1;3 B) 3;5 C) 2;4;5 D) 3

Sonlarning bo'linish belgilari

✓ Berilgan p=5648256, q=72446583 va r=44789014 sonlaridan qaysilari 2 ga qoldiqsiz bo'linadi?
A) q va p B) q va r C) r D) p va r
Yechimi:
Oxirgi raqami 0, 2, 4, 6, 8 bilan tugagan sonlar 2 ga bo'linadi.
$p=5648256 \Rightarrow 6$ $q=72446583 \Rightarrow$ ✗
$r=44789014 \Rightarrow 4$
javob: p va r

61. Berilgan p=[illegible], q=6546580 va r=99789018 sonlaridan qaysilari 2 ga qoldiqsiz bo'linadi?
A) q va p B) q va r C) r D) p va r

62. Berilgan p=874852. q=4546584 va r=29789018 sonlaridan qaysilari 2 ga qoldiqsiz bo'linadi?
A) q va p B) q va r C) r,p va q D) p va r

63. Berilgan p=454851, q=4546586 va r=19789014 sonlaridan qaysilari 2 ga qoldiqsiz bo'linadi?
A) q va p B) q va r C) r D) p va r

✓ Berilgan m=1648256. n=42446583 va l=1478900 sonlaridan qaysilari 4 ga qoldiqsiz bo'linadi?
A) n va m B) m va l C) l D) n va l
Yechimi:
Oxirgi ikki raqami no'l bilan tugasa yoki 4 ga bo'linsa, bunday sonlar 4 ga bo'linadi.
$m=1648256 \Rightarrow 56=4\cdot14$ $n=42446583 \Rightarrow 83$ ✗
$l=1478900$ *javob*: m va l

64. Berilgan m=5648272, n=82446500 va l=9478944 sonlaridan qaysilari 4 ga qoldiqsiz bo'linadi?
A) n va m B) m va l C) n,m,l D) n va l

65. Berilgan m=4648255, n=42446516 va l=3478924 sonlaridan qaysilari 4 ga qoldiqsiz bo'linadi?
A) n va m B) m va l C) n,m,l D) n va l

66. Berilgan m=1648206, n=42446584 va l=1478932 sonlaridan qaysilari 4 ga qoldiqsiz bo'linadi?
A) n va m B) m va l C) n D) n va l

✓ Berilgan q=1648256, n=42446583 va r=14789000 sonlaridan qaysilari 8 ga qoldiqsiz bo'linadi?
A) q va r B) n va r C) r D) q va n
Yechimi:
Oxirgi uchta raqami no'l bilan tugasa yoki 8 ga bo'linsa, bunday sonlar 8 ga bo'linadi.
$q=1648256 \Rightarrow 256=8\cdot32$ $n=42446583 \Rightarrow 583$ ✗
$r=14789000$ *javob*: q va r

67. Berilgan q=8888336, n=42446064 va r=24789192 sonlaridan qaysilari 8 ga qoldiqsiz bo'linadi?
A) q va r B) q, n va r C) r D) q va n

68. Berilgan q=5558208, n=42446401 va r=14789800 sonlaridan qaysilari 8 ga qoldiqsiz bo'linadi?
A) q va r B) n va r C) r D) q va n

69. Berilgan q=1648520, r=14789564 va n=42446000 sonlaridan qaysilari 8 ga qoldiqsiz bo'linadi?
A) q va r B) n va r C) r D) q va n

✓ Berilgan p=5648250, q=72446583 va r=44789015 sonlaridan qaysilari 5 ga qoldiqsiz bo'linadi?
A) p va q B) q va r C) r D) p va r
Yechimi:
Oxirgi raqami 0 yoki 5 bilan tugagan sonlar 5 ga bo'linadi
$p=5648250 \Rightarrow 0$ $q=72446583 \Rightarrow$ ✗
$r=44789015 \Rightarrow 5$ *javob*: p va r

70. Berilgan p=774855, q=6546580 va r=99789018 sonlaridan qaysilari 5 ga qoldiqsiz bo'linadi?
A) p va q B) q va r C) r D) p va r

71. Berilgan p=874852, q=4546584 va r=29789010 sonlaridan qaysilari 5 ga qoldiqsiz bo'linadi?
A) p va q B) q va r C) r D) p va r

72. Berilgan p=454851, q=4546585 va r=19789015 sonlaridan qaysilari 5 ga qoldiqsiz bo'linadi?
A) p va q B) q va r C) r D) p va r

✓ Berilgan x=16482, z=426583 va y=42900 sonlaridan qaysilari 3 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x
Yechimi:
Raqamlar yig'indisi 3 ga bo'linadigan sonlar 3 ga bo'linadi.
$x=$ 16482 $z=$ 426583
$1+6+4+8+2=21$ $4+2+6+5+8+3=28$ ✗
$y=$ 42900 *javob*: x va y
$4+2+9+0+0=15$

73. Berilgan x=22482, z=126081 va y=41241 sonlaridan qaysilari 3 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) x,y va z D) y va x

74. Berilgan x=43957, z=66183 va y=82425 sonlaridan qaysilari 3 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

75. Berilgan x=763542, z=126573 va y=62923 sonlaridan qaysilari 3 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

✓ n raqamining qanday qiymatlarida $6134n$ soni 3 ga qoldiqsiz bo'linadi?
A) 1 B) 4 C) 1; 4; 7 D) 2
Yechimi:
$\underbrace{6134n}_{6+1+3+4+n=14+n}$ $n=0,1,2,3,4,5,6,7,8,9$
$\underbrace{14+n}_{n=1}=15=3\cdot5$; $\underbrace{14+n}_{n=4}=18=2\cdot9$; $\underbrace{14+n}_{n=7}=21=3\cdot7$
javob: C

76. n raqamining qanday qiymatlarida $7851n$ soni 3 ga qoldiqsiz bo'linadi?
A) 3;4 B) 4 C) 5; 9 D) 0; 3; 6

77. n raqamining qanday qiymatlarida $726134n$ soni 3 ga qoldiqsiz bo'linadi?
A) 5 B) 4 C) 1;4; 7 D) 2

78. n raqamining qanday qiymatlarida $57134n$ soni 3 ga qoldiqsiz bo'linadi?
A) 1 B) 5 C) 3;7 D) 2

✓ Berilgan x=16482, z=426582 va y=42900 sonlaridan qaysilari 9 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x
Yechimi:
Raqamlar yig'indisi 9 ga bo'linadigan sonlar 9 ga bo'linadi.
$x=$ 16482 $z=$ 426582
$1+6+4+8+2=21$ ✗ $4+2+6+5+8+2=27$
$y=$ 42900 *javob*: z
$4+2+9+0+0=15$ ✗

79. Berilgan x=52182, z=126081 va y=41241 sonlaridan qaysilari 9 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) x,y va z D) y va x

80. Berilgan x=816482, z=426573 va y=8564913 sonlaridan qaysilari 9 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

81. Berilgan x=16482, z=426583 va y=42900 sonlaridan qaysilari 9 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) hech qaysi D) y va x

✓ 246*013579 soni 9 ga bo'linishi uchun yulduzchaning o'rniga qanday raqam yozilishi lozim?
A) 5 B) 8 C) 1; 4; 7 D) 6
Yechimi:
$\underbrace{246*013579}$
$2+4+6+0+1+3+5+7+9+*=37+*$
$*=0,1,2,3,4,5,6,7,8,9$
$37+*=45$ *javob*: 8
$37+8$

82. 66055*79 soni 9 ga bo'linishi uchun yulduzchaning o'rniga qanday raqam yozilishi lozim?
A) 5 B) 8 C) 7 D) 6

83. 9501357*9 soni 9 ga bo'linishi uchun yulduzchaning o'rniga qanday raqam yozilishi lozim?
A) 5 B) 8 C) 1; 4; 7 D) 6

84. 2*54601879 soni 9 ga bo'linishi uchun yulduzchaning o'rniga qanday raqam yozilishi lozim?
A) 5 B) 8 C) 3 D) 6

✓ Berilgan x=63734, z=16482 va y=74734 sonlaridan qaysilari 11 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x
Yechimi:

Agar sonning juft o'rinda turgan raqamlar yig'indisi bilan toq, o'rinda turgan raqamlar yig'indisining ayirmasi 11 ga bo'linsa, bunday sonlar 11 ga bo'linadi.

$x = \underbrace{\overbrace{63734}^{3+3=6}}_{6+7+4=17} \Rightarrow 17-6=11$; $z = \underbrace{\overbrace{16482}^{6+8=14}}_{1+4+2=7} \Rightarrow 14-7=7$

$y = \underbrace{\overbrace{74734}^{4+3=7}}_{7+7+4=18} \Rightarrow 18-7=11$; **Javob:** *x va y*

Izoh: Agar ayirmasi "0" chiqsa ham bo'linadi.

85. Berilgan x=76824, z=51194 va y=74834 sonlaridan qaysilari 11 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

86. Berilgan x=86824, z=51194 va y=108394 sonlaridan qaysilari 11 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

87. Berilgan x=16824, z=98747 va y=64834 sonlaridan qaysilari 11 ga qoldiqsiz bo'linadi?
A) z va x B) y va z C) z D) y va x

Tub va murakkab sonlar

✓ 20 dan kichik tub sonlar nechta?
A) 6 B) 7 C) 8 D) 5

Yechimi:
Faqat 1 ga va o'ziga bo'linadigan har qanday son tub sondir.

20 dan kichik sonlar:
1, 2, 3, 4, 5, 6, 7,
8, 9, 10, 11, 12, 13, 14, 15,
16, 17, 18, 19, 20

20 dan kichik tub sonlar:
1, 2, 3, 4, 5, 6, 7,
8, 9, 10 11, 12, 13, 14, 15,
16, 17, 18, 19, 20

Javob: 8 ta

88. 10 dan kichik tub sonlar nechta?
A) 4 B) 3 C) 5 D) 6

89. 30 dan kichik tub sonlar nechta?
A) 10 B) 8 C) 9 D) 11

90. 40 dan kichik tub sonlar nechta?
A) 13 B) 12 C) 14 D) 11

✓ 50 dan 70 gacha tub sonlar nechta?
A) 6 B) 7 C) 4 D) 5

Yechimi: **Javob: 4 ta**

50 dan 70 gacha sonlar:
50, 51, 52, 53, 54, 55, 56, 57, 58, 59
60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70

50 dan 70 gacha tub sonlar:
50, 51, 52, 53, 54, 55, 56, 57, 58, 59
60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70

91. 60 dan 70 gacha tub sonlar nechta?
A) 1 B) 4 C) 2 D) 3

92. 70 dan 90 gacha tub sonlar nechta?
A) 8 B) 7 C) 6 D) 5

93. 80 dan 100 gacha tub sonlar nechta?
A) 4 B) 5 C) 2 D) 3

✓ 1; 2; ,3; 15; 17; 23; 24; 169; 289; 361 sonlar ketma–ketligida nechta tub son bor?
A) 6 B) 7 C) 4 D) 5

Yechimi:
tub sonlar:
1, 2, 3, 15, 17, 23,
24, 169, 289, 361,

Javob: 4 ta

Izoh: 169 : 13=13; 289 : 17=17; 361 : 19=19 . e'tiborga olindi.

94. 1; 21; 27; 35; 37; 43; 361 sonlar ketma–ketligida nechta tub son bor?
A) 1 B) 4 C) 2 D) 3

95. 2; 9; 27; 57; 59; 63; 169 sonlar ketma–ketligida nechta tub son bor?
A) 2 B) 5 C) 3 D) 4

96. 7; 17; 57; 59; 93; 169 sonlar ketma–ketligida nechta tub son bor?
A) 3 B) 6 C) 4 D) 5

Tub ko'paytuvchilarga ajratish

✓ 320 ni tub ko'paytuvchilarga ajratilgan javobni toping.
A) $8^2 \cdot 5$ B) $4^3 \cdot 5$ C) $2^5 \cdot 5$ D) $2^6 \cdot 5$

Yechimi:

320	2
160	2
80	2
40	2
20	2
10	2
5	5
1	

$320 = 2^6 \cdot 5$
tub ko'paytuvchilarga ajratish

Javob: D

97. 480 ni tub ko'paytuvchilarga ajratilgan javobni toping.
A) $4 \cdot 2^3 \cdot 3 \cdot 5$ B) $4^3 \cdot 3 \cdot 5$ C) $2^5 \cdot 3 \cdot 5$ D) $2^6 \cdot 3 \cdot 5$

98. 620 ni tub ko'paytuvchilarga ajratilgan javobni toping.
A) $2^2 \cdot 5 \cdot 31$ B) $4 \cdot 155 \cdot 5$ C) $2^5 \cdot 155$ D) $4 \cdot 155$

99. 420 ni tub ko'paytuvchilarga ajratilgan javobni toping.
A) $2^2 \cdot 5 \cdot 7$ B) $3 \cdot 4 \cdot 7 \cdot 5$ C) $2^2 \cdot 105$ D) $2^2 \cdot 3 \cdot 7 \cdot 5$

✓ 500 ni kanonik yoyilmasini toping.
A) $4 \cdot 5^3$ B) $4^3 \cdot 5$ C) $2^2 \cdot 5^3$ D) $2^5 \cdot 5^3$

Yechimi:

500	2
250	2
125	5
25	5
5	5
1	

$500 = 2^2 \cdot 5^3$
kanonik yoyilma

Javob: C

Izoh: *"tub ko'paytuvchilarga"* ajratish va *"kanonik yoyilma"* 2 lasi bir xildir.

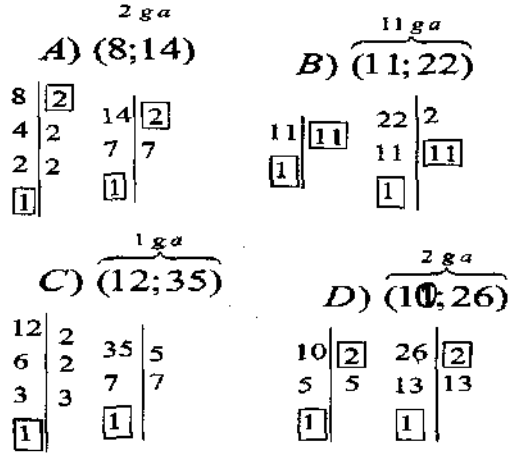
100. 600 ni kanonik yoyilmasini toping.
A) $2^3 \cdot 3 \cdot 5^2$ B) $8 \cdot 75$ C) $8 \cdot 3 \cdot 5^2$ D) $2^4 \cdot 3 \cdot 5$

101. 700 ni kanonik yoyilmasini toping.
A) $2^2 \cdot 5 \cdot 7$ B) $4 \cdot 5 \cdot 7$ C) $2^2 \cdot 5^2 \cdot 7$ D) $4 \cdot 175$

102. 800 ni kanonik yoyilmasini toping.
A) $2^5 \cdot 5^3$ B) $2^4 \cdot 5^2$ C) $2^3 \cdot 5$ D) $2^5 \cdot 5^2$

O'zaro tub juftliklar

✓ Qaysi juftlik o'razo tub sonlardan iborat?
A) (8; 14) B) (11; 22) C) (12;35) D) (10; 26)
Yechimi:
Berilgan sonlarning har ikkalasi faqat "1" soniga bo'linishi shart.



javob: (C)
Izoh: har bir javobni ishlab chiqish lozim.

103. Qaysi juftlik o'razo tub sonlardan iborat?
A) (15; 28) B) (11; 22) C) (22; 33) D) (50; 24)

104. Qaysi juftlik o'razo tub sonlardan iborat?
A) (8; 14) B) (15; 22) C) (12; 34) D) (10; 26)

105. Qaysi juftlik o'razo tub sonlardan iborat?
A) (58; 22) B) (21; 14) C) (15; 35) D) (44; 25)

✓ 9; 10; 22 va 25 sonlari orasida nechta o'zaro tub sonlar jufti bor?
A) 6 B) 7 C) 4 D) 5
Yechimi
(9;10) (9;22) (9;25) ~~(10;22)~~ ~~(10;25)~~ (22;25)
javob: 4 *ta*

106. 8;12;21 va 27 sonlari orasida nechta o'zaro tub sonlar jufti bor?
A) 2 B) 5 C) 4 D) 3

107. 7;11;21 va 28 sonlari orasida nechta o'zaro tub sonlar jufti bor?
A) 6 B) 7 C) 4 D) 3

108. 6;15;25 va 32 sonlari orasida nechta o'zaro tub sonlar jufti bor?
A) 6 B) 3 C) 4 D) 5

Natural bo'luvchilari soni

✓ 36 ning barcha natural bo'luvchilari nechta?
A) 6 B) 7 C) 9 D) 8
Yechimi:
$A = 2^k \cdot 3^n \cdot 5^m \ldots$
$NBS(A) = (k+1)(n+1)(m+1)\ldots$

$36 = 2^{\boxed{2}} \cdot 3^{\boxed{2}}$

$NBS(36) = (\boxed{2}+1)\cdot(\boxed{2}+1) = 9$

36 | 2
18 | 2
9 | 3
3 | 3
1

Javob:9
Izoh: Avval kanonik yoyilmani topib, darajasiga "1" ni qo'shamiz.

109. 72 ning barcha natural bo'luvchilari nechta?
A) 3 B) 16 C) 12 D) 15

110. 400 ning barcha natural bo'luvchilari nechta?
A) 12 B) 15 C) 14 D) 13

111. 405 ning barcha natural bo'luvchilari nechta?
A) 10 B) 15 C) 14 D) 13

112. 200 ning barcha natural bo'luvchilari nechta?
A) 12 B) 15 C) 14 D) 13

Natural bo'luvchilari yig'indisi

✓ 36 ning barcha natural bo'luvchilari yig'indisini toping.
A) 42 B) 64 C) 91 D) 96
Yechimi: qoidasi:

$$A = 2^k \cdot 3^n \cdot 5^m \ldots \quad NBY(A) = \frac{2^{k+1}-1}{2-1} \cdot \frac{3^{n+1}-1}{3-1} \cdot \frac{5^{m+1}-1}{5-1} \ldots$$

$36 = 2^2 \cdot 3^2$

36 | 2
18 | 2
9 | 3
3 | 3
1

$$NBY(36) = \frac{2^{2+1}-1}{2-1} \cdot \frac{3^{2+1}-1}{3-1} =$$

$$= \frac{\overset{2\cdot2\cdot2}{2^3}-1}{2-1} \cdot \frac{\overset{3\cdot3\cdot3}{3^3}-1}{3-1} = \frac{8-1}{2-1} \cdot \frac{27-1}{3-1} = \frac{7}{1} \cdot \frac{26}{2} = 7 \cdot 13 = 91$$

113. 72 ning barcha natural bo'luvchilari yig'indisini toping.
A) 245 B) 195 C) 152 D) 135

114. 150 ning barcha natural bo'luvchilari yig'indisini toping.
A) 362 B) 352 C) 372 D) 472

115. 200 ning barcha natural bo'luvchilari yig'indisini toping.
A) 425 B) 645 C) 465 D) 965

✓ n raqamining qanday qiymatlarida 50+n soni eng kam tub ko'partuvchilarga ajraladi?
A) 3 B) 3;9 C) 5 D) 9
Yechimi:
0,1,2,3,4,5,6,7,8,9
$\overbrace{\quad}^{n=}$ $50 + n = 53, 59$ **J: 3; 9 (B)**

116. n raqamining qanday qiymatlarida $60+n$ soni eng kam tub ko'partuvchilarga ajraladi?
A) 1; 3 B) 1; 7 C) 3 D) 7

117. n raqamining qanday qiymatlarida $40+n$ soni eng kam tub ko'partuvchilarga ajraladi?
A) 3 B) 1; 5 C) 1 D) 1; 3; 7

118. n raqamining qanday qiymatlarida $80+n$ soni eng kam tub ko'partuvchilarga ajraladi?
A) 1; 3 B) 3; 9 C) 1; 5 D) 9

✓ 6 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...44 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B)...24 C) ...79 D) ...14
Yechimi:

$...19 \cdot 6 = ...14$ (A) $\quad ...24 \cdot 6 = ...44 \Leftarrow$ (B)

$...79 \cdot 6 = ...74$ (C) $\quad ...14 \cdot 6 = ...84$ (D)

Javob: (B)
Izoh: javoblarga ko'paytirib chiqish lozim.

119. 8 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...88 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...26 B) ...46 C) ...36 D) ...16

120. 7 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...23 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B) ...24 C) ...79 D) ...89

121. 4 ni berilgan songa ko'paytirganda, hosil bo'lgan son ...04 ko'rinishda bo'lsa, berilgan son quyidagilardan qaysi biri ko'rinishida bo'lishi mumkin?
A) ...19 B) ...26 C) ...36 D) ...16

Raqamlar yig'indisini toppish

✓ Ushbu 12345678910...4950 sonning raqamlari yig'indisini toping.
A) 335 B) 315 C) 330 D) 320
Yechimi:

$\underbrace{1\,2\,3\,4\,5\,6\,7\,8\,9}_{} \Rightarrow 45$

$1+2+3+4+5+6+7+8+9=45$

10	20	30	40
11	21	31	41
12	22	32	42
13	23	33	43
14	24	34	44
+ 15	25	35	45
16	26	36	46
17	27	37	47
18	28	38	48
19	29	39	49
10+45	20+45	30+45	40+45

$50 \Rightarrow 5+0=5$

$45 \cdot 5 + \underbrace{10+20+30+40+5}_{105} = 225$

$225+105=330$

javob: 330

Izoh: tushuntirish maqsadida ustuncha qilib qo'shildi. Siz ham shunday qilib yeching.

122. Ushbu 21222324...6970 sonning raqamlari yig'indisini toping.
A) 400 B) 440 C) 430 D) 420

123. Ushbu 31323334...7980 sonning raqamlari yig'indisini toping.
A) 460 B) 480 C) 473 D) 490

124. Ushbu 11121314...5960 sonning raqamlari yig'indisini toping.
A) 365 B) 360 C) 380 D) 370

✓ 7 ga karrali ikki xonali natural sonlar nechta?
A) 14 B) 12 C) 15 D) 13
Yechimi:

1 2 3
7 , 14 , 21 , 28 ,
1 xonali
4 5 6 7 8 9 10 11 12 13
35, 42, 49, 56, 63, 70, 77, 84, 91, 98

Tez toppish usuli:
$99:7 \approx 14{,}142857$
bir xonalini chiqarib tashlash lozim $14-1=13$
Izoh: tez topish usulida toping.

125. 8 ga karrali ikki xonali natural sonlar nechta?
A) 14 B) 12 C) 15 D) 11

126. 9 ga karrali ikki xonali natural sonlar nechta?
A) 10 B) 12 C) 15 D) 11

127. 4 ga karrali ikki xonali natural sonlar nechta?
A) 21 B) 24 C) 22 D) 23

✓ Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linadi?
A) 1017 B) 1044 C) 9027 D) 1782
Yechimi:

$36 = 9 \cdot 4 = 12 \cdot 3 = 18 \cdot 6$

$1017 \Rightarrow \overbrace{17}^{\text{4 ga karrali emas}}$ (A) $\quad 1044 \Rightarrow \overbrace{44}^{\text{4 ga karrali}}$ (B)

$9027 \Rightarrow \overbrace{27}^{\text{4 ga karrali emas}}$ (C) $\quad 1782 \Rightarrow \overbrace{82}^{\text{4 ga karrali emas}}$ (D)

128. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linadi?
A) 10242 B) 50616 C) 80937 D) 60282

129. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linadi?
A) 50418 B) 80424 C) 90927 D) 50742

130. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linadi?
A) 50913 B) 57042 C) 99072 D) 17082

✓ Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linmaydi?
A) 1116 B) 8244 C) 1926 D) 1728
Yechimi:

$36 = 9 \cdot 4 = 12 \cdot 3 = 18 \cdot 6$

$1116 \Rightarrow$ 4 ga karrali (16) — A; $1926 \Rightarrow$ 4 ga karrali emas (26) — C

$8244 \Rightarrow$ 4 ga karrali (44) — B; $1728 \Rightarrow$ 4 ga karrali (28) — D

javob: (C)

Izoh: $12 \cdot 3$ *va* $6 \cdot 6$. lar o'zaro tub emas shuning uchun olinmagan.

131. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linmaydi?

A) 50616 B) 92052 C) 30924 D) 60782

132. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linmaydi?

A) 54018 B) 80424 C) 40932 D) 20736

133. Quyidagi sonlardan qaysi biri 36 ga qoldiqsiz bo'linmaydi?

A) 18072 B) 30222 C) 10908 D) 20700

✓ Quyidagi sonlardan qaysi biri 12 ga qoldiqsiz bo'linmaydi?

A) 9216 **B) 13626** C) 12024 D) 18312

Yechimi:

$12 = 3 \cdot 4 = 12 \cdot 2$

$9216 \Rightarrow$ 4 ga karrali (16) — A; $13626 \Rightarrow$ 4 ga karrali emas (26) — B

$12024 \Rightarrow$ 4 ga karrali (24) — C; $18312 \Rightarrow$ 4 ga karrali (12) — D

134. Quyidagi sonlardan qaysi biri 12 ga qoldiqsiz bo'linmaydi?

A) 20616 B) 12042 C) 50028 D) 61032

135. Quyidagi sonlardan qaysi biri 12 ga qoldiqsiz bo'linmaydi?

A) 53016 B) 80136 C) 39024 D) 50382

136. Quyidagi sonlardan qaysi biri 12 ga qoldiqsiz bo'linmaydi?

A) 5712 B) 5100 C) 6974 D) 1428

✓ 35 ta natural sonni ketma –ket yozish natijasida hosil bo'lgan 123…333435 sonini 25 ga bo'lish natijasida hosil bo'lgan qoldiq nechiga teng?

A) 0 B) 8 C) 5 D) 10

Yechimi:

Oxirgi ikki raqami no'l bilan tugasa yoki 25 ga bo'linsa, bunday sonlar 25 ga bo'linadi.

$123\ldots33\,34\,\underline{35} \Rightarrow 35$

$35 \mid 25$

$-25 \quad 1$

10

javob: 10

137. 65 ta natural sonni ketma –ket yozish natijasida hosil bo'lgan 123…63 64 65 sonini 25 ga bo'lish natijasida hosil bo'lgan qoldiq nechiga teng?

A) 15 B) 20 C) 5 D) 10

138. 85 ta natural sonni ketma –ket yozish natijasida hosil bo'lgan 123…83 84 85 sonini 25 ga bo'lish natijasida hosil bo'lgan qoldiq nechiga teng?

A) 15 B) 8 C) 5 D) 10

139. 95 ta natural sonni ketma –ket yozish natijasida hosil bo'lgan 123…93 94 95 sonini 25 ga bo'lish natijasida hosil bo'lgan qoldiq nechiga teng?

A) 20 B) 15 C) 5 D) 10

Qoldiqli bo'lish

✓ Qaysi tenglik qoldiqli bo'lishni ifodalaydi?

1) $47 = 4 \cdot 11 + 3$ 2) $47 = 6 \cdot 6 + 11$

3) $47 = 9 \cdot 5 + 2$ 4) $47 = 7 \cdot 7 - 2$

A) hammasi B) 1;3 C) 2;3 D) 1;4

Yechimi:

bo'linuvchi | bo'luvchi

bo'linma

qoldiq

$25 \mid 7$

3

4

$\Rightarrow 25 = 3 \cdot 7 + 4$

$6 < 11$

1) $47 = 4 \cdot 11 + 3$ 2) $47 = 6 \cdot 6 + 11$

3) $47 = 9 \cdot 5 + 2$ 4) $47 = 7 \cdot 7 - 2$

javob: 1; 3 (B)

Izoh: qoldiq ayrilmaydi va katta bo'lmaydi.

140. Qaysi tenglik qoldiqli bo'lishni ifodalaydi?

1) $59 = 5 \cdot 11 + 4$; 2) $59 = 9 \cdot 6 + 5$; 3) $59 = 7 \cdot 7 + 10$; 4) $59 = 6 \cdot 10 - 1$

A) hammasi B) 1;3 C) 2;3 D) 1;2

141. Qaysi tenglik qoldiqli bo'lishni ifodalaydi?

1) $97 = 9 \cdot 9 + 16$; 2) $97 = 10 \cdot 10 - 3$; 3) $97 = 8 \cdot 12 + 1$; 4) $97 = 7 \cdot 13 + 6$

A) 3;4 B) 1;3 C) 2;3 D) 1;4

142. Qaysi tenglik qoldiqli bo'lishni ifodalaydi?

1) $69 = 6 \cdot 11 + 3$; 2) $69 = 8 \cdot 7 + 13$; 3) $69 = 7 \cdot 10 - 1$; 4) $69 = 9 \cdot 7 + 6$

A) hammasi B) 1;3 C) 2;3 D) 1;4

✓ Qandaydir sonni 23 ga bo'lganda bo'linma 5 ga, qoldiq 3 ga teng chiqdi bo'linuvchi nechiga teng?

A) 118 B) 138 C) 128 D) 114

Yechimi:

bo'linuvchi | bo'luvchi

bo'linma

qoldiq

bo'linuvchi = bo'luvchi · bo'linma + qoldiq

$a \mid 23$

5

3

$\Rightarrow a = 23 \cdot 5 + 3 = 118$

Javob: 118 (A)

143. Qandaydir sonni 59 ga bo'lganda bo'linma 23 ga, qoldiq 17 ga teng chiqdi bo'linuvchi nechiga teng?
A) 1364 B) 1354 C) 1344 D) 1374

144. Qandaydir sonni 37 ga bo'lganda bo'linma 9 ga, qoldiq 8 ga teng chiqdi bo'linuvchi nechiga teng?
A) 358 B) 351 C) 341 D) 331

145. Qandaydir sonni 97 ga bo'lganda bo'linma 39 ga, qoldiq 23 ga teng chiqdi bo'linuvchi nechiga teng?
A) 3806 B) 3816 C) 3826 D) 3836

✓ 2146, 1991 va 1805 sonlarining har birini qanday natural songa bo'lgandan, qoldiqlari bir xil chiqadi?
A) 7 B) 13 C) 31 D) 37
Yechimi:

2146 | 31	1991 | 31	1805 | 31
186 69	186 64	155 58
286	131	255
279	124	248
7	7	7

Izoh: A, B, C, D javoblarni bo'lib chiqishda bir xil qoldiq qolgani olinadi.

146. 3842, 3132 va 6256 sonlarining har birini qanday natural songa bo'lgandan, qoldiqlari bir xil chiqadi ?
A) 41 B) 71 C) 61 D) 31

EKUK va EKUB lar

✓ 1260 va 540 ning Eng katta ummumiy bo'luvchisini toping.
A) 180 B) 90 C) 60 D) 540
Yechimi: katta sonni kichik songa bo'lamiz va qoldiqni topamiz:

1260 | 540	540 | 180
1080 2	540 3
180	0

$EKUB(1260;540)=180$ **Javob: 180 (A)**
Izoh: Qoldiq "0" bo'lgunga qadar davom etadi, "0" dan oldingi qoldiq EKUB bo'ladi.

147. 72 va 96 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 24 C) 6 D) 54

148. 18 va 12 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 9 C) 6 D) 54

149. 56 va 16 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 8 C) 6 D) 54

✓ 456 va 156 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 12 C) 6 D) 54
Yechimi:
2-usul
$EKUB(456;156)=?$

456 | 2	156 | 2
228 | 2	78 | 2
114 | 2	39 | 3
57 | 3	13 | 13
19 | 19	1
1	

$\boxed{2}\cdot\boxed{2}\cdot\boxed{3}=2\cdot2\cdot3=12$

$EKUB(456;156)=12$ **Javob: 12 (B)**
Izoh: Ikkalasida qatnashgan sonlarni ko'paytirish lozim.

150. 630 va 198 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 24 C) 6 D) 54
151. 840 va 264 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 9 C) 6 D) 24
152. 270 va 300 ning Eng katta ummumiy bo'luvchisini toping.
A) 18 B) 8 C) 30 D) 54

✓ 54, 36 va 99 eng katta umummiy bo'lvchisini toping.
A) 15 B) 9 C) 12 D) 14
Yechimi:

54 | 2	36 | 2	99 | 3	⇒	54 | 2	36 | 2	99 | 3
27 | 3	18 | 2	33 | 3		27 | 3	18 | 2	33 | 3
9 | 3	9 | 3	11 | 11		9 | 3	9 | 3	11 | 11
3 | 3	3 | 3	1		3 | 3	3 | 3	1
1	1			1	1	

EKUB da barchasida qatnashgan sonlarni belgilaymiz.
$\boxed{3}\cdot\boxed{3}=9$ **Javob: 9 (B)**

153. 54, 81 va 189 eng katta umummiy bo'lvchisini toping.
A) 5 B) 27 C) 12 D) 9

154. 30, 50 va 70 eng katta umummiy bo'lvchisini toping.
A) 10 B) 60 C) 12 D) 14

155. 56, 84 va 126 eng katta umummiy bo'lvchisini toping.
A) 15 B) 28 C) 12 D) 14

✓ 54, 36 va 99 eng kichik umummiy karralisini toping.
A) 1188 B) 6944 C) 12 D) 7624
Yechimi:

54 | 2	36 | 2	99 | 3	⇒	54 | (2)	36 | (2)	99 | 3
27 | 3	18 | 2	33 | 3		27 | 3	18 | 2	33 | 3
9 | 3	9 | 3	11 | 11		9 | 3	9 | 3	11 | [11]
3 | 3	3 | 3	1		3 | {3}	3 | 3	1
1	1			1	1	

EKUK da barchasida qatnashgan sonlarni va qatnashmaganlarini ham belgilaymiz.
$\boxed{3}\cdot\boxed{3}\cdot(2)\cdot\{3\}\cdot\boxed{2}\cdot[11]=1188$ **Javob: (A)**

156. 45, 90 va 180 eng kichik umummiy karralisini toping.
A) 360 B) 90 C) 180 D) 120

157. 25, 75 va 100 eng kichik umummiy karralisini toping.
A) 150 B) 600 C) 300 D) 180

158. 30, 45 va 225 eng kichik umummiy karralisini toping.
A) 450 B) 350 C) 225 D) 500

✓ 594 va 378 ning Eng kichik ummumiy karralisini toping.
A) 4458 B) 4168 C) 4158 D) 4258
Yechimi:

594	378	378	216	216	162	162	54
378	1	216	1	162	1	162	3
216		162		54		0	

$$EKUK=\frac{a\cdot b}{EKUB}\Rightarrow EKUK=\frac{594\cdot 378}{54}=4158$$ **J: (C)**

Izoh: Avval EKUB toping va EKUK formulasi $EKUK=\frac{a\cdot b}{EKUB}$ ga qo'yish lozim.

159. 8 va 6 ning Eng kichik ummumiy karralisini toping.
A) 18 B) 24 C) 12 D) 54

160. 12 va 18 ning Eng kichik ummumiy karralisini toping.
A) 18 B) 40 C) 36 D) 6

161. 45 va 27 ning Eng kichik ummumiy karralisini toping.
A) 450 B) 225 C) 255 D) 9

✓ 36 va 48 sonlari eng kichik umumiy karralisining natural bo'luvchilari nechta?
A) 8 B) 6 C) 4 D) 15
Yechimi:

$$EKUK=\frac{a\cdot b}{EKUB}\Rightarrow EKUK=\frac{36\cdot 48}{12}=144$$

46	36	36	12
36	1	36	3
12		0	

$EKUB=12$
$EKUK=144$

$144=2^4\cdot 3^2$

5 3 **javob: 15 (D)**

$NBS(144)=(4+1)(2+1)=15$

Izoh: Avval EKUB, EKUK topiladi keyin NBS ni hisoblash lozim.

162. 8 va 12 sonlari eng kichik umumiy karralisining natural bo'luvchilari nechta?
A) 8 B) 24 C) 12 D) 54

163. 27 va 45 sonlari eng kichik umumiy karralisining natural bo'luvchilari nechta?
A) 8 B) 4 C) 6 D) 5

164. 50 va 40 sonlari eng kichik umumiy karralisining natural bo'luvchilari nechta?
A) 18 B) 12 C) 6 D) 4

✓ 630 va 198 ning umumiy bo'luvchilari nechta?
A) 4 B) 6 C) 1 D) 8
Yechimi

630	198	198	36	36	18
594	3	180	5	36	2
36		18		0	

2 3
$EKUB=18;\ 18=2\cdot 3^2;\ NBS(18)=(1+1)(2+1)=6;\ UBS(18)=6$
javob: 6 (B)

Izoh: Avval EKUB topiladi keyin NBS ni hisoblaymiz shu UBS bo'ladi.

165. 312 va 12 ning umumiy bo'luvchilari nechta?
A) 18 B) 8 C) 12 D) 6

166.420 va 156 ning umumiy bo'luvchilari nechta?
A) 18 B) 8 C) 12 D) 6

167. 840 va 264 ning umumiy bo'luvchilari nechta?
A) 18 B) 8 C) 12 D) 6

✓ 21 va 35 sonlarining eng kichik umumiy karralisi, bilan eng katta umumiy bo'luvchisining, yig'indisini toping.
A) 105 B) 110 C) 112 D) 114
Yechimi:

35	21	21	14	14	7
21	1	14	1	14	2
14		7		0	

$EKUB=7;\ EKUK=\frac{21\cdot 35}{7}=105\quad 7+105=112$

javob: 112 (C)

168. 24 va 18 sonlarining eng kichik umumiy karralisi bilan, eng katta umumiy bo'luvchisining, yig'indisini toping.
A) 72 B) 78 C) 112 D) 70

169. 270 va 300 sonlarining eng kichik umumiy karralisi, bilan eng katta umumiy bo'luvchisining, yig'indisini toping.
A) 2760 B) 2700 C) 2630 D) 2730

170. 72 va 96 sonlarining eng kichik umumiy karralisi, bilan eng katta umumiy bo'luvchisining, yig'indisini toping.
A) 305 B) 310 C) 312 D) 314

✓ 21 va 35 sonlari eng kichik umumiy karralisining, eng katta umumiy bo'luvchisiga, ko'paytmasini toping.
A) 735 B) 110 C) 112 D) 114
Yechimi:

$EKUK\cdot EKUB=a\cdot b$

$EKUK\cdot EKUB=21\cdot 35=735$ **javob: 735 (A)**

Izoh: EKUK va EKUB larni topmasdan berilgan sonlarni ko'paytirsak bo'ldi.

171. 15 va 10 sonlari eng kichik umumiy karralisining, eng katta umumiy bo'luvchisiga, ko'paytmasini toping.
A) 105 B) 150 C) 112 D) 114

172. 27 va 30 sonlari eng kichik umumiy karralisining, eng katta umumiy bo'luvchisiga, ko'paytmasini toping.
A) 860 B) 820 C) 270 D) 810

173. 12 va 16 sonlari eng kichik umumiy karralisining, eng katta umumiy bo'luvchisiga, ko'paytmasini toping.
A) 192 B) 110 C) 112 D) 114

✓ 900 va 50 sonlarini nisbatini toping.
A) 15 B) 18 C) 12 D) 14
Yechimi:
nisbat $-:(bo'lish)$ $900:50=18$ **javob: (B)**
Izoh: "nisbat" degan termin ishlatilsa ":" (bo'lish) ni tushunish lozim.

174. 216 va 36 sonlarini nisbatini toping.
A) 5 B) 10 C) 12 D) 6
175. 288 va 24 sonlarini nisbatini toping.
A) 10 B) 60 C) 12 D) 14

176. 575 va 5 sonlarini nisbatini toping.
A) 105 B) 110 C) 112 D) 115

✓ 41 va 31 sonlari eng katta umumiy bo'luvchisini toping.
A) 1 B) 11 C) 2 D) 4
Yechimi:
a va b tub son bo'lsa, $EKUB(a;b)=1$ $EKUB(31,41)=1$ **javob: 1(A)**
Izoh: Tub sonlar berilsa ularning EKUBi doim "1" ga tengdir.

177. 13 va 11 sonlari eng katta umumiy bo'luvchisini toping.
A) 5 B) 1 C) 2 D) 4

178. 29 va 3 sonlari eng katta umumiy bo'luvchisini toping.
A) 8 B) 0 C) 2 D) 1

179. 11 va 17 sonlari eng katta umumiy bo'luvchisini toping.
A) 1 B) 10 C) 2 D) 14

✓ Ikki sonning ko'paytmasi 294 ga, ularning eng katta umumiy bo'luvchisi 7 ga teng. Bu sonlarning eng kichik umumiy karralisini toping.
A) 42 B) 40 C) 12 D) 14
Yechimi:
$$EKUK=\frac{a\cdot b}{EKUB} \Rightarrow EKUK=\frac{294}{7}=42$$ **J: 42 (A)**
Izoh: berilgan sonlarning ko'paytmasini EKUB ga bo'lsak, EKUK bo'ladi.

180. Ikki sonning ko'paytmasi 952 ga, ularning eng katta umumiy bo'luvchisi 17 ga teng. Bu sonlarning eng kichik umumiy karralisini toping.
A) 42 B) 40 C) 56 D) 14

181. Ikki sonning ko'paytmasi 845 ga, ularning eng katta umumiy bo'luvchisi 13 ga teng. Bu sonlarning eng kichik umumiy karralisini toping.
A) 42 B) 40 C) 45 D) 65

182. Ikki sonning ko'paytmasi 494 ga, ularning eng katta umumiy bo'luvchisi 19 ga teng. Bu sonlarning eng kichik umumiy karralisini toping.
A) 46 B) 26 C) 36 D) 16

✓ 108 va [illegible] kichik umumiy karralisini, 12 va 54 [illegible] umumiy karralisiga, nisbatini toping.
A) 2 B) 4 C) 8 D) 5
Yechimi:

$$\frac{EKUK(108;135)}{EKUK(12;54)}=?$$

135 | 27 — 108 | 27 — 54 | 12 — 12 | 6 — 48 | 3 — 12 | 2 — 6 — 0

$$EKUK=\frac{a\cdot b}{EKUB} \Rightarrow EKUK=\frac{108\cdot 135}{27}=540$$

$$EKUK=\frac{12\cdot 54}{6}=108 \qquad \frac{540}{108}=5$$ **Javob: 5**

183. 270 va 300 son[illegible] kichik umumiy karralisini, 4 va 6 sonlari eng [illegible]umiy karralisiga, nisbatini toping.
A) 125 B) 95 C) 225 D) 45

184. 18 va 15 sonlarining **eng kichik** umumiy karralisini, 5 va 3 sonlari eng **kichik umumiy** karralisiga, nisbatini toping.
A) 2 B) 4 C) 8 D) 6

185. 48 va 32 sonlarining **eng kichik** umumiy karralisini, 12 va 4 sonlari eng **kichik umumiy** karralisiga, nisbatini toping.
A) 2 B) 4 C) 8 D) 5

Kasrlar haqida umumiy ma'lumot

✓ Qaysi qatorda to'g'ri kasrlar berilgan.
1) $\frac{17}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $\frac{15}{59};\frac{2}{51};\frac{9}{17}$
A) 1;2 B) 4 C) 3;4 D) 1;4
Yechimi:
to'g'ri kasr $\Rightarrow \frac{kichik}{katta}$
1) $\frac{7}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{17}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $\frac{15}{59};\frac{2}{51};\frac{9}{17}$
Javob: 3; 4 (C)
Izoh: kasr surat va mahrajiga $\Rightarrow \frac{surat}{maxraj}$ e'tibor bering.

186. Qaysi qatorda to'g'ri kasrlar berilgan.
1) $1\frac{7}{9};1\frac{6}{99};2\frac{3}{17};1\frac{3}{17}$, 2) $\frac{4}{15};\frac{9}{22};\frac{6}{7};\frac{3}{7}$, 3) $\frac{46}{79};\frac{17}{41};\frac{21}{93};\frac{2}{41}$, 4) 7.4 ; 0.08 ; 9.84
A) 1;2 B) 2;3 C) 2 D) 1;4

187. Qaysi qatorda to'g'ri kasrlar berilgan.
1) $\frac{7}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{16}{19};\frac{16}{31};\frac{5}{7};\frac{23}{41}$, 4) $\frac{15}{59};1\frac{2}{51};\frac{28}{51}$
A) 1;2 B) 1 C) 3;4 D) 1;3

188. Qaysi qatorda to'g'ri kasrlar berilgan.

1) $\frac{7}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{19};\frac{16}{31};2\frac{5}{7};\frac{23}{41}$, 4) $\frac{15}{59};\frac{2}{51};\frac{28}{51}$

A) 1;2 B) 4 C) 3;4 D) 1;4

✓ Qaysi qatorda noto'g'ri kasrlar berilgan.

1) $\frac{57}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{17}{9};\frac{26}{11};\frac{85}{77};\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $\frac{75}{59};\frac{2}{51};\frac{82}{51}$

A) 1;2 B) 2 C) 3;4 D) 1;4

Yechimi:

$noto'g'ri\ kasr \Rightarrow \frac{katta}{kichik}$

1) $\frac{57}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $\frac{17}{9};\frac{26}{11};\frac{85}{77};\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $\frac{75}{59};\frac{2}{51};\frac{82}{51}$,

javob: 2 (B)

189. Qaysi qatorda noto'g'ri kasrlar berilgan.

1) $1\frac{7}{9};1\frac{6}{9};2\frac{3}{17};1\frac{3}{17}$, 2) $\frac{4}{15};\frac{9}{22};\frac{6}{7};\frac{3}{7}$, 3) $\frac{46}{19};\frac{17}{4};\frac{21}{9};\frac{18}{4}$, 4) 5.5 ; 2.08 ; 6.75

A) 1;2 B) 2;3 C) 3 D) 1;4

190. Qaysi qatorda noto'g'ri kasrlar berilgan.

1) $\frac{47}{9};\frac{56}{19};\frac{63}{27};\frac{34}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{19};\frac{86}{31};\frac{25}{7};\frac{3}{11}$, 4) $\frac{95}{59};\frac{62}{51};\frac{72}{51}$

A) 1;4 B) 3 C) 3;4 D) 2;3

191. Qaysi qatorda noto'g'ri kasrlar berilgan.

1) $\frac{47}{9};\frac{56}{19};\frac{63}{27};\frac{34}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{19};\frac{16}{31};2\frac{5}{7};\frac{23}{41}$, 4) $\frac{95}{59};\frac{62}{51};\frac{72}{51}$

A) 1;2 B) 4 C) 3;4 D) 1;4

✓ Qaysi qatorda aralash (butun qismli) kasrlar berilgan.

1) $\frac{17}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $4\frac{1}{9};4\frac{26}{11};4\frac{8}{7};4\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $1\frac{15}{59};4\frac{2}{5};\frac{12}{51}$

A) 1;2 B) 2 C) 4 D) 1;4

Yechimi:

$aralash\ kasr \Rightarrow butun\frac{kichik}{katta}$

1) $\frac{17}{9};\frac{6}{19};\frac{13}{27};\frac{3}{11}$, 2) $4\frac{1}{9};3\frac{26}{11};1\frac{8}{7};6\frac{23}{11}$, 3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $7\frac{15}{59};4\frac{2}{5};9\frac{12}{51}$

javob: 4 (C)

192. Qaysi qatorda aralash (butun qismli) kasrlar berilgan.

1) $1\frac{7}{9};1\frac{6}{9};2\frac{3}{17};1\frac{3}{17}$, 2) $\frac{4}{15};\frac{9}{22};\frac{6}{7};\frac{3}{7}$, 3) $1\frac{46}{19};1\frac{17}{4};2\frac{1}{9};1\frac{8}{41}$, 4) 7.4 ; 0.08 ; 9.84

A) 1 B) 2;3 C) 3 D) 1;4

193. Qaysi qatorda aralash (butun qismli) kasrlar berilgan.

1) $\frac{37}{11};\frac{27}{15};\frac{31}{20};\frac{21}{15}$, 2) $\frac{7}{19};\frac{26}{11};\frac{5}{27};\frac{23}{81}$, 3) $4\frac{6}{19};5\frac{6}{31};5\frac{5}{9};3\frac{1}{21}$, 4) $\frac{5}{9};\frac{2}{5};\frac{7}{17};5$

A) 1;3 B) 3 C) 3;4 D) 2;3

194. Qaysi qatorda aralash (butun qismli) kasrlar berilgan.

1) $\frac{47}{9};\frac{56}{19};6\frac{3}{27};\frac{34}{11}$, 2) $\frac{7}{9};\frac{6}{11};\frac{65}{77};\frac{23}{11}$, 3) $\frac{96}{19};\frac{16}{31};2\frac{5}{7};\frac{23}{41}$, 4) $9\frac{5}{59};6\frac{2}{51};7\frac{2}{51}$

A) 1;2 B) 4 C) 3;4 D) 1;4

✓ Qaysi qatorda o'nli kasrlar berilgan.

1) 0.7; 8.95; 65.3; 5.9; 2.64 2) $4.3;4\frac{26}{11};4\frac{8}{7};4\frac{23}{11}$

3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$, 4) $1\frac{15}{59};4\frac{2}{5};15\frac{12}{51}$

A) 1;2 B) 1 C) 4 D) 1;4

Yechimi:

$o'nli\ kasr \Rightarrow butun\frac{kichik}{10lar}$

1) 0.7; 8.95; 65.359; 2.64

2) $4.3;4\frac{26}{11};4\frac{8}{7};4\frac{23}{11}$

3) $\frac{96}{109};\frac{16}{31};\frac{25}{97};\frac{23}{41}$

4) $1\frac{15}{59};4\frac{2}{5};15\frac{12}{51}$

javob: 1(B)

195. Qaysi qatorda o'nli kasrlar berilgan.

1) $1\frac{7}{9};1\frac{6}{9};2\frac{3}{17};1\frac{3}{17}$, 2) $\frac{4}{15};\frac{9}{22};\frac{6}{7};\frac{3}{7}$, 3) $1\frac{46}{19};1\frac{17}{4};2\frac{1}{9};1\frac{8}{41}$,

4) 7.4 ; 0.08 ; 9.84

A) 1 B) 2;3 C) 3 D) 4

196. Qaysi qatorda o'nli kasrlar berilgan.

1) $\frac{37}{11};\frac{27}{15};\frac{31}{20};\frac{21}{15}$ 2) 5.68; 0.001;6.85; 9.4 3) $4\frac{6}{19};5\frac{6}{31};5\frac{5}{9};3\frac{1}{21}$

4) $\frac{5}{9};\frac{2}{5};\frac{7}{17};5$

A) 1;3 B) 3 C) 3;4 D) 2

197. Qaysi qatorda o'nli kasrlar berilgan.

1) $\frac{47}{9};\frac{56}{19};6\frac{3}{27};\frac{34}{11}$ 2) $\frac{7}{10};\frac{6}{100};\frac{65}{1000};1\frac{3}{10}$ 3) $\frac{96}{19};\frac{16}{31};2\frac{5}{7};\frac{23}{41}$ 4) $9\frac{5}{59};6\frac{2}{51};7\frac{2}{51}$

A) 2 B) 4 C) 3;4 D) 1;4

✓ $\frac{24}{36}$ ni qisqartiring.

A) $\frac{2}{3}$ B) $\frac{72}{48}$ C) $\frac{3}{2}$ D) $\frac{36}{24}$

Yechimi: surat va mahrajini bir xil songa bo'lamiz, ya'ni EKUB ga.

36 | 24 — 24 | 12 — 24 | 2 — 12 | 0 — 2 — 3

$EKUB = 12$ $\frac{24}{36} = \frac{24:12}{36:12} = \frac{2}{3}$

198. $\frac{20}{24}$ ni qisqartiring.

A) $\frac{5}{4}$ B) $\frac{40}{48}$ C) $\frac{6}{5}$ D) $\frac{5}{6}$

199. $\frac{500}{750}$ ni qisqartiring.

A) $\frac{2}{3}$ B) $\frac{3}{2}$ C) $\frac{6}{5}$ D) $\frac{5}{6}$

200. $\frac{420}{3600}$ ni qisqartiring.

A) $\frac{5}{4}$ B) $\frac{60}{7}$ C) $\frac{7}{60}$ D) $\frac{5}{6}$

201. $\frac{12}{84}$ ni qisqartiring.

A) $\frac{5}{4}$ B) $\frac{1}{7}$ C) $\frac{6}{5}$ D) $\frac{5}{6}$

202. $\frac{650}{850}$ ni qisqartiring.

A) $\frac{13}{17}$ B) $\frac{2}{17}$ C) $\frac{17}{12}$ D) $\frac{12}{7}$

203. $\frac{450}{480}$ ni qisqartiring.

A) $\frac{5}{4}$ B) $\frac{16}{15}$ C) $\frac{17}{16}$ D) $\frac{15}{16}$

✓ $\frac{251}{83}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $\frac{2}{83}$ B) $4\frac{2}{83}$ C) $\frac{3}{2}$ D) $3\frac{2}{83}$

Yechimi:

$\frac{katta}{kichik}=butun\frac{qoldiq}{kichik}$ $\begin{array}{r|l} 251 & 83 \\ \hline 249 & 3 \\ 2 & \end{array}$ $\frac{251}{83}=3\frac{2}{83}$ **Javob: (D)**

Izoh: E'tibor bering qoldiq suratga, butun esa o'rtaga yozilishi lozim.

204. $\frac{25}{8}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $4\frac{1}{8}$ B) $\frac{1}{8}$ C) $8\frac{1}{3}$ D) $3\frac{1}{8}$

205. $\frac{17}{4}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $1\frac{2}{4}$ B) $4\frac{1}{4}$ C) $\frac{6}{5}$ D) $\frac{5}{6}$

206. $\frac{117}{41}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $35\frac{2}{41}$ B) $2\frac{2}{41}$ C) $2\frac{35}{41}$ D) $2\frac{15}{41}$

207. $\frac{2255}{43}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $19\frac{52}{43}$ B) $52\frac{19}{43}$ C) $52\frac{19}{41}$ D) $5\frac{9}{43}$

208. $\frac{605}{81}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $7\frac{38}{81}$ B) $38\frac{7}{81}$ C) $7\frac{81}{38}$ D) $7\frac{28}{81}$

209. $\frac{450}{41}$ noto'g'ri kasrni, aralash kasrga aylantiring.

A) $10\frac{40}{41}$ B) $10\frac{41}{10}$ C) $10\frac{11}{41}$ D) $10\frac{10}{31}$

✓ $35\frac{5}{12}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{425}{5}$ B) $\frac{425}{83}$ C) $\frac{425}{2}$ D) $\frac{425}{12}$

Yechimi:

$a\frac{r}{b}=\frac{a\cdot b+r}{b}$ $35\frac{5}{12}=\frac{\overset{420}{35\cdot 12}+5}{12}=\frac{425}{12}$ **javob: (D)**

210. $3\frac{2}{3}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{9}{11}$ B) $\frac{11}{3}$ C) $\frac{1}{9}$ D) $1\frac{9}{11}$

211. $2\frac{15}{16}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{15}{16}$ B) $\frac{47}{25}$ C) $\frac{47}{16}$ D) $\frac{16}{47}$

212. $3\frac{5}{8}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{5}{8}$ B) $\frac{8}{29}$ C) $3\frac{15}{8}$ D) $\frac{29}{8}$

213. $5\frac{2}{7}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{37}{7}$ B) $\frac{35}{7}$ C) $\frac{2}{7}$ D) $\frac{2}{35}$

214. $11\frac{2}{3}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{2}{3}$ B) $\frac{35}{3}$ C) $\frac{3}{35}$ D) $\frac{33}{2}$

215. $20\frac{1}{2}$ aralash kasrni, noto'g'ri kasrga aylantiring.

A) $\frac{1}{2}$ B) $\frac{41}{10}$ C) $\frac{41}{2}$ D) $\frac{2}{41}$

Kasrlar ustida amallar

✓ $\frac{5}{12}+\frac{2}{12}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{7}{12}$ B) $\frac{6}{12}$ C) $\frac{24}{7}$ D) $\frac{7}{24}$

Yechimi:

$\frac{r}{b}+\frac{n}{b}=\frac{r+n}{b}$ $\Rightarrow\frac{5}{12}+\frac{2}{12}=\frac{5+2}{12}=\frac{7}{12}$ **Javob: (A)**

216. $\frac{15}{31}+\frac{4}{31}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{29}{31}$ B) $\frac{19}{31}$ C) $\frac{9}{31}$ D) $\frac{19}{62}$

217. $\frac{23}{43}+\frac{15}{42}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{23}{86}$ B) $\frac{43}{25}$ C) $\frac{38}{43}$ D) $\frac{16}{43}$

218. $\frac{2}{29}+\frac{6}{29}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{5}{8}$ B) $\frac{8}{29}$ C) $\frac{15}{8}$ D) $\frac{29}{8}$

✓ $\frac{5}{17}+\frac{12}{17}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{7}{12}$ B) $\frac{6}{12}$ C) $\frac{24}{7}$ D) 1

Yechimi:

$\frac{r}{b}+\frac{n}{b}=\frac{r+n}{b}=\frac{b}{b}=1$ $\frac{5}{17}+\frac{12}{17}=\frac{5+12}{17}=1$ **Javob: (D)**

219. $\frac{18}{31}+\frac{13}{31}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{21}{31}$ B) $\frac{19}{31}$ C) $\frac{9}{31}$ D) 1

220. $\frac{3}{43}+\frac{40}{43}$ bir xil maxrajli kasrlarni qo'shing.

A) 1 B) $\frac{43}{25}$ C) $\frac{38}{43}$ D) $\frac{16}{43}$

221. $\frac{13}{29}+\frac{16}{29}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{5}{8}$ B) $\frac{8}{29}$ C) $\frac{15}{8}$ D) 1

✓ $\frac{11}{13}+\frac{12}{13}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{7}{12}$ **B)** $\frac{6}{12}$ C) $1\frac{10}{13}$ D) $\frac{24}{7}$

Yechimi:

$\frac{r}{b}+\frac{n}{b}=\frac{r+n}{b}=a\frac{c}{b}$ $\frac{11}{13}+\frac{12}{13}=\frac{23}{13}=1\frac{10}{13}$ **Javob: (C)**

222. $\frac{28}{31}+\frac{25}{31}$ bir xil maxrajli kasrlarni qo'shing.

A) $\frac{21}{31}$ B) $1\frac{19}{31}$ C) $1\frac{9}{31}$ D) $1\frac{22}{31}$

223. $\frac{40}{43}+\frac{37}{43}$ bir xil maxrajli kasrlarni qo'shing.

A) $1\frac{34}{43}$ B) $\frac{43}{25}$ C) $1\frac{38}{43}$ D) $1\frac{16}{43}$

224. $\frac{73}{79}+\frac{66}{79}$ bir xil maxrajli kasrlarni qo'shing.

A) $1\frac{5}{79}$ B) $1\frac{8}{79}$ C) $\frac{15}{8}$ D) $1\frac{60}{79}$

✓ $\frac{15}{37}-\frac{12}{37}$ bir xil maxrajli kasrlarni ayring.

A) $\frac{7}{12}$ B) $\frac{3}{37}$ C) $\frac{24}{7}$ D) $\frac{7}{24}$

Yechimi:

$\frac{r}{b}-\frac{n}{b}=\frac{r-n}{b}$ $\frac{15}{37}-\frac{12}{37}=\frac{15-12}{37}=\frac{3}{37}$ **Javob: (B)**

225. $\frac{28}{31}-\frac{25}{31}$ bir xil maxrajli kasrlarni ayring.

A) $\frac{21}{31}$ B) $\frac{3}{31}$ C) $\frac{9}{31}$ D) $\frac{22}{31}$

226. $\frac{41}{43}-\frac{37}{43}$ bir xil maxrajli kasrlarni ayring.

A) $\frac{4}{43}$ B) $\frac{43}{25}$ C) $\frac{38}{43}$ D) $\frac{16}{43}$

227. $\frac{73}{79}-\frac{66}{79}$ bir xil maxrajli kasrlarni ayring.

A) $1\frac{5}{79}$ B) $\frac{7}{79}$ C) $\frac{15}{8}$ D) $\frac{60}{79}$

✓ $\frac{15}{53}-\frac{15}{53}$ bir xil maxrajli kasrlarni ayring.

A) $\frac{7}{12}$ B) $\frac{6}{12}$ C) $\frac{24}{7}$ D) 0

Yechimi:

$\frac{r}{b}-\frac{n}{b}=\frac{r-r}{b}=\frac{0}{b}=0$ $\frac{15}{53}-\frac{15}{53}=\frac{15-15}{53}=\frac{0}{53}=0$ **J: (D)**

228. $\frac{28}{31}-\frac{28}{31}$ bir xil maxrajli kasrlarni ayring.

A) 0 B) $\frac{3}{31}$ C) $\frac{9}{31}$ D) $\frac{22}{31}$

229. $\frac{41}{43}-\frac{41}{43}$ bir xil maxrajli kasrlarni ayring.

A) $\frac{4}{43}$ B) 0 C) $\frac{38}{43}$ D) $\frac{16}{43}$

230. $\frac{66}{79}-\frac{66}{79}$ bir xil maxrajli kasrlarni ayring.

A) 0 B) $\frac{7}{79}$ C) $\frac{15}{8}$ D) $\frac{60}{79}$

✓ $-\frac{25}{53}-\frac{15}{53}$ ni hisoblang.

A) $-\frac{40}{53}$ B) $\frac{6}{12}$ C) $\frac{24}{7}$ D) 0

Yechimi:

$-\frac{r}{b}-\frac{c}{b}=\frac{-r-c}{b}$ $-\frac{25}{53}-\frac{15}{53}=\frac{-25-15}{53}=-\frac{40}{53}$

Javob: (A)

231. $-\frac{28}{31}-\frac{26}{31}$ ni hisoblang.

A) $-1\frac{23}{31}$ B) $1\frac{3}{31}$ C) $1\frac{9}{31}$ D) $-1\frac{22}{31}$

232. $-\frac{35}{43}-\frac{34}{43}$ ni hisoblang.

A) $\frac{4}{43}$ B) $-1\frac{26}{43}$ C) $-1\frac{38}{43}$ D) $1\frac{16}{43}$

233. $-\frac{66}{79}-\frac{66}{79}$ ni hisoblang.

A) 0 B) $-\frac{53}{79}$ C) $-1\frac{53}{79}$ D) $1\frac{53}{79}$

✓ $-\frac{15}{53}+\frac{25}{53}$ ni hisoblang.

A) $\frac{10}{53}$ B) $\frac{6}{12}$ C) $-\frac{40}{53}$ D) $-\frac{10}{53}$

Yechimi:

$-\frac{r}{b}+\frac{c}{b}=\frac{-r+c}{b}$ $-\frac{15}{53}+\frac{25}{53}=\frac{-15+25}{53}=\frac{10}{53}$ **Javob: (A)**

234. $-\frac{28}{31}+\frac{8}{31}$ ni hisoblang.

A) $-\frac{20}{31}$ B) $\frac{3}{31}$ C) $\frac{9}{31}$ D) $-1\frac{5}{31}$

235. $-\frac{31}{43}+\frac{24}{43}$ ni hisoblang.

A) $\frac{4}{43}$ B) $-\frac{7}{43}$ C) $-1\frac{12}{43}$ D) $\frac{16}{43}$

236. $-\frac{86}{79}+\frac{66}{79}$ ni hisoblang.

A) 0 B) $-\frac{20}{79}$ C) $\frac{15}{8}$ D) $\frac{60}{79}$

✓ $\frac{2}{5}va\frac{1}{6}$ kasrlariga umumiy mahrajini toping.

A) 15 B) 11 C) 25 D) 30

Yechimi: ***Maxraji ketma-ket kelgan sonlar bo'lsa, ko'paytmasi umumiy mahraj bo'ladi.***

$\frac{2}{5}va\frac{1}{6}\Rightarrow 5\cdot 6=30$ **Javob: 30 (D)**

237. $\frac{7}{8}va\frac{5}{9}$ kasrlariga umumiy mahrajini toping.

A) 35 B) 12 C) 72 D) 30

238. $\frac{8}{11}va\frac{7}{12}$ kasrlariga umumiy mahrajini toping.

A) 132 B) 56 C) 112 D) 130

239. $\frac{11}{20}va\frac{10}{21}$ kasrlariga umumiy mahrajini toping.

A) 415 B) 110 C) 425 D) 420

✓ $2\frac{2}{4}va7\frac{1}{5}$ kasrlariga umumiy mahrajini toping.

A) 15 B) 11 C) 25 D) 20

Yechimi: ***Butun qismini umumiy mahrajga ahamyati yo'q.***

$2\frac{2}{4}va7\frac{1}{5}\Rightarrow 4\cdot 5=20$ **Javob: 20 (D)**

240. $1\frac{2}{7}va\,8\frac{5}{6}$ kasrlariga umumiy mahrajini toping.

A) 35 B) 42 C) 72 D) 30

241. $6\frac{9}{14}va\,5\frac{1}{15}$ kasrlariga umumiy mahrajini toping.

A) 232 B) 210 C) 212 D) 230

242. $4\frac{1}{9}va\,8\frac{7}{10}$ kasrlariga umumiy mahrajini toping.

A) 40 B) 90 C) 95 D) 20

✓ $\frac{2}{3}va\frac{1}{5}$ kasrlariga umumiy mahrajini toping.

A) 15 B) 11 C) 25 D) 20

Yechimi: ***Maxrajida tub sonlar kelgan bo'lsa ham, ko'paytmasi umumiy maxraj bo'ladi.***

$\frac{2}{3}va\frac{1}{5}\Rightarrow 3\cdot 5=15$ **Javob: 15 (A)**

243. $\frac{2}{7}va\frac{5}{11}$ kasrlariga umumiy mahrajini toping.

A) 35 B) 42 C) 77 D) 10

244. $\frac{2}{3}va\frac{4}{7}$ kasrlariga umumiy mahrajini toping.

A) 32 B) 21 C) 22 D) 23

245. $\frac{1}{2}va\frac{4}{7}$ kasrlariga umumiy mahrajini toping.

A) 14 B) 40 C) 90 D) 28

✓ $4\frac{2}{7}va\,3\frac{1}{5}$ kasrlariga umumiy mahrajini toping.

A) 15 B) 11 C) 35 D) 20

Yechimi: ***Butun qismini umumiy mahrajga ahamyati yo'q.***

$4\frac{2}{7}va\,3\frac{1}{5}\Rightarrow 7\cdot 5=35$ **Javob:35 (C)**

246. $2\frac{2}{11}va\,4\frac{5}{5}$ kasrlariga umumiy mahrajini toping.

A) 35 B) 42 C) 77 D) 55

247. $2\frac{2}{13}va\,9\frac{4}{5}$ kasrlariga umumiy mahrajini toping.

A) 30 B) 65 C) 22 D) 60

248. $6\frac{1}{17}va\,8\frac{4}{2}$ kasrlariga umumiy mahrajini toping.

A) 34 B) 40 C) 90 D) 28

✓ $\frac{2}{7}va\frac{5}{14}$ kasrlariga umumiy mahrajini toping.

A) 14 B) 11 C) 25 D) 20

Yechimi: ***Maxajdagi sonlardan biri ikkinchisiga karrali bo'lsa, u holda umumiy maxraj kattasi bo'ladi.***

$\frac{2}{7}va\frac{5}{14}\Rightarrow 14(7<14)$ **Javob: 14 (A)**

249. $\frac{2}{10}va\frac{5}{5}$ kasrlariga umumiy mahrajini toping.

A) 10 B) 42 C) 77 D) 50

250. $\frac{2}{12}va\frac{1}{3}$ kasrlariga umumiy mahrajini toping.

A) 36 B) 65 C) 12 D) 60

251. $\frac{11}{60}va\frac{7}{10}$ kasrlariga umumiy mahrajini toping.

A) 600 B) 60 C) 90 D) 28

✓ $1\frac{2}{8}va\,9\frac{5}{16}$ kasrlariga umumiy mahrajini toping.

A) 15 B) 16 C) 25 D) 20

Yechimi: ***Butun qismini umumiy mahrajga ahamyati yo'q*** $1\frac{3}{8}va\,9\frac{5}{16}\Rightarrow 16\,(8<16)$ **Javob: 16 (B)**

252. $5\frac{2}{14}$ *va* $3\frac{5}{28}$ kasrlariga umumiy mahrajini toping.

A) 14 B) 56 C) 28 D) 50

253. $3\frac{2}{11}$ *va* $4\frac{1}{33}$ kasrlariga umumiy mahrajini toping.

A) 33 B) 363 C) 11 D) 60

254 . $4\frac{10}{77}$ *va* $1\frac{2}{7}$ kasrlariga umumiy mahrajini toping.

A) 60 B) 77 C) 90 D) 11

✓ $\frac{2}{18}$ *va* $\frac{5}{16}$ kasrlariga umumiy mahrajini toping.

A) 145 B) 144 C) 250 D) 20

Yechimi: ***umumiy holda umumiy mahrajga EKUK topiladi.***

$\frac{2}{18}$ *va* $\frac{5}{16} \Rightarrow 18$ *va* 16

$18 \mid 16$ — $16 \mid 2$

$16 \mid 1$ — $16 \mid 8$

2 — 0

$EKUK = \frac{a \cdot b}{EKUB}$ $EKUK = \frac{18 \cdot 16}{2} = 144$

Javob: 144 (B)

255. $\frac{2}{6}$ *va* $\frac{5}{8}$ kasrlariga umumiy mahrajini toping.

A) 24 B) 56 C) 28 D) 48

256. $\frac{2}{12}$ *va* $\frac{1}{10}$ kasrlariga umumiy mahrajini toping.

A) 33 B) 48 C) 11 D) 60

257. $\frac{10}{77}$ *va* $\frac{2}{33}$ kasrlariga umumiy mahrajini toping.

A) 221 B) 231 C) 131 D) 28

✓ $9\frac{7}{48}$ *va* $14\frac{11}{36}$ kasrlariga umumiy mahrajini toping.

A) 144 B) 110 C) 205 D) 20

Yechimi: umumiy holda umumiy mahrajga EKUK topiladi.

$9\frac{7}{48}$ *va* $14\frac{11}{36} \Rightarrow 48$ *va* 36

$48 \mid 36$ — $36 \mid 12$

$36 \mid 1$ — $36 \mid 3$

12 — 0

Javob: 144 (A)

$EKUK = \frac{a \cdot b}{EKUB}$ $EKUK = \frac{48 \cdot 36}{12} = 144$

258. $5\frac{2}{35}$ *va* $3\frac{5}{28}$ kasrlariga umumiy mahrajini toping.

A) 140 B) 56 C) 280 D) 50

259. $3\frac{2}{10}$ *va* $4\frac{1}{15}$ kasrlariga umumiy mahrajini toping.

A) 33 B) 35 C) 30 D) 60

260. $4\frac{11}{30}$ *va* $1\frac{3}{20}$ kasrlariga umumiy mahrajini toping.

A) 60 B) 77 C) 90 D) 28

✓ $4+\frac{1}{5}$ ni hisoblang.

A) $\frac{1}{5}$ B) $4\frac{1}{5}$ C) $1\frac{4}{5}$ D) 4

Yechimi: $4+\frac{1}{5}=4\frac{1}{5}$ **Javob: (B)**

261. $8+\frac{9}{65}$ ni hisoblang.

A) $8\frac{8}{65}$ B) $\frac{9}{65}$ C) $9\frac{8}{65}$ D) $8\frac{9}{65}$

262. $11+\frac{29}{51}$ ni hisoblang.

A) $11\frac{29}{51}$ B) $\frac{29}{51}$ C) $29\frac{11}{51}$ D) $1\frac{29}{51}$

263. $23+\frac{57}{98}$ ni hisoblang.

A) $2\frac{57}{98}$ B) $23\frac{57}{98}$ C) $23\frac{51}{98}$ D) $3\frac{57}{98}$

✓ $\frac{1}{5}+4$ ni hisoblang.

A) $\frac{1}{5}$ B) $4\frac{1}{5}$ C) $1\frac{4}{5}$ D) 4

Yechimi: $\frac{1}{5}+4=4\frac{1}{5}$

Izoh: oldingi misoldan farqi o'rni almashgan javob o'zgarmaydi. oldingi: $4+\frac{1}{5}=4\frac{1}{5}$ hozirgi: $\frac{1}{5}+4=4\frac{1}{5}$ **Javob: (B)**

264. $\frac{9}{65}+9$ ni hisoblang.

A) $8\frac{8}{65}$ B) $9\frac{9}{65}$ C) $9\frac{8}{65}$ D) $8\frac{9}{65}$

265. $\frac{29}{51}+6$ ni hisoblang.

A) $11\frac{29}{51}$ B) $6\frac{29}{51}$ C) $9\frac{11}{51}$ D) $1\frac{29}{51}$

266. $\frac{57}{98}+9$ ni hisoblang.

A) $2\frac{57}{98}$ B) $23\frac{57}{98}$ C) $2\frac{51}{98}$ D) $9\frac{57}{98}$

✓ $8\frac{1}{5}+4$ ni hisoblang.

A) $\frac{1}{5}$ B) $4\frac{1}{5}$ C) $1\frac{4}{5}$ D) $12\frac{1}{5}$

Yechimi: $8\frac{1}{5}+4 \overset{8+4}{=} 12\frac{1}{5}$ **Javob: (D)**

267. $24\frac{9}{65}+9$ ni hisoblang.

A) $8\frac{8}{65}$ B) $33\frac{9}{65}$ C) $9\frac{8}{65}$ D) $24\frac{9}{65}$

268. $4\frac{11}{51}+6$ ni hisoblang.

A) $11\frac{29}{51}$ B) $6\frac{11}{51}$ C) $10\frac{11}{51}$ D) $1\frac{29}{51}$

269. $9+8\frac{57}{98}$ ni hisoblang.

A) $17\frac{57}{98}$ B) $23\frac{57}{98}$ C) $2\frac{51}{98}$ D) $9\frac{57}{98}$

✓ $8-\frac{1}{5}$ ni hisoblang.

A) $7\frac{4}{5}$ B) $4\frac{1}{5}$ C) $1\frac{4}{5}$ D) $12\frac{1}{5}$

Yechimi: $8-\frac{1}{5}=7\frac{5}{5}-\frac{1}{5}=7\frac{4}{5}$ **Javob: (A)**

Izoh: mahraji nechi bo'lsa, o'shani yozib 1 ta kamaytiriladi? Yana boshqa misolda :

$20-\frac{3}{8}=19\frac{8}{8}-\frac{3}{8}=19\frac{8-3}{8}=19\frac{5}{8}$

270. $18-\frac{7}{15}$ ni hisoblang.

A) $17\frac{8}{15}$ B) $33\frac{9}{15}$ C) $9\frac{8}{15}$ D) $18\frac{7}{15}$

271. $14-\frac{11}{51}$ ni hisoblang.

A) $11\frac{29}{51}$ B) $13\frac{40}{51}$ C) $10\frac{11}{51}$ D) $1\frac{40}{51}$

272. $12-\frac{51}{98}$ ni hisoblang.

A) $11\frac{57}{98}$ B) $23\frac{57}{98}$ C) $2\frac{51}{98}$ D) $11\frac{47}{98}$

✓ $7-2\frac{1}{5}$ ni hisoblang.

A) $\frac{1}{5}$ B) $4\frac{1}{5}$ C) $4\frac{4}{5}$ D) $12\frac{1}{5}$

Yechimi: **Javob: (C)**

$7-2\frac{1}{5}=6\frac{5}{5}-2\frac{1}{5}=(6-2)+\frac{5}{5}-\frac{1}{5}=4+\frac{5-1}{5}=4+\frac{4}{5}=4\frac{4}{5}$

Izoh: quyidagi xatolardan biri qilinmasin:

$7-2\frac{1}{5}=(7-2)\frac{1}{5}=5\frac{1}{5}$ *noto'g'ri*

273. $5-2\frac{6}{7}$ ni hisoblang.

A) $3\frac{1}{7}$ B) 2 C) $3\frac{6}{7}$ D) $2\frac{1}{7}$

274. $27-20\frac{11}{12}$ ni hisoblang.

A) $7\frac{29}{12}$ B) $7\frac{1}{12}$ C) $6\frac{1}{12}$ D) $7\frac{11}{12}$

275. $40-39\frac{3}{20}$ ni hisoblang.

A) $1\frac{3}{20}$ B) $\frac{3}{20}$ C) $\frac{17}{20}$ D) $1\frac{17}{20}$

✓ $7\frac{1}{3}+1\frac{2}{3}$ ni hisoblang.

A) $\frac{1}{5}$ B) 3 C) $4\frac{4}{5}$ D) 9

Yechimi:

$7\frac{1}{3}+1\frac{2}{3}=(7+1)+\frac{1}{3}+\frac{2}{3}=8+\frac{1+2}{3}=8+\frac{3}{3}=8+1=9$

Izoh: kasrlarni qisqartirish ekanligini hisobga oling.

$8+\frac{\cancel{3}}{\cancel{3}}=8+1=9$ **Javob: (D)**

276. $5\frac{1}{4}+2\frac{3}{4}$ ni hisoblang.

A) 8 B) $3\frac{1}{4}$ C) $3\frac{6}{7}$ D) $7\frac{1}{4}$

277. $27\frac{1}{12}+20\frac{11}{12}$ ni hisoblang.

A) $7\frac{29}{51}$ B) 48 C) $46\frac{1}{12}$ D) $47\frac{11}{12}$

278. $40\frac{17}{20}+39\frac{3}{20}$ ni hisoblang.

A) $1\frac{3}{20}$ B) $\frac{3}{20}$ C) 80 D) $1\frac{17}{20}$

✓ $5\frac{13}{15}+2\frac{4}{15}$ ni hisoblang.

A) $\frac{1}{5}$ B) 8 C) $4\frac{4}{5}$ D) $8\frac{2}{15}$

Yechimi:

$5\frac{13}{15}+2\frac{4}{15}=(5+2)+\frac{13}{15}+\frac{4}{15}=7+\frac{13+4}{15}=7+\frac{17}{15}=$

$=7+1\frac{2}{15}=8\frac{2}{15}$ **Javob: (D)**

Izoh: noto'g'ri kasrni to'g'ri kasrlarga aylantirish ekanligini hisobga oling.

$7+\frac{17}{15}=7+1\frac{2}{15}=8\frac{2}{15}$ (15:15=1, 15·1+2=17)

279. $5\frac{11}{17}+2\frac{13}{17}$ ni hisoblang.

A) $8\frac{7}{17}$ B) $3\frac{1}{4}$ C) $3\frac{6}{17}$ D) $7\frac{1}{17}$

280. $27\frac{11}{13}+20\frac{11}{13}$ ni hisoblang.

A) $7\frac{29}{51}$ B) $48\frac{9}{13}$ C) $46\frac{1}{13}$ D) $47\frac{11}{13}$

281. $14\frac{11}{23}+12\frac{13}{23}$ ni hisoblang.

A) $28\frac{3}{23}$ B) $16\frac{3}{23}$ C) $27\frac{1}{23}$ D) $1\frac{17}{23}$

✓ $\frac{1}{4}+\frac{1}{3}$ ni hisoblang.

A) $\frac{1}{5}$ B) $\frac{7}{12}$ C) $4\frac{4}{5}$ D) 1

Yechimi:

$\frac{{}^{3/}1}{4}+\frac{{}^{4/}1}{3}=\frac{3\cdot1+4\cdot1}{12}=\frac{7}{12}$ **Javob: (B)**

Izoh: mahraji har xil bo'lsa, umumiy mahraj topamiz. 3 *va* 4 *ketma – ket kelgani uchun* $3\cdot4=12$

$\frac{1}{4}+\frac{1}{3}=\frac{2}{7}\Rightarrow$ *noto'g'ri* $\frac{1}{4}+\frac{1}{3}=\frac{2}{12}\Rightarrow$ *noto'g'ri*

282. $\frac{2}{5}+\frac{1}{6}$ ni hisoblang.

A) $\frac{7}{30}$ B) $\frac{17}{30}$ C) $\frac{3}{30}$ D) $\frac{1}{30}$

283. $\frac{3}{10}+\frac{4}{11}$ ni hisoblang.

A) $\frac{73}{110}$ B) $\frac{63}{110}$ C) $\frac{83}{110}$ D) $\frac{53}{110}$

284. $\frac{1}{7}+\frac{3}{8}$ ni hisoblang.

A) $\frac{29}{59}$ B) $\frac{29}{56}$ C) $\frac{21}{56}$ D) $\frac{19}{56}$

✓ $\frac{2}{5}+\frac{1}{3}$ ni hisoblang.

A) $\frac{1}{5}$ B) 3 C) $4\frac{4}{5}$ D) $\frac{11}{15}$

Yechimi: $\frac{{}^{3/}2}{5}+\frac{{}^{5/}1}{3}=\frac{3\cdot2+5\cdot1}{15}=\frac{11}{15}$ **Javob: (D)**

Izoh: mahraji har xil bo'lsa, umumiy mahraj topamiz 5 *va* 3 *tub son bo'lgani uchun* $5\cdot3=15$

285. $\frac{3}{5}+\frac{2}{7}$ ni hisoblang.

A) $\frac{7}{30}$ B) $\frac{17}{35}$ C) $\frac{3}{35}$ D) $\frac{31}{35}$

286. $\frac{3}{7}+\frac{4}{11}$ ni hisoblang.

A) $\frac{11}{77}$ B) $\frac{71}{77}$ C) $\frac{51}{77}$ D) $\frac{61}{77}$

287. $\frac{4}{7}+\frac{1}{3}$ ni hisoblang.

A) $\frac{5}{7}$ B) $\frac{29}{31}$ C) $\frac{9}{21}$ D) $\frac{19}{21}$

✓ $\frac{2}{15}+\frac{1}{3}$ ni hisoblang.

A) $\frac{7}{15}$ B) 3 C) $4\frac{4}{5}$ D) $\frac{11}{15}$

Yechimi:

$\frac{{}^{1/}2}{15}+\frac{{}^{5/}1}{3}=\frac{1\cdot2+5\cdot1}{15}=\frac{7}{15}$ **Javob: (A)**

Izoh: mahraji har xil bo'lsa, umumiy mahraj topamiz. 15 *va* 3 *berilgan sonlardan biri ikkinchisiga karrali bo'lgani uchun* $\Rightarrow$15

288. $\frac{3}{35}+\frac{2}{7}$ ni hisoblang.

A) $\frac{7}{30}$ B) $\frac{13}{35}$ C) $\frac{3}{35}$ D) $\frac{13}{30}$

289. $\frac{7}{30}+\frac{1}{5}$ ni hisoblang.

A) $\frac{3}{30}$ B) $\frac{1}{30}$ C) $\frac{11}{30}$ D) $\frac{13}{30}$

290. $\frac{1}{3}+\frac{4}{21}$ ni hisoblang.

A) $\frac{11}{21}$ B) $\frac{19}{21}$ C) $\frac{9}{21}$ D) $\frac{19}{21}$

✓ $\frac{2}{15}+\frac{4}{25}$ ni hisoblang.

A) $\frac{22}{75}$ B) $\frac{22}{75}$ C) $4\frac{4}{5}$ D) $\frac{11}{15}$

Yechimi:

$\frac{{}^{5/}2}{15}+\frac{{}^{3/}4}{25}=\frac{5\cdot2+3\cdot4}{75}=\frac{22}{75}$ **Javob: (B)**

Izoh: mahraji har xil bo'lsa, umumiy mahraj topamiz. 15 *va* 25 *berilgan sonlarni EKUK ni topamiz*$\Rightarrow$75

291. $\frac{1}{12}+\frac{1}{30}$ ni hisoblang.

A) $\frac{7}{60}$ B) $\frac{13}{30}$ C) $\frac{3}{35}$ D) $\frac{31}{35}$

292. $\frac{7}{24}+\frac{1}{32}$ ni hisoblang.

A) $\frac{3}{30}$ B) $\frac{31}{96}$ C) $\frac{11}{96}$ D) $\frac{13}{30}$

293. $\frac{1}{30}+\frac{3}{20}$ ni hisoblang.

A) $\frac{11}{61}$ B) $\frac{11}{21}$ C) $\frac{11}{60}$ D) $\frac{19}{60}$

✓ $\frac{3}{8}-\frac{1}{6}$ ni hisoblang.

A) $\frac{5}{24}$ B) $\frac{22}{75}$ C) $4\frac{4}{5}$ D) $\frac{11}{15}$

Yechimi: $\frac{{}^{3/}3}{8}-\frac{{}^{4/}1}{6}=\frac{3\cdot3-4\cdot1}{24}=\frac{5}{24}$ **Javob: (A)**

294. $\frac{5}{8}-\frac{7}{16}$ ni hisoblang.

A) $\frac{5}{24}$ B) $\frac{3}{16}$ C) $\frac{1}{24}$ D) $\frac{11}{16}$

295. $\frac{11}{28}-\frac{3}{14}$ ni hisoblang.

A) $\frac{8}{14}$ B) $\frac{11}{36}$ C) $\frac{5}{28}$ D) $\frac{11}{28}$

296. $\frac{7}{12}-\frac{5}{36}$ ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{15}{36}$ C) $\frac{11}{36}$ D) $\frac{1}{36}$

✓ $-\frac{1}{2}-\frac{1}{3}$ ni hisoblang.

A) $-\frac{5}{24}$ B) $-\frac{5}{6}$ C) $4\frac{4}{5}$ D) $\frac{11}{15}$

Yechimi: $-\frac{{}^{3/}1}{2}-\frac{{}^{2/}1}{3}=\frac{-3\cdot1-2\cdot1}{6}=\frac{-3-2}{6}=\frac{-5}{6}=-\frac{5}{6}$ **J: (B)**

297. $-\frac{1}{4}-\frac{1}{3}$ ni hisoblang.

A) $\frac{7}{12}$ B) $-\frac{7}{12}$ C) $-\frac{1}{12}$ D) $\frac{11}{12}$

298. $-\frac{1}{5}-\frac{1}{4}$ ni hisoblang.

A) $-\frac{9}{20}$ B) $\frac{9}{20}$ C) $-\frac{5}{12}$ D) $\frac{11}{12}$

299. $-\frac{1}{5}-\frac{1}{7}$ ni hisoblang.

A) $\frac{12}{35}$ B) $-\frac{11}{35}$ C) $\frac{12}{36}$ D) $-\frac{12}{35}$

✓ $8\frac{2}{9}-5\frac{7}{9}$ ni hisoblang.

A) $\frac{4}{9}$ B) $-\frac{5}{6}$ C) $\frac{9}{4}$ D) $2\frac{4}{9}$

Yechimi: **J: (D)**

$8\frac{2}{9}-5\frac{7}{9}=(8-5)+\frac{2}{9}-\frac{7}{9}=3+\frac{-5}{9}=3-\frac{5}{9}=2\frac{9}{9}-\frac{5}{9}=2\frac{4}{9}$

300. $12\frac{2}{5}-10\frac{3}{5}$ ni hisoblang.

A) $2\frac{4}{5}$ B) $-\frac{7}{12}$ C) $1\frac{4}{5}$ D) $\frac{11}{12}$

301. $20\frac{3}{10}-15\frac{7}{10}$ ni hisoblang.

A) $4\frac{2}{5}$ B) $5\frac{4}{5}$ C) $\frac{3}{5}$ D) $4\frac{3}{5}$

302. $15\frac{1}{18}-1\frac{17}{18}$ ni hisoblang.

A) $\frac{1}{9}$ B) $12\frac{1}{9}$ C) $\frac{12}{36}$ D) $13\frac{1}{9}$

✓ $3\frac{3}{5}-1\frac{1}{2}$ ni hisoblang.

A) $-\frac{5}{24}$ B) $-\frac{5}{6}$ C) $4\frac{1}{10}$ D) $2\frac{1}{10}$

Yechimi:

$3\frac{3}{5}-1\frac{1}{2}=(3-1)+(\frac{1}{5}-\frac{1}{2})=2+(\frac{{}^{2/}3}{5}-\frac{{}^{5/}1}{2})=2+\frac{6-5}{10}=$

$=2+\frac{1}{10}=2\frac{1}{10}$ **Javob: (D)**

303. $7\frac{6}{7}-5\frac{1}{2}$ ni hisoblang.

A) $1\frac{40}{63}$ B) $2\frac{40}{63}$ C) $\frac{40}{63}$ D) $\frac{11}{12}$

304. $42\frac{15}{38}-15\frac{1}{3}$ ni hisoblang.

A) $7\frac{7}{114}$ B) $27\frac{18}{114}$ C) $27\frac{7}{114}$ D) $27\frac{17}{114}$

305. $15\frac{2}{12}-1\frac{2}{9}$ ni hisoblang.

A) $14\frac{7}{36}$ B) $14\frac{17}{36}$ C) $4\frac{8}{36}$ D) $15\frac{7}{36}$

✓ $4\frac{1}{75}-3\frac{111}{150}$ ni hisoblang.

A) $\frac{41}{150}$ B) $1\frac{41}{150}$ C) $4\frac{4}{5}$ D) $2\frac{4}{9}$

Yechimi:

$4\frac{1}{75}-3\frac{111}{150}=(4-3)+(\frac{1}{75}-\frac{111}{150})=1+(\frac{{}^{2/}1}{75}-\frac{{}^{1/}111}{150})=$

$=1+\frac{2-111}{150}=1-\frac{109}{150}=\frac{150}{150}-\frac{109}{150}=\frac{41}{150}$ **J:(A)**

306. $160\frac{1}{9}-125\frac{16}{27}$ ni hisoblang.

A) $1\frac{40}{63}$ B) $35\frac{14}{27}$ C) $33\frac{14}{27}$ D) $34\frac{14}{27}$

307. $17\frac{1}{55}-12\frac{13}{33}$ ni hisoblang.

A) $\frac{103}{165}$ B) $3\frac{103}{165}$ C) $27\frac{7}{114}$ D) $4\frac{103}{165}$

308. $504\frac{13}{42}-385\frac{15}{28}$ ni hisoblang.

A) $118\frac{65}{84}$ B) $119\frac{65}{84}$ C) $4\frac{8}{36}$ D) $117\frac{65}{84}$

✓ $\frac{3}{5}+\frac{7}{8}+\frac{1}{10}$ kasrlarni qo'shing.

A) $\frac{11}{23}$ B) $\frac{64}{40}$ C) $1\frac{13}{40}$ D) $1\frac{23}{40}$

Yechimi:

$$\frac{{}^{8/}3}{5}+\frac{{}^{5/}7}{8}+\frac{{}^{4/}1}{10}=\frac{24+35+4}{40}=\frac{63}{40}=1\frac{23}{40}$$ **Javob: (C)**

309. $\frac{2}{15}+\frac{7}{10}+\frac{11}{30}$ kasrlarni qo'shing.

A) $\frac{35}{30}$ B) $1\frac{1}{5}$ C) $1\frac{7}{30}$ D) $\frac{7}{6}$

310. $\frac{7}{12}+\frac{3}{4}-\frac{5}{18}$ kasrlarni qo'shing va ayring.

A) $\frac{18}{19}$ B) $\frac{19}{18}$ C) $1\frac{1}{6}$ D) $\frac{37}{36}$

311. $\frac{2}{3}-\frac{5}{9}+\frac{5}{63}$ kasrlarni qo'shing va ayring.

A) $\frac{4}{21}$ B) $\frac{5}{63}$ C) $\frac{5}{8}$ D) $\frac{13}{63}$

✓ $4\frac{29}{51}+1\frac{7}{23}+3\frac{22}{51}$ kasrlarni qo'shing.

A) $\frac{11}{23}$ B) $\frac{64}{40}$ C) $9\frac{7}{23}$ D) $\frac{7}{23}$

Yechimi:

$$4\underline{\underline{\frac{29}{51}}}+1\frac{7}{23}+3\underline{\underline{\frac{22}{51}}}=4\underline{\underline{\frac{29}{51}}}+3\underline{\underline{\frac{22}{51}}}+1\frac{7}{23}=$$

$$=(4+3)+\frac{29}{51}+\frac{22}{51}+1\frac{7}{23}=7+\frac{51}{51}+1\frac{7}{23}=7+1+1\frac{7}{23}=9\frac{7}{23}$$

Javob: (C)

Izoh: Avval bir xil mahrajli kasrlarni hisoblash lozim. tagiga chizilgan kasrlarga e'tibor bering.

312. $5\frac{1}{6}+3\frac{7}{10}+2\frac{5}{6}$ kasrlarni qo'shing.

A) $10\frac{7}{10}$ B) $1\frac{1}{5}$ C) $1\frac{7}{30}$ D) $11\frac{7}{10}$

313. $33\frac{5}{44}+3\frac{8}{13}-2\frac{5}{44}$ kasrlarni qo'shing va ayring.

A) $3\frac{8}{13}$ B) $33\frac{8}{13}$ C) $34\frac{8}{13}$ D) $\frac{38}{13}$

314. $7\frac{6}{25}+5\frac{3}{35}-2\frac{6}{25}$ kasrlarni qo'shing va ayring.

A) $5\frac{3}{35}$ B) $10\frac{3}{35}$ C) $\frac{3}{35}$ D) $-5\frac{3}{35}$

✓ $\frac{3}{5}\cdot 12$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $7\frac{1}{5}$ C) $9\frac{7}{23}$ D) $\frac{36}{7}$

Yechimi: $\frac{3}{5}\cdot 12=\frac{3\cdot 12}{5}=\frac{36}{5}=7\frac{1}{5}$ **Javob: (B)**

Izoh: Agar butun son mahraj bilan qisqarmasa to'g'ridan to'g'ri suratga ko'paytiriladi.

315. $\frac{7}{10}\cdot 3$ kasrni ko'paytiring.

A) $2\frac{1}{10}$ B) $1\frac{1}{10}$ C) $1\frac{7}{30}$ D) $1\frac{7}{10}$

316. $\frac{8}{13}\cdot 9$ kasrni ko'paytiring.

A) $3\frac{8}{13}$ B) $5\frac{7}{13}$ C) $34\frac{8}{13}$ D) $\frac{38}{36}$

317. $\frac{6}{25}\cdot 2$ kasrni ko'paytiring.

A) $\frac{24}{25}$ B) $\frac{12}{25}$ C) $\frac{8}{25}$ D) $2\frac{6}{25}$

✓ $12\cdot\frac{3}{5}$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $7\frac{1}{5}$ C) $9\frac{7}{23}$ D) $\frac{36}{7}$

Yechimi: $12\cdot\frac{3}{5}=\frac{12\cdot 3}{5}=\frac{36}{5}=7\frac{1}{5}$ **Javob: (B)**

Izoh: oldingi misol o'rni almashsa ham misol javobi ishlanishi o'zgarmaydi.

318. $7\cdot\frac{5}{6}$ kasrni ko'paytiring.

A) $5\frac{5}{6}$ B) $6\frac{1}{5}$ C) $1\frac{7}{30}$ D) $1\frac{7}{10}$

319. $4\cdot\frac{6}{11}$ kasrni ko'paytiring.

A) $3\frac{8}{11}$ B) $2\frac{2}{11}$ C) $1\frac{8}{11}$ D) $\frac{2}{11}$

320. $2\cdot\frac{31}{45}$ kasrni ko'paytiring.

A) $\frac{24}{45}$ B) $1\frac{17}{45}$ C) $\frac{8}{45}$ D) $2\frac{6}{45}$

✓ $5\cdot\frac{3}{5}$ kasrni ko'paytiring.

A) 6 B) 3 C) 15 D) 25

Yechimi: $5\cdot\frac{3}{5}=\frac{{}^{1/}\cancel{5}\cdot 3}{\cancel{5}_{1}}=\frac{1\cdot 3}{1}=\frac{3}{1}=3$ **Javob: (B)**

321. $10\cdot\frac{7}{10}$ kasrni ko'paytiring.

A) $2\frac{1}{13}$ B) $1\frac{1}{13}$ C) 7 D) $1\frac{7}{10}$

322. $13\cdot\frac{8}{13}$ kasrni ko'paytiring

A) $3\frac{8}{13}$ B) $5\frac{7}{13}$ C) $34\frac{8}{13}$ D) 8

323. $25\cdot\frac{6}{25}$ kasrni ko'paytiring.

A) 6 B) $\frac{12}{25}$ C) $\frac{8}{25}$ D) $2\frac{6}{25}$

✓ $12\cdot\frac{7}{10}$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $8\frac{2}{5}$ C) $9\frac{7}{23}$ D) $\frac{36}{7}$

Yechimi:

$12\cdot\frac{7}{10}=\frac{6/12}{1}\cdot\frac{7}{10_5}=\frac{6\cdot7}{5}=\frac{42}{5}=8\frac{2}{5}$ **Javob: (B)**

Izoh: Agar kasrlar qisqarsa qisqartiramiz va suratga ko'paytiramiz.

324. $25\cdot\frac{8}{15}$ kasrni ko'paytiring.

A) $2\frac{1}{3}$ B) $13\frac{1}{3}$ C) $10\frac{2}{3}$ D) $1\frac{7}{10}$

325. $27\cdot\frac{11}{45}$ kasrni ko'paytiring.

A) $3\frac{1}{3}$ B) $6\frac{3}{5}$ C) $3\frac{2}{5}$ D) $\frac{3}{5}$

326. $21\cdot\frac{6}{28}$ kasrni ko'paytiring.

A) $2\frac{1}{2}$ B) $\frac{1}{2}$ C) $4\frac{1}{2}$ D) $2\frac{6}{25}$

✓ $72\cdot1\frac{7}{10}$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $122\frac{2}{5}$ C) $9\frac{7}{23}$ D) $\frac{36}{7}$

Yechimi:

$72\cdot1\frac{7}{10}=72\cdot\frac{17}{10}=\frac{36/72}{1}\cdot\frac{17}{10_5}=\frac{36\cdot17}{5}=\frac{612}{5}=122\frac{2}{5}$

Javob: (B)

Izoh: Agar kasrlar aralash bo'lsa, noto'g'riga aylantiriladi.

327. $180\cdot1\frac{1}{2}$ kasrni ko'paytiring.

A) 180 B) 45 C) 90 D) 270

328. $140\cdot1\frac{1}{28}$ kasrni ko'paytiring.

A) 145 B) 290 C) 150 D) 25

329. $143\cdot1\frac{1}{13}$ kasrni ko'paytiring.

A) 164 B) 154 C) 124 D) 144

✓ $\frac{7}{9}\cdot\frac{7}{10}$ kasrni ko'paytiring.

A) $\frac{49}{90}$ B) $\frac{90}{49}$ C) $\frac{9}{49}$ D) 180

Yechimi: $\frac{7}{9}\cdot\frac{7}{10}=\frac{7\cdot7}{9\cdot10}=\frac{49}{90}$ **Javob: (A)**

Izoh: *Agar kasrlar qisqarmasa to'g'rima–to'g'risiga* ko'paytiriladi.

330. $\frac{6}{11}\cdot\frac{3}{4}$ kasrni ko'paytiring.

A) $\frac{9}{22}$ B) $\frac{5}{22}$ C) $1\frac{9}{22}$ D) 270

331. $\frac{14}{15}\cdot\frac{8}{11}$ kasrni ko'paytiring.

A) 475 B) $\frac{122}{165}$ C) $\frac{112}{155}$ D) $\frac{112}{165}$

332. $\frac{3}{10}\cdot\frac{7}{13}$ kasrni ko'paytiring.

A) $\frac{11}{130}$ B) $\frac{21}{130}$ C) $\frac{21}{120}$ D) $1\frac{21}{130}$

✓ $\frac{14}{25}\cdot\frac{5}{7}$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $8\frac{2}{5}$ C) $\frac{2}{5}$ D) $\frac{36}{7}$

Yechimi:

$\frac{14}{25}\cdot\frac{5}{7}=\frac{2/14}{5\cancel{25}}\cdot\frac{\cancel{5}^{1}}{\cancel{7}_{1}}=\frac{2}{5}$ **Javob: (C)**

Izoh: Agar kasrlar qisqarsa bir xil songa bo'linadi ya'ni

$\frac{14}{25}\cdot\frac{5}{7}=\frac{2\cdot\cancel{7}}{5\cdot\cancel{5}}\cdot\frac{\cancel{5}}{\cancel{7}}=\frac{2}{5}$

333. $\frac{7}{8}\cdot\frac{16}{35}$ kasrni ko'paytiring.

A) $\frac{28}{35}$ B) $\frac{5}{2}$ C) $\frac{1}{2}$ D) $\frac{2}{5}$

334. $\frac{4}{15}\cdot\frac{3}{8}$ kasrni ko'paytiring.

A) $\frac{1}{10}$ B) $\frac{12}{15}$ C) $1\frac{1}{10}$ D) $\frac{11}{10}$

335. $\frac{5}{9}\cdot\frac{12}{25}$ kasrni ko'paytiring.

A) $\frac{4}{13}$ B) $\frac{4}{15}$ C) $\frac{60}{25}$ D) $\frac{2}{15}$

✓ $2\frac{1}{4}\cdot1\frac{1}{3}$ kasrni ko'paytiring.

A) 6 B) 12 C) 9 D) 3

Yechimi:

$2\frac{1}{4}\cdot1\frac{1}{3}=\frac{9}{4}\cdot\frac{4}{3}=\frac{\cancel{3}^{1}}{1}\cdot\frac{\cancel{4}^{1}}{\cancel{3}_{1}}=\frac{3}{1}=3$ **Javob: (D)**

Izoh: Agar kasrlar aralash kasr ko'rinishida berilsa, noto'g'ri kasrga aylantiring so'ngra qisqartiring.

$2\frac{1}{4}\cdot1\frac{1}{3}=\frac{9}{4}\cdot\frac{4}{3}$

336. $5\frac{5}{12}\cdot 1\frac{5}{13}$ kasrni ko'paytiring.

A) $\frac{15}{?}$ B) $\frac{5}{2}$ C) $7\frac{1}{2}$ D) $\frac{2}{5}$

337. $1\frac{1}{7}\cdot 4\frac{3}{8}$ kasrni ko'paytiring.

A) $\frac{8}{7}$ B) 35 C) $\frac{1}{7}$ D) 5

338. $4\frac{9}{10}\cdot 3\frac{1}{3}$ kasrni ko'paytiring.

A) $1\frac{1}{3}$ B) $16\frac{1}{3}$ C) $\frac{1}{3}$ D) $15\frac{1}{3}$

✓ $2\frac{1}{4}\cdot 2\frac{1}{3}+5\frac{5}{12}\cdot 1\frac{5}{13}$ kasrni ko'paytiring.

A) $\frac{11}{23}$ B) $8\frac{2}{5}$ C) $\frac{2}{5}$ D) $12\frac{3}{4}$

Yechimi:

$2\frac{1}{4}\cdot 1\frac{1}{3}+5\frac{5}{12}\cdot 1\frac{5}{13}=?$

$2\frac{1}{4}\cdot 2\frac{1}{3}=\frac{9}{4}\cdot\frac{7}{3}=\frac{{}^{3}\cancel{9}}{4}\cdot\frac{7}{\cancel{3}_{1}}=\frac{21}{4}=5\frac{1}{4}$

$5\frac{5}{12}\cdot 1\frac{5}{13}=\frac{65}{12}\cdot\frac{18}{13}=\frac{{}^{5}\cancel{65}}{{}_{2}\cancel{12}}\cdot\frac{\cancel{18}^{3}}{\cancel{13}_{1}}=\frac{15}{2}=7\frac{1}{2}$

$5\frac{1}{4}+7\frac{1}{2}=(5+7)+\frac{{}^{1}\cancel{1}}{4}+\frac{\cancel{1}^{2}}{\cancel{2}}=12+\frac{1+2}{4}=12+\frac{3}{4}=12\frac{3}{4}$

Javob: (D)

Izoh: Agar kasrlar bir necha ishli bo'lsa, 1–2–3…–ish qilib bajarish lozim.

339. $9\frac{1}{9}\cdot\frac{3}{41}+14\frac{2}{3}\cdot 2\frac{1}{4}$ amallarni bajaring.

A) $\frac{11}{3}$ B) $\frac{3}{2}$ C) $33\frac{2}{3}$ D) $\frac{2}{3}$

340. $4\frac{1}{2}\cdot 1\frac{1}{3}-10\frac{2}{7}\cdot\frac{7}{9}$ amallarni bajaring.

A) $\frac{8}{7}$ B) 7 C) 8 D) 15

341. $5\frac{4}{21}-\frac{18}{49}\cdot\frac{7}{9}$ amallarni bajaring.

A) $4\frac{19}{21}$ B) $1\frac{19}{21}$ C) $\frac{19}{21}$ D) $1\frac{17}{21}$

✓ $15:\frac{3}{4}$ kasrni bo'lishni bajaring.

A) $\frac{11}{23}$ B) $8\frac{2}{5}$ C) 20 D) $\frac{36}{7}$

Yechimi: $15:\frac{3}{4}=\frac{15}{1}:\frac{3}{4}=\frac{15}{1}\cdot\frac{4}{3}=\frac{{}^{5}\cancel{15}}{1}\cdot\frac{4}{\cancel{3}_{1}}=\frac{20}{1}=20$

Javob: 20 (C)

Izoh: kasrlarni bo'lish uchun o'ng tomonini teskarisiga ko'paytirish lozim. $\frac{k}{n}:\frac{p}{l}=\frac{k}{n}\cdot\frac{l}{p}$

342. $6:\frac{1}{4}$ bo'lishni bajaring.

A) $\frac{6}{4}$ B) $\frac{5}{2}$ C) $7\frac{1}{2}$ D) 24

343. $5:\frac{5}{6}$ bo'lishni bajaring.

A) $\frac{8}{7}$ B) 35 C) 6 D) 5

344. $10:\frac{5}{9}$ bo'lishni bajaring.

A) $1\frac{1}{3}$ B) 18 C) $\frac{1}{3}$ D) 15

345. $12:\frac{3}{4}$ bo'lishni bajaring.

A) $1\frac{1}{3}$ B) 16 C) $\frac{1}{3}$ D) 15

✓ $\frac{5}{7}:2$ kasrni bo'lishni bajaring.

A) $\frac{5}{14}$ B) $8\frac{2}{5}$ C) $\frac{2}{5}$ D) $\frac{36}{7}$

Yechimi: $\frac{5}{7}:2=\frac{5}{7}:\frac{2}{1}=\frac{5}{7}\cdot\frac{1}{2}=\frac{5}{14}$ **Javob: (A)**

Izoh: kasrlarni bo'lish uchun o'ng tomonini teskarisiga ko'paytirish lozim. $\frac{k}{n}:\frac{p}{l}=\frac{k}{n}\cdot\frac{l}{p}$

346. $\frac{7}{8}:3$ kasrni bo'lishni bajaring.

A) $\frac{6}{4}$ B) $\frac{5}{2}$ C) $\frac{7}{24}$ D) 24

347. $\frac{4}{5}:5$ kasrni bo'lishni bajaring.

A) $\frac{8}{7}$ B) 35 C) $\frac{4}{25}$ D) 5

348. $\frac{7}{10}:4$ kasrni bo'lishni bajaring.

A) $1\frac{1}{3}$ B) $\frac{1}{4}$ C) $\frac{7}{40}$ D) $15\frac{1}{3}$

349. $\frac{13}{16}:26$ kasrni bo'lishni bajaring.

A) $\frac{1}{32}$ B) 16 C) $\frac{1}{13}$ D) 32

350. $\frac{7}{9}:3$ kasrni bo'lishni bajaring.

A) $\frac{7}{27}$ B) 16 C) $\frac{7}{3}$ D) 32

✓ $3\frac{1}{2}:2\frac{1}{3}$ kasrni bo'lishni bajaring.

A) $\frac{11}{23}$ B) $\frac{7}{3}$ C) $\frac{2}{5}$ D) $1\frac{1}{2}$

Yechimi: $3\frac{1}{2}:2\frac{1}{3}=\frac{7}{2}:\frac{7}{3}=\frac{7}{2}\cdot\frac{3}{7}=\frac{\cancel{7}}{2}\cdot\frac{3}{\cancel{7}}=\frac{3}{2}=1\frac{1}{2}$ **J: (D)**

Izoh: Agar aralash kasrlar berilgan bo'lsa, noto'g'ri kasrga aylantiramiz va bo'lishni bajaramiz.

351. $2\frac{5}{8}:1\frac{3}{4}$ kasrni bo'lishni bajaring.

A) $\frac{21}{8}$ B) $\frac{7}{4}$ C) $\frac{7}{24}$ D) $1\frac{1}{2}$

352. $5\frac{1}{9}:7\frac{2}{3}$ kasrni bo'lishni bajaring.

A) $\frac{2}{3}$ B) 35 C) $\frac{46}{9}$ D) 5

353. $10\frac{4}{5}:5\frac{2}{5}$ kasrni bo'lishni bajaring.

A) $\frac{5}{27}$ B) 2 C) $\frac{54}{5}$ D) $15\frac{1}{3}$

354. $\frac{5}{6}:1\frac{2}{3}$ kasrni bo'lishni bajaring.

A) $\frac{3}{5}$ B) 16 C) $\frac{1}{13}$ D) $\frac{1}{2}$

355. $3\frac{1}{7}:\frac{4}{7}$ kasrni bo'lishni bajaring.

A) $\frac{3}{8}$ B) $5\frac{1}{2}$ C) $\frac{8}{3}$ D) 32

356. $\frac{15}{38}:1\frac{1}{19}$ kasrni bo'lishni bajaring.

A) $\frac{3}{8}$ B) 16 C) $\frac{8}{3}$ D) 32

357. $7\frac{1}{2}:\frac{3}{4}$ kasrni bo'lishni bajaring.

A) $\frac{7}{27}$ B) 16 C) 10 D) 32

Ko'paytirishning taqsimot qanuni

✓ $4\cdot(25+101)$ ni hisoblang.

A) 504 B) 100 C) 205 D) 404

Yechimi: **Javob: 504 (A)**

$4\cdot(25+101)=4\cdot25+4\cdot101=100+404=504$

Izoh: $c\cdot(a+b)=c\cdot a+c\cdot b$

358. $2\cdot(25+13)$ ni hisoblang.

A) 26 B) 76 C) 20 D) 50

359. $5\cdot(15+6)$ ni hisoblang.

A) 125 B) 105 C) 205 D) 180

360. $4\cdot(11+15)$ ni hisoblang.

A) 125 B) 135 C) 205 D) 104

✓ $345\cdot69-345\cdot67$ ni hisoblang.

A) 125 B) 135 C) 290 D) 690

Yechimi:

$345\cdot69-345\cdot67=345\cdot(69-67)=345\cdot2=690$

Izoh: $c\cdot(a+b)=c\cdot a+c\cdot b$ **Javob: 690 (D)**

361. $21\cdot18-19\cdot18$ ni hisoblang.

A) 12 B) 36 C) 20 D) 18

362. $26\cdot25-25\cdot21$ ni hisoblang.

A) 125 B) 135 C) 205 D) 180

363. $36\cdot24-31\cdot24$ ni hisoblang.

A) 120 B) 135 C) 205 D) 180

✓ $859\cdot38+859\cdot62$ ni hisoblang.

A) 125 B) 85900 C) 859 D) 8900

Yechimi:

$859\cdot38+859\cdot62=859\cdot(38+62)=859\cdot100=85900$

Izoh: $c\cdot(a+b)=c\cdot a+c\cdot b$ **Javob: (B)**

364. $59\cdot128+41\cdot128$ ni hisoblang.

A) 128 B) 12800 C) 100 D) 180

365. $221\cdot25+75\cdot221$ ni hisoblang.

A) 125 B) 221 C) 22100 D) 100

366. $36\cdot22+14\cdot22$ ni hisoblang.

A) 125 B) 100 C) 22 D) 1100

✓ $21\cdot18-19\cdot18+18\cdot17-17\cdot16+16\cdot15-15\cdot14$ ni hisoblang.

A) 125 B) 135 C) 205 D) 100

Yechimi:

$\underline{21\cdot18-19\cdot18}+18\cdot17-17\cdot16+\overline{16\cdot15-15\cdot14}=$

$=\underline{18\cdot(21-19)}+17\cdot(18-16)+\overline{15\cdot(16-14)}=$

$=18\cdot2+17\cdot2+15\cdot2=2\cdot(18+17+15)=2\cdot50=100$

Javob: 100 (D)

367. $26\cdot25-25\cdot24+24\cdot23-23\cdot22-12\cdot8$ ni hisoblang.

A) 96 B) 135 C) 0 D) 192

368. $18\cdot36-16\cdot36+24\cdot27-25\cdot24-21\cdot5$ ni hisoblang.

A) 15 B) 115 C) 25 D) 18

369. $21\cdot17-18\cdot17+17\cdot15-15\cdot14+18\cdot13-15\cdot13$ ni hisoblang.

A) 125 B) 135 C) 205 D) 180

370. $36\cdot24-33\cdot24+17\cdot11-11\cdot14+18\cdot16-15\cdot16$ ni hisoblang.

A) 166 B) 153 C) 235 D) 180

371. $27\cdot23-24\cdot23+21\cdot19-18\cdot19+17\cdot11-14\cdot11$ ni hisoblang.

A) 143 B) 165 C) 189 D) 159

✓ $11\frac{5}{7}\cdot 4\frac{4}{11}-4\frac{4}{11}\cdot 6\frac{5}{7}$ ni hisoblang.

A) $\frac{9}{11}$ B) $21\frac{9}{11}$ C) $\frac{2}{5}$ D) $1\frac{1}{2}$

Yechimi:

$11\frac{5}{7}\cdot 4\frac{4}{11}-4\frac{4}{11}\cdot 6\frac{5}{7}=4\frac{4}{11}\cdot(11\frac{5}{7}-6\frac{5}{7})=$

$=4\frac{4}{11}\cdot((11-6)+\frac{5}{7}-\frac{5}{7})=4\frac{4}{11}\cdot(5+\frac{5-5}{7})=$

$=4\frac{4}{11}\cdot 5=\frac{48}{11}\cdot 5=\frac{48\cdot 5}{11}=\frac{240}{11}=21\frac{9}{11}$ **Javob: (B)**

Izoh: $c\cdot a+c\cdot b=c\cdot(a+b)$ kasr holatda bajarilishi kerak. Tagiga chizilgan kasrga e'tibor qarating.

372. $3\frac{1}{3}\cdot 15\frac{12}{13}-3\frac{1}{3}\cdot 6\frac{12}{13}$ ni hisoblang.

A) 30 B) 36 C) 20 D) 18

373. $6\frac{5}{8}\cdot\frac{4}{9}+2\frac{3}{8}\cdot\frac{4}{9}$ ni hisoblang.

A) 2 B) 4 C) 10 D) 8

374. $17\frac{4}{11}\cdot\frac{7}{10}-\frac{7}{10}\cdot 7\frac{4}{11}$ ni hisoblang.

A) 7 B) 6 C) 2 D) 8

375. $21\frac{9}{20}\cdot 10\frac{4}{15}+21\frac{9}{20}\cdot 9\frac{11}{15}$ ni hisoblang.

A) 419 B) 420 C) 320 D) 429

376. $12\frac{13}{19}\cdot 4\frac{3}{5}-7\frac{13}{19}\cdot 4\frac{3}{5}$ ni hisoblang.

A) 13 B) 23 C) 33 D) 18

✓ $(3\frac{1}{4}+2\frac{1}{2}+\frac{5}{8})\cdot 24$ ni hisoblang.

A) $\frac{11}{23}$ B) $8\frac{2}{5}$ C) 153 D) $1\frac{1}{2}$

Yechimi:

$(3\frac{1}{4}+2\frac{1}{2}+\frac{5}{8})\cdot 24=(\frac{13}{4}+\frac{5}{2}+\frac{5}{8})\cdot 24=$

$=\frac{13}{4}\cdot\underline{24}+\frac{5}{2}\cdot\underline{24}+\frac{5}{8}\cdot\underline{24}=\frac{13}{\cancel{4}}\cdot\underline{\cancel{24}^{6}}+\frac{5}{\cancel{2}}\cdot\underline{\cancel{24}^{12}}+\frac{5}{\cancel{8}}\cdot\underline{\cancel{24}^{3}}=$

$=13\cdot 6+5\cdot 12+5\cdot 3=153$

javob: 153 (C)

377. $(\frac{5}{6}-\frac{3}{7})\cdot 42$ ni hisoblang.

A) 12 B) 35 C) 17 D) 18

378. $(\frac{14}{15}-\frac{3}{5})\cdot 15$ ni hisoblang.

A) 1 B) 14 C) –1 D) 5

379. $(2\frac{3}{5}+1\frac{7}{10}+\frac{17}{20})\cdot 20$ ni hisoblang.

A) 30 B) 103 C) 20 D) 15

380. $(4\frac{7}{15}-2\frac{3}{5})\cdot 15$ ni hisoblang.

A) 12 B) 36 C) 28 D) 18

381. $(1\frac{11}{17}+2\frac{15}{34})\cdot 34$ ni hisoblang.

A) 120 B) 139 C) 200 D) 119

✓ 36:27 ni kasr ko'rinishi…ga teng.

A) $\frac{11}{23}$ B) $1\frac{1}{3}$ C) $\frac{2}{5}$ D) $1\frac{1}{2}$

Yechimi: $a:b=\frac{a}{b}$ $36:27=\frac{36}{27}=\frac{4}{3}=1\frac{1}{3}$ **Javob: (B)**

Izoh: bu misolda kasr 9 ga qisqardi.

382. 49:35 ni kasr ko'rinishi…ga teng.

A) $1\frac{2}{5}$ B) $\frac{7}{4}$ C) $\frac{6}{5}$ D) $1\frac{1}{2}$

383. 25:65 ni kasr ko'rinishi…ga teng.

A) $\frac{2}{13}$ B) 35 C) $\frac{13}{5}$ D) $\frac{5}{13}$

384. 119:63 ni kasr ko'rinishi…ga teng.

A) $\frac{5}{63}$ B) $1\frac{8}{9}$ C) $\frac{8}{63}$ D) $1\frac{1}{9}$

385. 128:192 ni kasr ko'rinishi…ga teng.

A) $\frac{3}{5}$ B) $\frac{2}{3}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$

✓ 2,5 ni kasr ko'rinishi…ga teng.

A) $\frac{3}{5}$ B) $1\frac{1}{3}$ C) $\frac{2}{5}$ D) $2\frac{1}{2}$

Yechimi: $2,5=2\frac{5}{10}=2\frac{1}{2}$ **Javob: (D)**

Izoh: kasr nima deb o'qilsa shunday yozamiz va qisqarsa qisqartiramiz.

386. 3,6 ni kasr ko'rinishi…ga teng.

A) $1\frac{2}{5}$ B) $3\frac{3}{5}$ C) $\frac{6}{5}$ D) $3\frac{1}{2}$

387. 1,8 ni kasr ko'rinishi…ga teng.

A) $1\frac{4}{5}$ B) $1\frac{2}{5}$ C) $\frac{4}{5}$ D) $18\frac{4}{5}$

388. 392,3 ni kasr ko'rinishi…ga teng.

A) $392\frac{3}{10}$ B) $392\frac{3}{5}$ C) $382\frac{3}{10}$ D) $1\frac{1}{9}$

389. 6,45 ni kasr ko'rinishi…ga teng.

A) $6\frac{9}{20}$ B) $6\frac{3}{20}$ C) $6\frac{1}{20}$ D) $6\frac{7}{20}$

390 0,75 ni kasr ko'rinishi…ga teng.

A) $\frac{3}{5}$ B) $\frac{1}{4}$ C) $\frac{3}{4}$ D) $\frac{1}{2}$

391. 0,25 ni kasr ko'rinishi…ga teng.

A) $\frac{3}{5}$ B) $\frac{1}{4}$ C) $\frac{3}{4}$ D) $\frac{1}{2}$

392. 6,08 ni kasr ko'rinishi...ga teng.

A) $6\frac{2}{25}$ B) $6\frac{4}{25}$ C) $\frac{8}{25}$ D) $6\frac{1}{25}$

393. 0,09 ni kasr ko'rinishi...ga teng.

A) $\frac{3}{5}$ B) $\frac{9}{10}$ C) $\frac{9}{100}$ D) $\frac{1}{2}$

✓ $4\frac{7}{100}$ ni o'nli kasr ko'rinishi...ga teng.

A) 4,07 B) 7,4 C) 7,04 D) 4,7

Yechimi: $4\frac{7}{100}=4,07$ **Javob: (A)**

Izoh: kasr nima deb o'qilsa shunday yozamiz.

$4\frac{7}{100}=4,7$

394. $2\frac{3}{10}$ ni o'nli kasr ko'rinishi...ga teng.

A) 2,3 B) 2,03 C) 3,2 D) 3,02

395. $\frac{2}{10}$ ni o'nli kasr ko'rinishi...ga teng.

A) 0,2 B) 1,2 C) 2,2 D) 0,02

396. $7\frac{5}{10}$ ni o'nli kasr ko'rinishi...ga teng.

A) 7,5 B) 0,05 C) 7,05 D) 7,005

397. $\frac{75}{100}$ ni o'nli kasr ko'rinishi...ga teng.

A) 0,5 B) 0,25 C) 0,75 D) 1,75

398. $5\frac{125}{1000}$ ni o'nli kasr ko'rinishi...ga teng.

A) 5,25 B) 5,125 C) 0,25 D) 0,125

399. $\frac{8}{10}$ ni o'nli kasr ko'rinishi...ga teng.

A) 0,2 B) 0,8 C) 8,8 D) 0,08

400. $4\frac{6}{100}$ ni o'nli kasr ko'rinishi...ga teng.

A) 4,6 B) 6,4 C) 0,06 D) 4,06

401. $6\frac{4}{100}$ ni o'nli kasr ko'rinishi...ga teng.

A) 0,04 B) 6,4 C) 4,6 D) 6,04

✓ $4\frac{5}{14}-0,5$ ni hisoblang.

A) 3,07 B) 3,4 C) 7,04 D) $3\frac{6}{7}$

Yechimi:

$4\frac{5}{14}-0,5=4\frac{5}{14}-\frac{1}{2}=4+\frac{5-7}{14}=4+\frac{-2}{14}=4-\frac{2}{14}=3\frac{14}{14}-\frac{2}{14}=$

$=3\frac{12}{14}=3\frac{6}{7}$

Izoh: kasrni o'nlini kasrga qo'shishda, o'nli kasrni oddiy kasrga aylantirib so'ngra qo'shamiz ya'ni $0,5=\frac{5}{10}=\frac{1}{2}$

402. $3\frac{5}{8}-0,25$ ni hisoblang.

A) $2\frac{3}{8}$ B) $3\frac{3}{8}$ C) $3\frac{1}{8}$ D) $2\frac{1}{8}$

403. $\frac{1}{3}-0,2$ ni hisoblang.

A) $\frac{7}{15}$ B) $\frac{2}{15}$ C) $\frac{1}{15}$ D) $\frac{8}{15}$

404. $\frac{11}{15}-0,5$ ni hisoblang.

A) $\frac{4}{30}$ B) $\frac{7}{30}$ C) $\frac{9}{30}$ D) $\frac{1}{30}$

405. $6\frac{7}{12}-2,75$ ni hisoblang.

A) $6\frac{9}{20}$ B) $3\frac{5}{6}$ C) $3\frac{1}{6}$ D) $3\frac{7}{20}$

406. $5\frac{1}{8}-1,6$ ni hisoblang.

A) $\frac{3}{5}$ B) $\frac{1}{4}$ C) $\frac{3}{4}$ D) $3\frac{21}{40}$

407. $18\frac{1}{6}-3,5$ ni hisoblang.

A) $14\frac{3}{5}$ B) $15\frac{2}{3}$ C) $14\frac{2}{3}$ D) $\frac{1}{2}$

408. $9\frac{3}{5}-3,68$ ni hisoblang.

A) $5\frac{23}{25}$ B) $5\frac{4}{25}$ C) $\frac{8}{25}$ D) $5\frac{1}{25}$

409. $6\frac{1}{20}-2,36$ ni hisoblang.

A) $3\frac{69}{100}$ B) $\frac{9}{10}$ C) $\frac{9}{100}$ D) $3\frac{1}{2}$

✓ 7,012 + 1,56 ni hisoblang.

A) 4,07 B) 8,572 C) 7,04 D) 4,7

Yechimi:

7,012 + 1,56 = 8,572

$$\begin{array}{r} 7,012 \\ +1,56 \\ \hline 8,572 \end{array} \qquad \begin{array}{r} 7,012 \\ +1,56 \\ \hline 7,168 \end{array} \Rightarrow xato$$

Javob: 8,572 (B)

Izoh: o'nli kasrlarni qo'shishda vergul tagiga, vergul tushushi lozim.

410. 4,05 + 3,2 ni hisoblang.

A) 7,15 B) 4,27 C) 7,25 D) 3,02

411. 16,17+4,361 ni hisoblang.

A) 20,531 B) 2,0531 C) 205,31 D) 0,02

412. 10,2 + 4,86 ni hisoblang.

A) 15,6 B) 15,06 C) 15,05 D) 1,506

✓ 7+1,56 ni hisoblang.
A) 4,07 B) 7,4 C) 7,04 D)8,56
Yechimi:
$7+1,56=8,56$

$$\begin{array}{r} 7, \\ +1,56 \\ \hline 8,56 \end{array} \qquad \begin{array}{r} 7 \\ +1,56 \\ \hline 1,63 \end{array} \Rightarrow xato$$

Javob: 8,56 (D)

Izoh: o'nli kasrlarni hisoblashda vergul tagiga, vergul tushushi lozim.

413. 4 + 32,62 ni hisoblang.
A) 7,15 B) 4,27 C) 72,62 D) 36,62

414. 16 + 4,361 ni hisoblang.
A) 20,531 B) 2,0361 C) 205,31 D) 20,361

415. 12 – 564,86 ni hisoblang.
A) 16,6 B) 57,686 C) 5,7686 D) 576,86

✓ 7,012–3,56 ni hisoblang.
A) 4,452 B) 7,4 C) 7,04 D) 3,452
Yechimi:
$7,012-3,56=3,452$

$$\begin{array}{r} 7,012 \\ -3,56 \\ \hline 3,452 \end{array} \qquad \begin{array}{r} 7,012 \\ -3,56 \\ \hline 6,656 \end{array} \Rightarrow xato$$

javob: 3,452 (D)

Izoh:o'nli kasrlarni hisoblashda vergul tagiga, vergul tushushi lozim.

416. 4,05 – 3,2 ni hisoblang.
A) 0,85 B) 8,5 C) 7,25 D) 3,85

417. 16,17 – 4,361 ni hisoblang.
A) 20,531 B) 118,09 C)1,1809 D) 11,809

418. 10,2– 4,86 ni hisoblang.
A) 15,6 B) 5,06 C) 5,34 D) 1,34

✓ 7–1,56 ni hisoblang.
A) 5,44 B) 7,4 C) 7,04 D) 4,7
Yechimi:
$7-1,56=5,44$

$$\begin{array}{r} 7 \\ -1,56 \\ \hline 5,44 \end{array} \qquad \begin{array}{r} 7 \\ -1,56 \\ \hline 1,51 \end{array} \Rightarrow xato$$

javob: 5,44 (A)

Izoh:o'nli kasrlarni hisoblashda vergul tagiga, vergul tushushi lozim.

419. 4–3,262 ni hisoblang.
A) 0,738 B) 1,738 C) 7,38 D) 36,62

420. 16–4,361 ni hisoblang.
A) 1,1639 B) 2,0361 C) 11,639 D) 20,361

421. 12–4,86 ni hisoblang.
A) 16,86 B) 7,14 C) 0,714 D) 71,4

✓ (1–0,973) + (2,5– 1,114) ni hisoblang.
A) 4,07 B) 1,413 C) 7,04 D) 4,7
Yechimi:

$$\overbrace{(1-0,973)}^{1}+\overbrace{(2,5-1,114)}^{2}$$

$$\begin{array}{r} 1 \\ -0,973 \\ \hline 0,027 \end{array} \qquad \begin{array}{r} 2,5 \\ -1,114 \\ \hline 1,386 \end{array}$$

$$\begin{array}{r} 0,027 \\ +1,386 \\ \hline 1,413 \end{array}$$

$0,027+1,386=1,413$ **javob: 1,413 (B)**

422. (27,428–16,507) – (2,946 +3,063) ni hisoblang.
A) 4,812 B) 4,912 C) 7,38 D) 4,902

423. $(110,1-29,37)-[(13,721-5,991)-6,75]$ ni hisoblang.
A) 78,75 B) 79,75 C) 79,79 D) 79,361

424. $24,06-(0,07+3,386)-[1,16+2,542-(4,74-3,84)]$ ni hisoblang.
A) 16,802 B) 17,812 C) 17,802 D) 17,702

425. $(1-0,973)+(2,5-1,114)-(1,137-0,883)$ ni hisoblang
A) 4,812 B) 0,254 C) 1,159 D) 1,413

426. $39-[(3,2+9,09)-6,75]$ ni hisoblang.
A) 39 B) 33,46 C) 5,54 D) 79,361

427. $28-(19,8004-3,2005-(2,906-0,5307))$ ni hisoblang.
A) 16,802 B) 17,812 C) 13,7754 D) 13,7744

✓ $8\frac{1}{4}$ ni o'nli kasr ko'rinishi…ga teng.
A) 4,07 B) 8,25 C) 8,75 D) 4,75
Yechimi:
$8\frac{1}{4}=8\frac{1\cdot 25}{4\cdot 25}=8\frac{25}{100}=8,25$ **Javob:8,25 (B)**

Izoh: Agar kasr mahraji 4 bo'lsa surat va mahrajni 25 ga ko'paytiriladi.

428. $2\frac{3}{4}$ ni o'nli kasr ko'rinishi…ga teng.
A) 2,5 B) 2,75 C) 3,25 D) 0,75

429. $\frac{1}{4}$ ni o'nli kasr ko'rinishi…ga teng.
A) 0,25 B) 1,25 C) 0,75 D) 0,02

430. $\frac{3}{4}$ ni o'nli kasr ko'rinishi…ga teng.
A) 7,75 B) 0,75 C) 7,25 D) 0,25

✓ $72\frac{1}{5}$ ni o'nli kasr ko'rinishi…ga teng.
A) 4,07 B) 7,22 C) 7,04 D) 72,2
Yechimi:
$72\frac{1}{5}=\frac{1\cdot 2}{5\cdot 2}=72\frac{2}{10}=72,2$ **javob: 72,2 (D)**

Izoh: Agar kasr mahraji 5 bo'lsa surat va mahrajni 2 ga ko'paytiriladi.

431. $2017\frac{3}{5}$ ni o'nli kasr ko'rinishi…ga teng.

A) 2017,6 B) 2017,4 C) 0,6 D) 2017,2

432. $\frac{2}{5}$ ni o'nli kasr ko'rinishi…ga teng.

A) 0,2 B) 2017,4 C) 0,75 D) 0,4

433. $7102\frac{4}{5}$ ni o'nli kasr ko'rinishi…ga teng.

A) 7102,6 B) 7102,4 C) 7102,8 D) 0,2

✓ $63\frac{3}{8}$ ni o'nli kasr ko'rinishi…ga teng.

A) 63,375 B) 7,22 C) 63,125 D) 72,2

Yechimi:

$63\frac{3}{8}=63\frac{3\cdot125}{8\cdot125}=63\frac{375}{1000}=63,375$ **javob: 63,125 (C)**

Izoh: Agar kasr mahraji 8 bo'lsa surat va mahrajni 125 ga ko'paytiriladi.

434. $20\frac{5}{8}$ ni o'nli kasr ko'rinishi…ga teng.

A) 0,625 B) 20,4 C) 20,625 D) 20,125

435. $\frac{7}{8}$ ni o'nli kasr ko'rinishi…ga teng.

A) 8,625 B) 2017,4 C) 0,875 D) 0,125

436. $12\frac{1}{8}$ ni o'nli kasr ko'rinishi…ga teng.

A) 12,625 B) 12,125 C) 21,125 D) 0,125

✓ $\frac{2}{25}$ ni o'nli kasr ko'rinishi…ga teng.

A) 4,07 B) 0,08 C) 7,04 D) 72,2

Yechimi:

$\frac{2}{25}=\frac{2\cdot4}{25\cdot4}=\frac{8}{100}=0,08$ **javob: 0,08 (B)**

Izoh: Agar kasr mahraji 25 bo'lsa surat va mahrajini 4 ga ko'paytiriladi.

437. $44\frac{17}{25}$ ni o'nli kasr ko'rinishi…ga teng.

A) 44,68 B) 44,34 C) 0,68 D) 44,17

438. $\frac{7}{25}$ ni o'nli kasr ko'rinishi…ga teng.

A) 0,1 B) 0,28 C) 0,7 D) 0,4

439. $204\frac{1}{25}$ ni o'nli kasr ko'rinishi…ga teng.

A) 204,4 B) 12,125 C) 204,04 D) 24,125

✓ $2,68+6,7-3\frac{2}{5}$ ni hisoblang.

A) 4,07 B) 7,22 C) 7,04 D) 5,98

Yechimi:

$2,68+6,7-3\frac{2}{5}\Rightarrow \quad 3\frac{2}{5}=3\frac{2\cdot2}{5\cdot2}=3\frac{4}{10}=3,4$

$\Rightarrow \underbrace{2,68+6,7}_{9,38}-3,4=9,38-3,4=5,98$

javob: 5,98 (D)

440. $2,5-\frac{3}{5}$ ni hisoblang.

A) 1,9 B) 0,19 C) 3,1 D) 2,6

441. $1,21+6,78-\frac{21}{25}$ ni hisoblang.

A) 7,15 B) 1,75 C) 0,7 D) 6,15

442. $25,25-2\frac{3}{4}+6,25$ ni hisoblang.

A) 204,4 B) 28,125 C) 22,5 D) 28,75

443. $3,075+26-6\frac{1}{4}$ ni hisoblang.

A) 22,68 B) 22,25 C) 22,825 D) 44,17

444. $\frac{3}{25}-7,69+6,8-\frac{2}{5}$ ni hisoblang.

A) 14,49 B) 0,28 C) 14,21 D) 14,125

445. $281,0625-3,88+2\frac{7}{8}$ ni hisoblang.

A) 204,4 B) 12,125 C) 280,0575 D) 24,125

Teskari sonlar

✓ $\frac{19}{5}$ ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B) $\frac{9}{5}$ C) $\frac{5}{9}$ D) $\frac{5}{19}$

Yechimi: $\frac{19}{5}\Rightarrow\frac{5}{19}$ **javob: (D)**

Izoh: kasrni aylantirib yozish lozim.

Ta'rif: ko'paytmasi 1 ga teng sonlarga Teskari sonlar deb ataladi. $\frac{19}{5}\cdot\frac{5}{19}=\frac{\cancel{19}}{\cancel{5}}\cdot\frac{\cancel{5}}{\cancel{19}}=1$

446. $\frac{15}{8}$ ni teskari sonni … ga teng.

A) $\frac{15}{8}$ B) $\frac{3}{8}$ C) $3\frac{1}{8}$ D) $\frac{8}{15}$

447. $\frac{15}{11}$ ni teskari sonni … ga teng.

A) $\frac{7}{15}$ B) $\frac{2}{15}$ C) $\frac{11}{15}$ D) $\frac{1}{15}$

448. $\frac{30}{17}$ ni teskari sonni … ga teng.

A) $\frac{4}{30}$ B) $\frac{17}{30}$ C) $\frac{9}{30}$ D) $\frac{1}{30}$

✓ $2\frac{1}{5}$ ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B) $\frac{9}{5}$ C) $\frac{5}{11}$ D) $\frac{5}{19}$

Yechimi: $2\frac{1}{5}=\frac{11}{5}\Rightarrow\frac{5}{11}$ **javob: (C)**

Izoh: Agar aralash kasr berilsa, noto'g'ri kasrga aylantiramiz. So'ngra teskarisi topiladi.

$2\frac{1}{5}=\frac{2\cdot5+1}{5}=\frac{11}{5}$

449. $4\frac{9}{15}$ ni teskari sonni … ga teng.

A) $\frac{15}{8}$ B) $\frac{69}{15}$ C) $\frac{15}{69}$ D) $\frac{8}{15}$

450. $5\frac{5}{11}$ ni teskari sonni … ga teng.

A) $\frac{11}{60}$ B) $\frac{5}{55}$ C) $\frac{11}{5}$ D) $\frac{1}{15}$

451. $1\frac{3}{17}$ ni teskari sonni … ga teng.

A) $\frac{4}{30}$ B) $\frac{11}{20}$ C) $\frac{9}{30}$ D) $\frac{17}{20}$

✓ 2,2 ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B) $\frac{9}{5}$ C) $\frac{5}{11}$ D) $\frac{5}{19}$

Yechimi:

$2,2 = 2\frac{2}{10} = 2\frac{\cancel{2}}{1\cancel{0}} = 2\frac{1}{5} = \frac{11}{5} \Rightarrow \frac{5}{11}$ **javob: (C)**

Izoh: Agar o'nli kasr berilsa, noto'g'ri kasrga aylantiramiz So'ngra teskarisi topiladi.

452. 9,4 ni teskari sonni … ga teng.

A) $9\frac{2}{5}$ B) $2\frac{5}{9}$ C) $\frac{5}{47}$ D) $\frac{47}{5}$

453. 5,25 ni teskari sonni … ga teng.

A) $\frac{4}{21}$ B) $\frac{21}{4}$ C) $\frac{21}{5}$ D) $\frac{1}{15}$

454. 6,25 ni teskari sonni … ga teng.

A) $6\frac{5}{8}$ B) $\frac{11}{2}$ C) $\frac{53}{8}$ D) $\frac{4}{25}$

455. 3,75 ni teskari sonni … ga teng.

A) $\frac{15}{4}$ B) $\frac{15}{9}$ C) $\frac{69}{15}$ D) $\frac{4}{15}$

456. 9,05 ni teskari sonni … ga teng.

A) $9\frac{1}{20}$ B) $\frac{20}{181}$ C) $\frac{181}{20}$ D) $\frac{11}{15}$

457. 11,875 ni teskari sonni … ga teng.

A) $\frac{95}{8}$ B) $\frac{8}{95}$ C) $\frac{9}{30}$ D) $11\frac{7}{8}$

✓ 25 ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B) 0,04 C) $\frac{5}{11}$ D) 0,4

Yechimi: $25 = \frac{25}{1} \Rightarrow \frac{1}{25} = 0,04$ **javob: (B)**

Izoh: Agar butun son berilsa, kasrga aylantiramiz. So'ngra teskarisi topiladi. $a \Rightarrow \frac{1}{a}$

458. 5 ni teskari sonni … ga teng.

A) 0,5 B) 0,2 C) 0,8 D) 0,4

459. 4 ni teskari sonni … ga teng.

A) $\frac{1}{25}$ B) 0,75 C) 0,85 D) 0,25

460. 8 ni teskari sonni … ga teng.

A) $\frac{4}{30}$ B) $\frac{11}{20}$ C) $\frac{5}{8}$ D) $\frac{1}{8}$

461. 2017 ni teskari sonni … ga teng.

A) $\frac{4}{2017}$ B) $\frac{11}{2017}$ C) $\frac{1}{2017}$ D) $\frac{1}{8}$

462. 0 ni teskari sonni … ga teng.

A) 0 B) 10 C) 1 D) mavjud emas

✓ −2,5 ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B) 0,4 C) $-\frac{2}{7}$ D) −0,4

Yechimi:

$-2,5 = -2\frac{5}{10} = -2\frac{\cancel{5}}{1\cancel{0}} = -2\frac{1}{2} = -\frac{5}{2} \Rightarrow -\frac{2}{5} = -0,4$

javob: (D)

Izoh: Agar "−"bo'lsa, oxirigacha o'zgarmay qoladi.

463. $-5\frac{2}{9}$ ni teskari sonni … ga teng.

A) $\frac{9}{47}$ B) $\frac{47}{9}$ C) $-\frac{9}{47}$ D) $-\frac{47}{9}$

464. − 2,25 ni teskari sonni … ga teng.

A) $\frac{1}{25}$ B) 2,25 C) $-\frac{4}{9}$ D) $-\frac{9}{4}$

465. − 25 ni teskari sonni … ga teng.

A) $\frac{19}{5}$ B)−0,04 C) 0,04 D) −0,4

✓ $\frac{11}{25}$ *va* $4\frac{6}{11}$ sonlariga teskari sonlar ko'paytmasi nechiga teng.

A) $\frac{1}{2}$ B) $\frac{3}{4}$ C) $\frac{1}{3}$ D) 2

Yechimi:

$\left.\begin{array}{l}\frac{11}{25} \Rightarrow \frac{25}{11} \\ 4\frac{6}{11} = \frac{50}{11} \Rightarrow \frac{11}{50}\end{array}\right| \frac{25}{11} \cdot \frac{11}{50} = \frac{{}^{1}\cancel{25}}{\cancel{11}} \cdot \frac{\cancel{11}}{\cancel{50}_{2}} = \frac{1}{2}$ **javob: (A)**

Izoh: avval teskarisi topilib so'ngra ko'partiriladi.

466. 2,2 *va* $\frac{3}{11}$ sonlariga teskari sonlar ko'paytmasi nechiga teng.

A) $\frac{5}{3}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) 2

467. $3\frac{1}{3}$ *va* 0,6 sonlariga teskari sonlar ko'paytmasi nechiga teng.

A) $\frac{1}{2}$ B) 0,75 C) 0,85 D) 2

468. 5,25 *va* $\frac{4}{7}$ sonlariga teskari sonlar ko'paytmasi nechiga teng.

A) $\frac{4}{30}$ B) $\frac{11}{4}$ C) $\frac{1}{3}$ D) 3

✓ $\left(1997\frac{3}{5}-1996\frac{1}{6}\right)\cdot 1\frac{1}{29}$ ni hisoblang.

A) $\frac{19}{5}$ B) $\frac{9}{5}$ C) $\frac{5}{9}$ D) $1\frac{14}{29}$

Yechimi:

$$\underset{\{1\}}{\left(1997\frac{3}{5}-1996\frac{1}{6}\right)}\cdot\underset{\{2\}}{1\frac{1}{29}} \qquad \underset{\{1\}}{1997\frac{3}{5}-1996\frac{1}{6}}=1+\frac{6'3}{5}-\frac{5'1}{6}=$$

$$=1+\frac{18-5}{30}=1+\frac{13}{30}=1\frac{13}{30}$$

$$1\frac{13}{30}\cdot 1\frac{1}{29}=\frac{43}{30}\cdot\frac{30}{29}=\frac{43}{\cancel{30}}\cdot\frac{\cancel{30}}{29}=\frac{43}{29}=1\frac{14}{29}$$ **j: (D)**

Izoh: kasrlarni hisoblashda 1– va 2– ishlarga loyihalab boshlash lozim,ya'ni qavs ichi 1– ish, ko'paytirish 2– ish.

469. $\left(1997\frac{3}{5}-1996\frac{2}{3}\right)\cdot 1\frac{1}{29}$ ni hisoblang.

A) $\frac{15}{29}$ B) $\frac{28}{29}$ C) $3\frac{1}{8}$ D) $\frac{29}{28}$

470. $\left(2017\frac{3}{7}-2016\frac{2}{3}\right)\cdot 1\frac{1}{2}$ ni hisoblang.

A) $\frac{8}{21}$ B) $\frac{3}{2}$ C) $1\frac{1}{7}$ D) $\frac{1}{15}$

471. $\left(2010\frac{3}{14}-2008\frac{5}{28}\right)\cdot 2\frac{1}{3}$ ni hissoblang.

A) $4\frac{3}{4}$ B) $4\frac{1}{4}$ C) $\frac{1}{15}$ D) $\frac{57}{28}$

✓ $84\cdot(-4)$ ko'paytmani toping.

A) 336 B) –336 C) 236 D) –236

Yechimi: $\underbrace{84\cdot(-4)}_{+\,-\,=-}=-336$ **javob: (B)**

Izoh: oldin o'rganilgan qoidaga ko'ra, + – = – bo'ldi.

472. $(-75)\cdot(-3)$ ko'paytmani toping.

A) $\frac{1}{75}$ B) 225 C) 78 D) –225

473. $(-48)\cdot 18$ ko'paytmani toping.

A) 864 B) 284 C) –764 D) –864

474. $20\cdot(-33)$ ko'paytmani toping.

A) 660 B) – 660 C) $\frac{1}{20}$ D) $\frac{1}{30}$

475. $-49\cdot(-31)$ ko'paytmani toping.

A)1419 B) 1509 C) 1519 D) –1519

476. $58\cdot(-96)$ ko'paytmani toping.

A)–5568 B) 5568 C) 2044 D) 2425

✓ $4\cdot(-6)\cdot 9$ ko'paytmani toping.

A) 336 B)–336 C) 216 D)–216

Yechimi:

$$\underbrace{4\cdot(-6)\cdot 9}_{+\,-\,=-}=\underbrace{-24\cdot 9}_{-\,=\,-}=-216$$ **javob: (D)**

Izoh: oldin 2 tasini. Ishorasini hisoblash lozim bo'ladi. + – = – so'ngra yana keyingisini – + = –

477. $(-7)\cdot(-10)\cdot(-5)$ ko'paytmani toping.

A) $\frac{1}{75}$ B)–350 C) 350 D)–225

478. $(-3)\cdot(-1)\cdot(-4)$ ko'paytmani toping.

A)–12 B)12 C)–4 D)–14

479. $-1\cdot(-2)\cdot(-8)$ ko'paytmani toping.

A) –16 **B) 16** C) $\frac{1}{16}$ D)–18

✓ $0{,}4\cdot\left(-1\frac{4}{5}\right)$ ko'paytmani toping.

A) 336 B) $\frac{18}{25}$ C) 216 D) $-\frac{18}{25}$

Yechimi:

$$\underbrace{0{,}4\cdot\left(-1\frac{4}{5}\right)}_{+\,-\,=\,-}=\frac{4}{10}\cdot\left(-\frac{9}{5}\right)=\frac{2}{5}\cdot\left(-\frac{9}{5}\right)=-\frac{18}{25}$$ + – = –

javob: (D)

480. $-2\frac{2}{5}\cdot\left(-3\frac{1}{8}\right)$ ko'paytmani toping.

A) 7,5 B) –7,5 C) 2,4 D) –2,4

481. $\left(-4\frac{3}{7}\right)\cdot 1\frac{4}{31}$ ko'paytmani toping.

A) –5 B) 5 C) –4 D) –15

482. $-2\frac{2}{3}\cdot\left(-1\frac{1}{8}\right)$ ko'paytmani toping.

A) –3 **B) 3** C) $\frac{1}{3}$ D) – 4

483. $0{,}9\cdot\left(-2\frac{1}{3}\right)$ ko'paytmani toping.

A) 2,1 B) 21 C) $\frac{1}{3}$ D) –2,1

484. $-3\frac{2}{9}\cdot 2{,}7$ ko'paytmani toping.

A) –29 B) 8,7 C) $\frac{1}{16}$ D) – 8,7

Qarama–qarshi sonlar

✓ 25 soniga qarama–qarshi sonini…ga teng.

A) $\frac{5}{9}$ B) –25 C) 7 D) $\frac{1}{25}$

Yechimi: $a\Rightarrow -a$, $-a\Rightarrow a$ $\quad 25\Rightarrow -25$ **javob: (B)**

Izoh: berilgan sonni oldiga "–" qo'yish lozim.

Ta'rif: faqat ishorasi bilan farq qiladigan sonlar qarama–qarshi sonlar deyiladi.

485. $\frac{7}{34}$ soniga qarama–qarshi sonini…ga teng.

A) $\frac{25}{7}$ B) $-\frac{7}{34}$ C) 0,68 D) -34

486. –0,7 soniga qarama–qarshi sonini…ga teng.

A) 0,14 B)-0,7 C) 0,7 D) 0,125

487. $-3\frac{4}{51}$ soniga qarama–qarshi sonini…ga teng.

A) $\frac{4}{51}$ B) $-3\frac{4}{51}$ C) $3\frac{4}{51}$ D) $-\frac{4}{51}$

488. $\frac{2019}{2010}$ soniga qarama–qarshi sonini…ga teng.

A) $\frac{2019}{2010}$ B) $\frac{1}{2010}$ C) $\frac{1}{2019}$ D) $-\frac{2019}{2010}$

✓ $\left(-\frac{1}{3}\right)\cdot\frac{2}{7}:\frac{5}{42}$ ifodaga qarama–qarshi sonini…ga teng.

A) $\frac{5}{9}$ B) -25 C) 7 D) $\frac{4}{5}$

Yechimi:

$$\left(-\frac{1}{3}\right)\cdot\frac{2}{7}:\frac{5}{\underline{42}}=\left(-\frac{1}{3}\right)\cdot\frac{2}{7}\cdot\frac{\underline{42}}{\underline{5}}=\left(-\frac{1}{3}\right)\cdot\frac{2}{\cancel{7}}\cdot\frac{\cancel{42}^{6}}{5}=$$

$$=-\frac{1\cdot2\cdot\cancel{6}^{2}}{\cancel{3}\cdot1\cdot5}=-\frac{4}{5}\qquad -\frac{4}{5}\Rightarrow\frac{4}{5}\qquad javob:(D)$$

Izoh: kasrlarni oldin hisoblab so'ngra qarama–qarshisini topamiz.

489. $\frac{1}{3}\cdot\left(-\frac{2}{7}\right):\left(-\frac{5}{42}\right)$ ifodaga qarama–qarshi sonini…ga teng.

A) $\frac{4}{5}$ B) $-\frac{3}{5}$ C) 0,9 D) - 0,8

490. $\frac{2044}{4}:511-9$ ifodaga qarama–qarshi sonini…ga teng.

A) -8 B) 8 C) 0 D) $\frac{1}{8}$

491. $3\frac{1}{3}\cdot2\frac{1}{4}\cdot\left(-\frac{1}{2}\right)\cdot\frac{4}{5}$ ifodaga qarama–qarshi sonini…ga teng.

A)-10 B) 10 C) 3 D) -3

492. $3\frac{1}{2}-\frac{7}{9}$ soniga qarama–qarshi sonini…ga teng.

A) $3\frac{5}{18}$ B) $2\frac{13}{18}$ C) $\frac{5}{18}$ D) $-2\frac{13}{18}$

493. $2\frac{1}{2}-1\frac{3}{8}$ soniga qarama–qarshi sonini…ga teng.

A) $3\frac{7}{8}$ B) $1\frac{1}{8}$ C) $\frac{5}{18}$ D) $-1\frac{1}{8}$

Taqqoslashlar

✓ 2134 va 2314 ni taqqoslang.

A) 2134 = 2314 B) 2134 < 2314

C) 2134 > 2314 D) 2134 ≥ 2314

Yechimi: $\underline{2}\underline{1}\underline{3}\underline{4}<\underline{2}\underline{3}\underline{1}\underline{4}$ **javob: (B)**

494. 7071 *va* 7017 ni taqqoslang.

A) 7071 = 7017 B) 7071 > 7017

C) 7071 < 7017 D) 7071 ≥ 7017

495. 9511 *va* 9501 ni taqqoslang.

A) 9511 > 9501 B) 9511 < 9501

C) 9511 = 9501 D) 9511 ≤ 9501

496. 511−9 *va* 560−81 ni taqqoslang.

A) 511−9 ≤ 560−81 B) 511−9 = 560−81

C) 511−9 > 560−81 D) 511−9 < 560−81

497. 111−24 *va* 153−66 ni taqqoslang.

A) 111−24 = 153−66 B) 111−24 > 153−66

C) 111−24 ≥ 153−66 D) 111−24 < 153−66

✓ −2 *va* −14 ni taqqoslang.

A) −2 < −14 B) −2 > −14

C) −2 = −14 D) −2 ≤ −14

Yechimi: −2 > −14 **javob: (B)**

Izoh: "−" sonlarda kichik son katta bo'ladi?

Ta'rif: no'lga yaqin turgan son katta hissoblanadi

498. −71 *va* −17 ni taqqoslang.

A) −71 = −17 B) −71 > −17

C) −71 < −17 D) −71 ≤ −17

499. −2019 *va* −2017 ni taqqoslang.

A) −2019 > −2017 B) −2019 < −2017

C) 9511 = 9501 D) 9511 ≤ 9501

500. 511−900 *va* 560−810 ni taqqoslang.

A) 511−900 > 560−810 B) 511−900 < 560−810

C) 511−900 = 560−810 D) 511−900 ≤ 560−810

501. 111−240 *va* 153−660 ni taqqoslang.

A) 111−240 = 153−660 B) 111−240 > 153− 660

C) 111−240 ≥ 153−660 D) 111−240 < 153−660

✓ −245 *va* 14 ni taqqoslang.

A) −245< 14 B) −245> 14

C) −245= 14 D) −245≤ 14

Yechimi: −245< 14 $-a<b$

Izoh: manfiy son har qanday musbat sondan kichik

502. −217 *va* 27 ni taqqoslang.

A) −217= 27 B) −217< 27

C) −217> 27 D) −217≤ 27

503. 0 *va* -2017 ni taqqoslang.

A) $0 > -2017$ B) $0 < -2017$

C) $0 = -2017$ D) $0 \le -2017$

504. -2017 *va* 2017 ni taqqoslang.

A) $-2017 = 2017$ B) $-2017 < 2017$

C) $-2017 > 2017$ D) $-2017 \le 2017$

505. $268-900$ *va* $560-81$ ni taqqoslang.

A) $268-900 > 560-81$ B) $268-900 < 560-81$

C) $268-900 = 560-81$ D) $268-900 \le 560-81$

506. $611-240$ *va* $153-660$ ni taqqoslang.

A) $611-240 = 153-660$ B) $611-240 > 153-660$

C) $611-240 \ge 153-660$ D) $611-240 < 153-660$

✓ $2\frac{5}{17}$ *va* $14\frac{1}{5}$ ni taqqoslang.

A) $2\frac{5}{17} \le 14\frac{1}{5}$ B) $2\frac{5}{17} = 14\frac{1}{5}$

C) $2\frac{5}{17} > 14\frac{1}{5}$ D) $2\frac{5}{17} < 14\frac{1}{5}$

Yechimi:

$2\frac{5}{17}$ *va* $14\frac{1}{5}$

javob: (D)

$2\frac{5}{17} < 14\frac{1}{5} \Rightarrow 2 < 14$

507. $4\frac{1}{11}$ *va* $2\frac{9}{58}$ ni taqqoslang.

A) $4\frac{1}{11} > 2\frac{9}{58}$ B) $4\frac{1}{11} < 2\frac{9}{58}$

C) $4\frac{1}{11} = 2\frac{9}{58}$ D) $4\frac{1}{11} \ge 2\frac{9}{58}$

508. $6\frac{9}{2017}$ *va* $2017\frac{1}{1644}$ ni taqqoslang.

A) $6\frac{9}{2017} > 2017\frac{1}{1644}$ B) $6\frac{9}{2017} = 2017\frac{1}{1644}$

C) $6\frac{9}{2017} < 2017\frac{1}{1644}$ D) $6\frac{9}{2017} \le 2017\frac{1}{1644}$

509. $-22\frac{6}{19}$ *va* $17\frac{16}{97}$ ni taqqoslang.

A) $-22\frac{6}{19} = 17\frac{16}{97}$ B) $-22\frac{6}{19} < 17\frac{16}{97}$

C) $-22\frac{6}{19} > 17\frac{16}{97}$ D) $-22\frac{6}{19} \ge 17\frac{16}{97}$

510. $7-\frac{8}{17}$ *va* $7+\frac{2}{5}$ ni taqqoslang.

A) $7-\frac{8}{17} < 7+\frac{2}{5}$ B) $7-\frac{8}{17} > 7+\frac{2}{5}$

C) $7-\frac{8}{17} = 7+\frac{2}{5}$ D) $7-\frac{8}{17} \le 7+\frac{2}{5}$

511. $a=\frac{5}{7}$ *va* $b=5\frac{1}{2}$ ni taqqoslang.

A) $a<b$ B) $a>b$ C) $a \le b$ D) $a=b$

✓ 0,654654 *va* 0,58888 ni taqqoslang.

A) $0{,}654654 = 0{,}58888$ B) $0{,}654654 < 0{,}58888$

C) $0{,}654654 > 0{,}58888$ D) $0{,}654654 \ge 0{,}58888$

Yechimi:

0,654654 *va* 0,58888

javob: (C)

$0{,}654654 > 0{,}58888$

Izoh: birinchi katta son hal qiladi

512. 4,46878 *va* 4,46898 ni taqqoslang.

A) $4{,}46878 = 4{,}46898$ B) $4{,}46878 > 4{,}46898$

C) $4{,}46878 < 4{,}46898$ D) $4{,}46878 \ge 4{,}46898$

513. 6,83 *va* 6,838383 ni taqqoslang.

A) $6{,}83 > 6{,}838383$ B) $6{,}83 < 6{,}838383$

C) $6{,}83 \le 6{,}838383$ D) $6{,}83 = 6{,}838383$

514. 22,5555 *va* 17,71111 ni taqqoslang.

A) $22{,}5555 < 17{,}71111$ B) $22{,}5555 \ge 17{,}71111$

C) $22{,}5555 = 17{,}71111$ D) $22{,}5555 > 17{,}71111$

515. 0,9999 *va* 5,1 ni taqqoslang.

A) $0{,}9999 = 5{,}1$ B) $0{,}9999 > 5{,}1$

C) $0{,}9999 < 5{,}1$ D) $0{,}9999 \ge 5{,}1$

516. 4,46878 *va* $-4{,}46898$ ni taqqoslang.

A) $4{,}46878 = -4{,}46898$ B) $4{,}46878 > -4{,}46898$

C) $4{,}46878 < -4{,}46898$ D) $4{,}46878 \ge -4{,}46898$

517. $-6{,}83$ *va* 6,838383 ni taqqoslang.

A) $-6{,}83 > 6{,}838383$ B) $-6{,}83 < 6{,}838383$

C) $-6{,}83 \le 6{,}838383$ D) $-6{,}83 = 6{,}838383$

518. $-22{,}5555$ *va* 17,71111 ni taqqoslang.

A) $-22{,}5555 < 17{,}71111$ B) $-22{,}5555 \ge 17{,}71111$

C) $-22{,}5555 = 17{,}71111$ D) $-22{,}5555 > 17{,}71111$

519. 1,777 *va* $-1{,}8111$ ni taqqoslang.

A) $1{,}777 < -1{,}8111$ B) $1{,}777 > -1{,}8111$

C) $1{,}777 = -1{,}8111$ D) $1{,}777 \ge -1{,}8111$

520. $-4{,}46878$ *va* $-4{,}46898$ ni taqqoslang.

A) $-4{,}46878 = -4{,}46898$ B) $-4{,}46878 > -4{,}46898$

C) $-4{,}46878 < -4{,}46898$ D) $-4{,}46878 \ge -4{,}46898$

521. $-6{,}83$ *va* $-6{,}838383$ ni taqqoslang.

A) $-6{,}83 > -6{,}838383$ B) $-6{,}83 < -6{,}838383$

C) $-6{,}83 \le -6{,}838383$ D) $-6{,}83 = -6{,}838383$

522. $-22{,}5555$ *va* $-17{,}71111$ ni taqqoslang.

A) $-22{,}5555 < -17{,}71111$

B) $-22{,}5555 \ge -17{,}71111$

C) $-22{,}5555 = -17{,}71111$

D) $-22{,}5555 > -17{,}71111$

523. $-0,9999$ *va* $-5,1$ ni taqqoslang.

A) $-0,9999 = -5,1$ B) $-0,9999 > -5,1$

C) $-0,9999 < -5,1$ D) $-0,9999 \geq -5,1$

524. $a=-1,777$ *va* $b=-1,8111$ ni taqqoslang.

A) $a<b$ B) $a>b$ C) $a=b$ D) $a\leq b$

525. $c=1,777$ *va* $k=1,8111$ ni taqqoslang.

A) $c<k$ B) $c>k$ C) $c=k$ D) $c\leq k$

526. $n=0,9999$ *va* $m=-5,1$ ni taqqoslang.

A) $n>m$ B) $n<m$ C) $n=m$ D) $n\leq m$

✓ $\frac{1}{75}$ *va* $\frac{4}{75}$ ni taqqoslang.

A) $\frac{1}{75} = \frac{4}{75}$ B) $\frac{1}{75} > \frac{4}{75}$

C) $\frac{1}{75} < \frac{4}{75}$ D) $\frac{1}{75} \leq \frac{4}{75}$

Yechimi: $\frac{1}{75}$ *va* $\frac{4}{75} \Rightarrow \frac{1}{75} < \frac{4}{75}$ **javob: (C)**

Izoh: Agar kasr mahraji bir xil bo'lsa, surati kattasi, katta bo'ladi. Ya'ni $1<4$

527. $\frac{4}{2017}$ *va* $\frac{11}{2017}$ ni taqqoslang.

A) $\frac{4}{2017} < \frac{11}{2017}$ B) $\frac{4}{2017} = \frac{11}{2017}$

C) $\frac{4}{2017} \geq \frac{11}{2017}$ D) $\frac{4}{2017} > \frac{11}{2017}$

528. $\frac{19}{42}$ *va* $\frac{23}{42}$ ni taqqoslang.

A) $\frac{19}{42} = \frac{23}{42}$ B) $\frac{19}{42} > \frac{23}{42}$

C) $\frac{19}{42} < \frac{23}{42}$ D) $\frac{19}{42} \leq \frac{23}{42}$

529. $a=\frac{17}{19}$ *va* $b=\frac{20}{19}$ ni taqqoslang.

A) $a<b$ B) $a>b$ C) $a\leq b$ D) $a=b$

✓ $\frac{11}{75}$ *va* $\frac{11}{25}$ ni taqqoslang.

A) $\frac{11}{75} = \frac{11}{25}$ B) $\frac{11}{75} > \frac{11}{25}$

C) $\frac{11}{75} < \frac{11}{25}$ D) $\frac{11}{75} \geq \frac{11}{25}$

Yechimi: $\frac{11}{75}$ *va* $\frac{11}{25} \Rightarrow \frac{11}{75} < \frac{11}{25}$ **javob: (C)**

Izoh: Agar kasr surati bir xil bo'lsa, mahraji kichigi katta bo'ladi. Ya'ni **75>25**

530. $\frac{67}{99}$ *va* $\frac{67}{100}$ ni taqqoslang.

A) $\frac{67}{99} = \frac{67}{100}$ B) $\frac{67}{99} > \frac{67}{100}$

C) $\frac{67}{99} \leq \frac{67}{100}$ D) $\frac{67}{99} < \frac{67}{100}$

531. $\frac{5}{13}$ *va* $\frac{5}{11}$ ni taqqoslang.

A) $\frac{5}{13} = \frac{5}{11}$ B) $\frac{5}{13} \leq \frac{5}{11}$

C) $\frac{5}{13} > \frac{5}{11}$ D) $\frac{5}{13} < \frac{5}{11}$

532. $n=\frac{49}{100}$ *va* $m=\frac{49}{90}$ ni taqqoslang.

A) $n<m$ B) $n>m$ C) $n=m$ D) $n\leq m$

✓ $\frac{5}{6}$ *va* $\frac{6}{7}$ ni taqqoslang.

A) $\frac{5}{6} > \frac{6}{7}$ B) $\frac{5}{6} = \frac{6}{7}$ C) $\frac{5}{6} < \frac{6}{7}$ D) $\frac{5}{6} \geq \frac{6}{7}$

Yechimi:

$\frac{a}{n}$ *va* $\frac{l}{b}$ $\qquad$ $\frac{5}{6}$ *va* $\frac{6}{7}$

$a\cdot b>n\cdot l$ $\qquad$ $a\cdot b<n\cdot l$ $\qquad$ $35=5\cdot7<6\cdot6=36$ **javob: (C)**

$\frac{a}{n}>\frac{l}{b}$ $\qquad$ $\frac{a}{n}<\frac{l}{b}$ $\qquad$ $\frac{5}{6}<\frac{6}{7}$

Izoh: Agar kasr surati va mahraji xar xil bo'lsa, umumiy usulda bajariladi.

533. $\frac{20}{21}$ *va* $\frac{11}{12}$ ni taqqoslang.

A) $\frac{20}{21} < \frac{11}{12}$ B) $\frac{20}{21} = \frac{11}{12}$

C) $\frac{20}{21} \geq \frac{11}{12}$ D) $\frac{20}{21} > \frac{11}{12}$

534. $\frac{9}{10}$ *va* $\frac{17}{18}$ ni taqqoslang.

A) $\frac{9}{10} = \frac{17}{18}$ B) $\frac{9}{10} > \frac{17}{18}$

C) $\frac{9}{10} < \frac{17}{18}$ D) $\frac{9}{10} \leq \frac{17}{18}$

535. $c=\frac{6}{7}$ *va* $k=\frac{8}{9}$ ni taqqoslang.

A) $c<k$ B) $c=k$ C) $c\leq k$ D) $c>k$

✓ Ushbu $n=\frac{1019}{1020}$ *va* $m=\frac{2040}{2042}$ sonlar uchun quyidagi munosabatlardan qaysi biri to'g'ri?

A) $n>m$ B) $n=m$ C) $n<m$ D) $n-1=m$

Yechimi:

$\frac{1019}{1020}$ *va* $\frac{2040}{2042} \Rightarrow \frac{1019}{1020}$ *va* $\frac{1020}{1021}$

$\frac{1019}{1020}$ *va* $\frac{1020}{1021} \Rightarrow \frac{19}{20}$ *va* $\frac{20}{21}$ **javob: (C)**

$\Rightarrow \{19\cdot21<20\cdot20\} \Rightarrow \frac{19}{20}<\frac{20}{21}$

$n<m$

Izoh: Agar kasrlarni boshi bir xil bo'lsa, tashlab oxirlarini taqqoslaymiz.

536. Ushbu $a=\frac{129}{130}$ va $b=\frac{260}{262}$ sonlar uchun quyidagi munosabatlardan qaysi biri to'g'ri?

A) $b>a$ B) $b=a$ C) $b<a$ D) $b-1=a$

537. Ushbu $k=\frac{2018}{2020}$ va $n=\frac{1010}{1011}$ sonlar uchun quyidagi munosabatlardan qaysi biri to'g'ri?

A) $n=k$ B) $n>k$ C) $n<k$ D) $n-1=k$

538. Ushbu $c=\frac{1107}{1109}$ va $d=\frac{2216}{2220}$ sonlar uchun quyidagi munosabatlardan qaysi biri to'g'ri?

A) $c=d$ B) $c>d$ C) $c<d$ D) $c-1=d$

539. Ushbu $c=\frac{11}{15}$ va $d=\frac{33}{45}$ sonlar uchun quyidagi munosabatlardan qaysi biri to'g'ri?

A) $c=d$ B) $c<d$ C) $c>d$ D) $c-1=d$

✓ Ushbu $a=5; b=-2017; c=69$ sonlarni o'sish tartibida joylashtiring.

A) $a<b<c$ B) $b<a<c$

C) $c<b<a$ D) $a<c<b$

Yechimi:

$a=5; b=-2017, c=69$

$\underbrace{-2017}_{b}<\underbrace{5}_{a}<\underbrace{69}_{c}$ **javob: (B)**

$b<a<c$

540. Ushbu $a=-5; b=207; c=100$ sonlarni o'sish tartibida joylashtiring.

A) $a<b<c$ B) $b<a<c$

C) $c<b<a$ D) $a<c<b$

541. Ushbu $a=-55; b=5; c=0,5$ sonlarni o'sish tartibida joylashtiring.

A) $a<b<c$ B) $b<a<c$

C) $c<b<a$ D) $a<c<b$

542. Ushbu $a=0; b=0,7; c=-100$ sonlarni o'sish tartibida joylashtiring.

A) $a<b<c$ B) $c<a<b$

C) $c<b<a$ D) $a<c<b$

✓ Ushbu $a=\frac{49}{150}; b=\frac{102}{300}; c=\frac{22}{75}$ sonlarni o'sish tartibida joylashtiring.

A) $c<a<b$ B) $b<a<c$

C) $c<b<a$ D) $a<c<b$

Yechimi:

$a=\frac{49}{150}; b=\frac{102}{300}; c=\frac{22}{75}$ $\quad a=\frac{49}{150}; b=\frac{51}{150}; c=\frac{22\cdot 2}{75\cdot 2}$

$a=\frac{49}{150}; b=\frac{102}{300}; c=\frac{22}{75}$ $\quad a=\frac{49}{150}; b=\frac{51}{150}; c=\frac{44}{150}$

$44<49<51 \Rightarrow c<a<b$ **Javob: (A)**

Izoh: kasrlarni mahraji bir xil ekanini hisobga olish lozim.

543. Ushbu $a=\frac{8}{15}; b=\frac{4}{15}; c=\frac{25}{75}$ sonlarni o'sish tartibida **joylashtiring.**

A) $a<b<c$ B) $b<c<a$

C) $c<b<a$ D) $a<c<b$

544. Ushbu $a=\frac{7}{36}; b=\frac{26}{72}; c=\frac{5}{18}$ sonlarni o'sish tartibida **joylashtiring.**

A) $a<b<c$ B) $b<c<a$

C) $c<b<a$ D) $a<c<b$

545. Ushbu $a=\frac{60}{90}; b=\frac{2}{3}; c=\frac{9}{27}$ sonlarni o'sish tartibida **joylashtiring.**

A) $a=b<c$ B) $c<b=a$

C) $c<b<a$ D) $a<c<b$

✓ Ushbu $a=\frac{7}{36}; b=\frac{11}{34}; c=\frac{7}{32}; d=\frac{9}{25}$ sonlarni kamayish tartibida **joylashtiring.**

A) $a>b>c>d$ B) $b>a>d>c$

C) $d>a>b>c$ D) $d>b>c>a$

Yechimi:

$\underbrace{a=\frac{7}{36}; b=\frac{11}{34}}_{7\cdot 34<11\cdot 36 \Rightarrow a<b}$; $\underbrace{c=\frac{7}{32}; d=\frac{9}{25}}_{7\cdot 25<9\cdot 32 \Rightarrow c<d}$ $\quad \underbrace{b=\frac{11}{34}; d=\frac{9}{25}}_{11\cdot 25<34\cdot 9 \Rightarrow b<d}$

$\underbrace{a=\frac{7}{36}; b=\frac{11}{34}; c=\frac{7}{32}}_{a<c}$; $\underbrace{b=\frac{11}{34}; c=\frac{7}{32}}_{11\cdot 32<34\cdot 7 \Rightarrow b<c}$; demak,

$d>b>c>a$

Izoh: kasrlarni **mahraji bir xil** emasligini hisobga olish lozim. **javob: (D)**

546. Ushbu $a=\frac{11}{28}; b=\frac{17}{30}; c=\frac{7}{23}; d=\frac{11}{25}$ sonlarni kamayish tartibida joylashtiring.

A) $a>b>c>d$ B) $d>b>c>a$

C) $d>a>c>b$ D) $b>d>a>c$

547. Ushbu $a=\frac{7}{16}; b=\frac{11}{24}; c=\frac{7}{32}; d=\frac{6}{25}$ sonlarni kamayish tartibida joylashtiring.

A) $d>c>b>a$ B) $b>d>a>c$

C) $b>a>d>c$ D) $a>c>b>d$

548. Ushbu $a=\frac{3}{40}; b=\frac{11}{34}; c=\frac{7}{32}; d=\frac{3}{31}$ sonlarni kamayish tartibida joylashtiring.

A) $b>c>d>b$ B) $b>a>d>c$

C) $d>a>b>c$ D) $d>a>c>b$

✓ $4\frac{1}{5}-30\frac{17}{50}$ ni hisoblang.

A) $26\frac{7}{50}$ B) $-26\frac{7}{50}$ C) $4\frac{4}{5}$ D) $2\frac{4}{50}$

Yechimi:

$4\frac{1}{5}-30\frac{17}{50}=-$

kattasidan kichigi ayrimiz: **javob: (B)**

$30\frac{17}{50}-4\frac{1}{5}=26+\frac{17-10}{50}=26+\frac{7}{50}=26\frac{7}{50}$

demak, $4\frac{1}{5}-30\frac{17}{50}=-26\frac{7}{50}$

549. $1\frac{3}{5}-3\frac{1}{5}$ *ni* hisoblang.

A) $1\frac{2}{5}$ B) $-1\frac{2}{5}$ C) $1\frac{3}{5}$ D) $2\frac{2}{5}$

550. $3\frac{4}{7}-5\frac{2}{7}$ ni hisoblang.

A) $-1\frac{5}{7}$ B) $1\frac{4}{7}$ C) $-\frac{4}{7}$ D) $1\frac{5}{7}$

551. $2\frac{4}{7}-6\frac{3}{28}$ ni hisoblang.

A) $3\frac{15}{28}$ B) $-4\frac{13}{28}$ C) $4\frac{13}{28}$ D) $-3\frac{15}{28}$

552. $3\frac{1}{6}-4\frac{1}{8}$ ni hisoblang.

A) $-\frac{23}{24}$ B) $\frac{23}{24}$ C) $1\frac{1}{24}$ D) $\frac{1}{24}$

553. $3\frac{8}{11}-7\frac{8}{11}$ ni hisoblang.

A) -3 B) -4 C) 3 D) 4

554 $4\frac{5}{9}-6\frac{1}{9}$ ni hisoblang.

A) $\frac{5}{9}$ B) $2\frac{4}{9}$ C) $-1\frac{5}{9}$ D) $-2\frac{4}{9}$

555. $1\frac{2}{3}-3\frac{2}{5}$ ni hisoblang.

A) $2\frac{4}{15}$ B) $1\frac{11}{15}$ C) $-2\frac{4}{15}$ D) $-1\frac{11}{15}$

✓ $-4\frac{1}{5}-30\frac{17}{50}$ ni hisoblang.

A) $26\frac{7}{50}$ B) $32\frac{27}{50}$ C) $4\frac{4}{5}$ D) $-34\frac{27}{50}$

Yechimi: $-4\frac{1}{5}-30\frac{17}{50}=-$ kasrlarni qo'shamiz va oldiga minus qo'yamiz

$4\frac{1}{5}+30\frac{17}{50}=34+\frac{^{10/}1}{5}+\frac{^{1/}17}{50}=34+\frac{10+17}{50}=34\frac{27}{50}$

demak, $-4\frac{1}{5}-30\frac{17}{50}=-34\frac{27}{50}$ **javob: (D)**

556. $-1\frac{3}{5}-3\frac{1}{5}$ ni hisoblang.

A) $-4\frac{4}{5}$ B) $-1\frac{2}{5}$ C) $-1\frac{3}{5}$ D) $2\frac{2}{5}$

557. $-3\frac{4}{7}-5\frac{2}{7}$ ni hisoblang.

A) $-1\frac{5}{7}$ B) $-8\frac{6}{7}$ C) $-\frac{4}{7}$ D) $1\frac{5}{7}$

558. $-2\frac{4}{7}-6\frac{3}{28}$ ni hisoblang.

A) $3\frac{15}{28}$ B) $-8\frac{19}{28}$ C) $4\frac{13}{28}$ D) $-3\frac{15}{28}$

559. $-3\frac{1}{6}-4\frac{1}{8}$ ni hisoblang.

A) $-\frac{23}{24}$ B) $\frac{23}{24}$ C) $-7\frac{7}{24}$ D) $\frac{1}{24}$

560. $-3\frac{8}{11}-7\frac{8}{11}$ ni hisoblang.

A) -3 B) -4 C) $-10\frac{5}{11}$ D) $-11\frac{5}{11}$

561. $-4\frac{5}{9}-6\frac{1}{9}$ ni hisoblang.

A) $10\frac{2}{3}$ B) $-10\frac{2}{3}$ C) $-1\frac{5}{9}$ D) $-2\frac{4}{9}$

562. $-1\frac{2}{3}-3\frac{2}{5}$ ni hisoblang.

A) $-5\frac{1}{15}$ B) $-4\frac{1}{15}$ C) $-1\frac{11}{15}$ D) $2\frac{3}{5}$

✓ $(4\frac{1}{10}-3\frac{4}{15})\cdot\frac{5}{6}+4\frac{1}{10}:1\frac{1}{5}$ ni hisoblang.

A) $3\frac{5}{9}$ B) $4\frac{1}{9}$ C) $5\frac{2}{3}$ D) $2\frac{3}{5}$

Yechimi:

[1] [2] [4] [3]

$\left(4\frac{1}{10}-3\frac{4}{15}\right)\cdot\frac{5}{6}+4\frac{1}{10}:1\frac{1}{5}$

[1] $\Rightarrow 4\frac{^{3/}1}{10}-3\frac{^{2/}4}{15}=1+\frac{3-8}{30}=1-\frac{5}{30}=\frac{30}{30}-\frac{5}{30}=\frac{25}{30}=\frac{\cancel{25}}{\cancel{30}}=\frac{5}{6}$

[2] $\Rightarrow \frac{5}{6}\cdot\frac{5}{6}=\frac{5\cdot5}{6\cdot6}=\frac{25}{36}$

[3] $\Rightarrow 4\frac{1}{10}:1\frac{1}{5}=\frac{41}{10}:\frac{6}{5}=\frac{41}{10}\cdot\frac{5}{6}=\frac{41}{_2\cancel{10}}\cdot\frac{\cancel{5}}{6}=\frac{41}{12}=3\frac{5}{12}$

[4] $\Rightarrow \frac{^{1/}25}{36}+3\frac{^{3/}5}{12}=3+\frac{25+15}{36}=3+\frac{40}{36}=3+1\frac{4}{36}=4\frac{4}{36}=4\frac{1}{9}$

Javob: (B)

563. $\left(12\frac{1}{9}-10\frac{2}{5}\right):38\frac{1}{2}+2\frac{8}{9}\cdot18$ ni hisoblang.

A) $24\frac{1}{15}$ B) $32\frac{7}{45}$ C) $38\frac{3}{5}$ D) $52\frac{2}{45}$

564. $\left(3\frac{17}{36}-5\frac{7}{12}\right):\frac{2}{9}-\frac{3}{26}\cdot 4\frac{1}{3}$ ni hisoblang.

A) -10 B) -9 C) 10 D) -11

565. $\left(7\frac{1}{3}-6\frac{7}{8}\right):\frac{3}{4}+8\frac{8}{9}\cdot 2\frac{1}{80}$ ni hisoblang.

A) $18\frac{1}{2}$ B) $17\frac{2}{3}$ C) $21\frac{1}{2}$ D) $16\frac{1}{3}$

566. $\left(\frac{5}{9}-1\frac{1}{6}\cdot\frac{1}{2}\right):\frac{5}{9}+\frac{1}{3}$ ni hisoblang.

A) $\frac{3}{20}$ B) $\frac{17}{60}$ C) $\frac{7}{30}$ D) $-\frac{7}{60}$

567. $\left(5\frac{3}{4}-4\frac{8}{9}\right)\cdot 2+67\frac{1}{2}:2\frac{1}{7}$ ni hisoblang.

A) $24\frac{1}{3}$ B) $33\frac{2}{9}$ C) $31\frac{1}{3}$ D) $36\frac{1}{9}$

568. $\left(2\frac{1}{2}-1\frac{3}{8}\right)\cdot\left(3\frac{1}{2}-\frac{3}{6}\right)\cdot 1\frac{1}{3}$ ni hisoblang.

A) 4,5 B) 8 C) 12 D) 3

Kasrlarni ko'paytirishda guruhlash qonuni

✓ $-\frac{1}{8}\cdot(8\cdot(-\frac{3}{11}))$ ni hisoblang.

A) $26\frac{7}{50}$ B) $-26\frac{7}{50}$ C) $\frac{3}{11}$ D) $2\frac{4}{50}$

Yechimi:

$-\frac{1}{8}\cdot(8\cdot(-\frac{3}{11}))=-\frac{1}{8}\cdot 8\cdot(-\frac{3}{11})=$

$=-\frac{1}{\cancel{8}}\cdot\cancel{8}\cdot(-\frac{3}{11})=-(-\frac{3}{11})=\frac{3}{11}$

Javob: (C)

569. $-2\frac{1}{8}\cdot(-\frac{3}{17})\cdot 16$ ni hisoblang.

A) $-4\frac{4}{5}$ B) -6 C) 6 D) $2\frac{2}{5}$

570. $-\frac{5}{24}\cdot\left(-\frac{4}{13}\right)\cdot 6$ ni hisoblang.

A) $\frac{5}{13}$ B) $-\frac{5}{13}$ C) $-\frac{4}{7}$ D) $\frac{13}{5}$

571. $3\frac{4}{7}\cdot\left(-1\frac{3}{5}\right)\cdot(-7)$ ni hisoblang.

A) 40 B) -40 C) $\frac{13}{28}$ D) $-\frac{15}{28}$

✓ $\frac{5}{7}\cdot\left(-2\frac{1}{4}\right)\cdot\left(-1\frac{2}{5}\right)$ ni hisoblang.

A) $26\frac{7}{50}$ B) $-26\frac{7}{50}$ C) $4\frac{4}{5}$ D) $2\frac{1}{4}$

Yechimi:

$\frac{5}{7}\cdot\left(-2\frac{1}{4}\right)\cdot\left(-1\frac{2}{5}\right)=\frac{5}{7}\cdot\left(-2\frac{1}{4}\right)\cdot\left(-\frac{7}{5}\right)=$

$=\frac{\cancel{5}}{\cancel{7}}\cdot\left(-2\frac{1}{4}\right)\cdot\left(-\frac{\cancel{7}}{\cancel{5}}\right)=2\frac{1}{4}$

Javob: (D)

572. $-\frac{5}{9}\cdot\frac{4}{7}\cdot\left(-\frac{9}{5}\right)$ ni hisoblang.

A) $-\frac{4}{7}$ B) $-1\frac{2}{5}$ C) $-1\frac{3}{5}$ D) $\frac{4}{7}$

573. $\frac{4}{5}\cdot 3\frac{1}{3}\cdot\left(-7\frac{1}{2}\right)$ ni hisoblang.

A) 20 B) $-8\frac{6}{7}$ C) $-\frac{4}{7}$ D) -20

574. $\frac{4}{7}\cdot\left(-\frac{5}{6}\right)\cdot 21$ ni hisoblang.

A) $3\frac{15}{28}$ B) -10 C) 10 D) -20

575. $-8\frac{2}{3}\cdot 1\frac{2}{3}\cdot\frac{3}{5}$ ni hisoblang.

A) $8\frac{2}{3}$ B) $\frac{23}{24}$ C) $-8\frac{2}{3}$ D) $\frac{1}{24}$

576. $-3\frac{1}{7}\cdot 1\frac{8}{11}\cdot\frac{1}{4}$ ni hisoblang.

A) $-1\frac{5}{14}$ B) $1\frac{5}{14}$ C) $-1\frac{5}{11}$ D) $-\frac{19}{11}$

577. $-\frac{7}{8}\cdot 6\frac{3}{7}\cdot\left(-\frac{8}{7}\right)$ ni hisoblang.

A) $10\frac{2}{3}$ B) $6\frac{3}{7}$ C) $-6\frac{3}{7}$ D) $-2\frac{4}{9}$

578. $-\frac{7}{11}\cdot(-8)\cdot\left(-1\frac{4}{7}\right)$ ni hisoblang.

A) -8 B) $-4\frac{1}{15}$ C) $-2\frac{4}{15}$ D) 8

✓ $1\frac{8}{17}\cdot 3\frac{2}{5}:\frac{11}{12}\cdot 2\frac{1}{5}:\frac{4}{9}$ ni hisoblang.

A) $26\frac{7}{50}$ B) $-26\frac{7}{50}$ C) 27 D) $2\frac{1}{4}$

Yechimi:

$1\frac{8}{17}\cdot 3\frac{2}{5}:\frac{11}{12}\cdot 2\frac{1}{5}:\frac{4}{9}=\frac{25}{17}\cdot\frac{17}{5}\cdot\frac{12}{11}\cdot\frac{11}{5}\cdot\frac{9}{4}$

$=\frac{\cancel{25}}{\cancel{17}}\cdot\frac{\cancel{17}}{\cancel{5}}\cdot\frac{\overset{3}{\cancel{12}}}{\cancel{11}}\cdot\frac{\cancel{11}}{\cancel{5}}\cdot\frac{9}{\cancel{4}_{1}}=\frac{9\cdot 3}{1}=27$

Javob: (C)

579. $\frac{3}{4}\cdot 1\frac{1}{7}:\left(\frac{2}{15}\right)\cdot 12\frac{1}{4}$ ni hisoblang.

A) $10\frac{1}{2}$ B) $78\frac{3}{4}$ C) $7\frac{1}{2}$ D) $9\frac{1}{4}$

580. $\frac{42}{95}\cdot 1\frac{3}{14}:\frac{3}{5}:2\cdot 4\frac{3}{4}$ ni hisoblang.

A) $\frac{13}{8}$ B) $1\frac{3}{8}$ C) $2\frac{1}{8}$ D) $2\frac{3}{5}$

581. $-3,6\cdot\frac{5}{11}\cdot\left(-\frac{3}{4}\right)\cdot(-2,2)$ ni hisoblang.

A) $2\frac{7}{10}$ B) $-2\frac{7}{10}$ C) 10 D) $-2\frac{1}{20}$

O'nli kasrlarni ko'paytirish

✓ $36,89\cdot 10$ ni hisoblang.

A) 368,9 B) 3689 C) 36,89 D) 3,689

Yechimi:

$36,89\cdot 10 = 36,\underline{89}\cdot\underline{10} = 368,9$

Izoh: O'nli kasrlarni 10; 100; 1000 ... ko'paytirishda nechta nol bo'lsa vergulni o'nga shuncha surish lozim.

$36,\underline{89}\cdot\underline{100} = 3689, = 3689$

$36,\underline{89}\cdot\underline{1000} = 36890, = 36890$ **Javob: (A)**

582. $22,45\cdot 10$ ni hisoblang.

A) 2,245 B) 224,5 C) 0,2245 D) 22,45

583. $3,045\cdot 10$ ni hisoblang.

A) 3,045 B) 30,45 C) 0,3045 D) 304,5

584. $43,173\cdot 100$ ni hisoblang.

A) 4317,3 B) 431,73 C) 4,3173 D) 43173

585. $83,02\cdot 100$ ni hisoblang.

A) 830,2 B) 8,302 C) 8302 D) 83,02

586. $1,0001\cdot 1000$ ni hisoblang.

A) 10,001 B) 100,01 C) 1000,1 D) 1,0001

587. $0,00324\cdot 10000$ ni hisoblang.

A) 0,0324 B) 3,24 C) 32,4 D) 324

588. $0,8\cdot 10000$ ni hisoblang.

A) 800 B) 8000 C) 80000 D) 80

589. $0,163\cdot 10$ ni hisoblang.

A) 0,163 B) 1,63 C) 163 D) 16,3

590. $6,4823\cdot 1000$ ni hisoblang.

A) 64,823 B) 648,23 C) 6482,3 D) 64823

✓ $3,89\cdot 1,4$ ni hisoblang.

A) 368,9 B) 5,446 C) 27 D) 544,6

Yechimi:

$3,89\cdot 1,4 = 5,446$

$$\begin{array}{r} 389 \\ \times\ 14 \\ \hline 1556 \\ 389 \\ \hline 5446 \end{array} \qquad \begin{array}{r} 3,\underline{89} \\ \times\ 1,\underline{4} \\ \hline 1556 \\ \underline{389} \\ 5,\underline{446} \end{array}$$ **Javob: (B)**

Izoh: O'nli kasrlarni ko'paytirishda verguldan keyingi sonlarni sanash lozim.

591. $1,4\cdot 1,8$ ni hisoblang.

A) 2,245 B) 25,2 C) 252 D) 2,52

592. $5,8\cdot 2,5$ ni hisoblang.

A) 14,5 B) 1,45 C) 145 D) 304,5

593. $12,9\cdot 3,4$ ni hisoblang.

A) 4317,3 B) 4386 C) 4,386 D) 43,86

594. $11,3\cdot 10,4$ ni hisoblang.

A) 117,52 B) 11,752 C) 1175,2 D) 1,1752

595. $3,2\cdot 0,25$ ni hisoblang.

A) 0,8 B) 100,08 C) 8 D) 8,0001

✓ $5\cdot 0,41$ ni hisoblang.

A) 200,5 B) 20,5 C) 27 D) 2,05

Yechimi:

$5\cdot 0,41 = 2,05$

$$\begin{array}{r} 0,41 \\ \times\ 5 \\ \hline 2,05 \end{array} \qquad \begin{array}{r} 0,\underline{41} \\ \times\ 5, \\ \hline 2,\underline{05} \end{array}$$ **Javob: (D)**

Izoh: O'nli kasrlarni ko'paytirishda verguldan keyingi sonlarni sanash lozim.

596. $17\cdot 1,01$ ni hisoblang.

A) 1,717 B) 17,17 C) 171,7 D) 22,45

597. $12\cdot 4,05$ ni hisoblang.

A) 48,6 B) 4,86 C) 486 D) 304,5

598. $0,011\cdot 18$ ni hisoblang.

A) 0,0198 B) 198 C) 0,198 D) 43173

599. $40\cdot 3,24$ ni hisoblang.

A) 12,96 B) 1296 C) 129,6 D) 1,296

600. $7,053\cdot 340$ ni hisoblang.

A) 239,802 B) 23980,2 C) 2,39802 D) 2398,02

✓ $(3,12+0,9)\cdot(1-0,4)$ ni hisoblang.

A) 368,9 B) 24,12 C) 2,412 D) 2,05

Yechimi:

$\{1\}\ \{3\}\ \{2\}$

$(3,12+0,9)\cdot(1-0,4)$

$$\begin{array}{r} \{1\}\ 3,12 \\ +\ 0,9 \\ \hline 4,02 \end{array} \qquad \begin{array}{r} \{2\}\ 1,0 \\ -\ 0,4 \\ \hline 0,6 \end{array} \qquad \begin{array}{r} \{3\}\ 4,02 \\ \times\ 0,6 \\ \hline 2412 \\ +\ 000 \\ \hline 2,412 \end{array}$$ **Javob: (C)**

601. $10,8+7,5\cdot(6,4-5,9)$ ni hisoblang.

A) 0,5 B) 14,55 C) 3,6 D) 22,45

602. $5,75\cdot 2,08\cdot(3,6-1,2\cdot 3)$ ni hisoblang.

A) 11,96 B) 30,45 C) 0 D) 3,6

603. $(9,09-9,0252)\cdot(25,0007-12,5007)$ ni hisoblang.

A) 0,81 B) 0,0648 C) 4,3173 D) 12,5

604. $6-(23,265+4,735)\cdot 0,01-2,4\cdot 0,1$ ni hisoblang.

A) 0,28 B) 5,48 C) 0,24 D) 83,02

✓ $\frac{6,8\cdot0,04\cdot1,65}{3,3\cdot5,1\cdot0,16}$ ni hisoblang.

A) 6 B) $\frac{1}{2}$ C) $\frac{1}{6}$ D) $\frac{2}{3}$

Yechimi:

$$\frac{6,8\cdot0,04\cdot1,65}{3,3\cdot5,1\cdot0,16}=\frac{6,\underline{8}\cdot0,\underline{04}\cdot1,\underline{65}}{3,\underline{3}\cdot5,\underline{1}\cdot0,\underline{16}}=\frac{68\cdot4\cdot165}{33\cdot510\cdot16}=$$

$$=\frac{^{2}\cancel{68}\cdot\cancel{4}\cdot\cancel{165}^{5}}{\cancel{33}\cdot\cancel{510}_{\cdot15}\cdot\cancel{16}_{\cdot4}}=\frac{2\cdot5}{15\cdot4}=\frac{\cancel{2}\cdot\cancel{5}}{_{3}\cancel{15}\cdot\cancel{4}_{2}}=\frac{1}{3\cdot2}=\frac{1}{6}$$

Javob: (C)

Izoh: O'nli kasrlarni tagiga chizilganligiga e'tibor bering. Shu sonlarni mos ravishda surdik toki sof son holatgacha.

$\frac{6,8}{3,3}=\frac{68}{33}$

605. $\frac{0,7\cdot1,8\cdot2,6}{7,2\cdot7,8\cdot1,4}$ ni qiymatini toping.

A) 24 B) $\frac{2}{5}$ C) $\frac{1}{24}$ D) $\frac{2}{3}$

606. $\frac{0,15\cdot1,6\cdot4,6}{9,2\cdot0,03\cdot6,4}$ ni qiymatini toping.

A) 6 B) $\frac{5}{8}$ C) $\frac{8}{5}$ D) $\frac{2}{3}$

607. $\frac{9,3\cdot4,6\cdot1,6}{2,3\cdot3,1\cdot0,16}$ ni qiymatini toping.

A) 60 B) $\frac{1}{20}$ C) $\frac{1}{60}$ D) $\frac{2}{3}$

O'nli kasrlarni bo'lish

✓ 36,89:10 ni hisoblang.

A) 3,689 B) 36,89 C) 369,8 D) 368,9

Yechimi: $36,89:10=\underline{36},\underline{89}:\underline{10}=3,689$ **Javob: (A)**

Izoh: O'nli kasrlarni 10; 100; 1000 ... bo'lishda nechta nol bo'lsa vergulni chapga shuncha surish lozim.

$36,89:100=\underline{36},\underline{89}:100=0,3689$

$36,89:100=\underline{36},\underline{89}:\underline{1000}=0,03689$

608. 22,45 : 10 ni hisoblang.

A) 2,245 B) 224,5 C) 0,2245 D) 22,45

609. 304,5 : 10 ni hisoblang.

A) 3,045 B) 30,45 C) 0,3045 D) 304,5

610. 43,173 : 100 ni hisoblang.

A) 4317,3 B) 431,73 C) 4,3173 D) 0,43173

611. 83,02 : 100 ni hisoblang.

A) 830,2 B) 0,8302 C) 8302 D) 83,02

612. 1000,1 : 1000 ni hisoblang.

A) 10,001 B) 100,01 C) 1000,1 D) 1,0001

613. 324 : 10000 ni hisoblang.

A) 0,0324 B) 0,324 C) 32,4 D) 324

614. 0,8 : 1000 ni hisoblang.

A) 800 B) 0,008 C) 0,0008 D) 80

615. 163 : 10 ni hisoblang.

A) 0,163 B) 1,63 C) 163 D) 16,3

616. 64823 : 1000 ni hisoblang.

A) 64,823 B) 648,23 C) 6482,3 D) 64823

✓ 3:0,6 bo'lish amalini bajaring.

A) 6 B) $\frac{1}{2}$ C) $\frac{1}{6}$ D) 5

Yechimi: $3:0,6=\frac{3}{0,6}=\frac{3,}{0,\underline{6}}=\frac{30}{6}=5$

$$\begin{array}{r|l} 30 & 6 \\ \underline{30} & 5 \\ 0 & \end{array}$$

Javob: (D)

Izoh: O'nli kasrlarni bo'lishda kasr ko'rinishga olib o'tib, vergul suriladi so'ngra bo'linadi.

617. 4:0,5 bo'lish amalini bajaring.

A) 24 B) 8 C) $\frac{1}{24}$ D) $\frac{2}{3}$

618. 20:0,8 bo'lish amalini bajaring.

A) 25 B) 8 C) $\frac{1}{24}$ D) $\frac{2}{3}$

619. $(4,3+7,7):(0,5-0,1)$ bo'lish amalini bajaring.

A) 24 B) 8 C) 30 D) 60

620. $(3-2,86):(0,01+0,06)$ bo'lish amalini bajaring.

A) 24 B) 8 C) 12 D) 2

✓ 3,672:2,04 bo'lish amalini bajaring.

A) 1,8 B) $\frac{1}{2}$ C) $\frac{1}{6}$ D) 5

Yechimi:

$$3,672:2,04=\frac{3,672}{2,04}=\frac{3,672}{2,04}=\frac{3672}{2040}=1,8$$

$$\begin{array}{r|l} 3672 & 2040 \\ \underline{2040} & 1,8 \\ 16320 & \\ \underline{16320} & \\ 0 & \end{array}$$

$$\begin{array}{r|l} 3672 & 2040 \\ \underline{2040} & 1 \\ 1632 & \end{array}$$

$$\begin{array}{r|l} 3672 & 2040 \\ \underline{2040} & 1, \\ 16320 & \end{array}$$

Izoh: O'nli kasrlarni bo'lishda kasr ko'rinishga olib o'tib, vergul suriladi so'ngra bo'linadi.

621. 1:0,8 bo'lish amalini bajaring.

A) 24 B) 1,25 C) $\frac{1}{24}$ D) $\frac{2}{3}$

622. 36:0,225 bo'lish amalini bajaring.

A) 25 B) 16 C) $\frac{1}{24}$ D) 160

623. $(0,93+5,07):(0,93-0,805)$ bo'lish amalini bajaring.

A) 5 B) 48 C) 30 D) $\frac{2}{3}$

624. $(20+2,5):(3+0,75)$ bo'lish amalini bajaring.

A) 6 B) 8 C) $\frac{1}{24}$ D) 2

✓ $2,002:9,1$ bo'lish amalini bajaring.

A) 6 B) 0,5 C) 0,22 D) 5

Yechimi:

$$2,002:9,1=\frac{2,002}{9,1}=\frac{2,002}{9,1}=\frac{2002}{9100}=0,22$$

$$\begin{array}{r|l} 20020 & 9100 \\ \hline 0, & \end{array} \qquad \begin{array}{r|l} 20020 & 9100 \\ \hline 18200 & 0,2 \\ \hline 1820 & \end{array} \qquad \begin{array}{r|l} 20020 & 9100 \\ \hline 18200 & 0,22 \\ \hline 18200 & \\ \hline 18200 & \\ \hline 0 & \end{array}$$

Javob: (C)

Izoh: O'nli kasrlarni bo'lishda kasr ko'rinishga olib o'tib, surgul suriladi so'ngra bo'linadi. kichikni kattaga bo'lganda "0" beriladi.

625. $0,12:0,4$ bo'lish amalini bajaring.

A) 24 B) 1,25 C) 0,3 D) $\frac{2}{3}$

626. $0,035:0,7$ bo'lish amalini bajaring.

A) 25 B) 0,05 C) $\frac{1}{24}$ D) 0,5

627. $4,3-3,5+1,44:3,6$ bo'lish amalini bajaring.

A) 5 B) 4 C) 1,2 D) $\frac{2}{3}$

628. $1,35:2,7+6,02-5,9+0,4:2,5$ bo'lish amalini bajaring.

A) 0,78 B) 0,5 C) $\frac{1}{24}$ D) 2

✓ $\frac{(36:1,2+0,3)\cdot 9}{0,2}$ amallarni bajaring.

A) 1363,5 B) $\frac{1}{2}$ C) $\frac{1}{6}$ D) 5

Yechimi:

$\{1\}$ $\{2\}$ $\{3\}$

$$\frac{(36:1,2+0,3)\cdot 9}{0,2}\{4\}=javob \qquad \{3\}\ 30,3\cdot 9=272,7$$

$$\{1\}\ 36:1,2=\frac{36}{1,2}=\frac{360}{12}=30 \qquad \begin{array}{r|l} 30,3 & \\ \hline 9, & \Rightarrow \\ \hline 272,7 & \end{array} \qquad \begin{array}{r|l} 303 & \\ \hline 9 & \\ \hline 2727 & \end{array}$$

$$\{2\}\ 30+0,3=30,3\Rightarrow 30,$$

$$+\ \underline{0,3}$$

$$30,3$$

$\{4\}$ $\frac{272,7}{0,2}=\frac{2727}{2}=1363,5$ **Javob: (A)**

629. $1\frac{1}{6}+1\frac{5}{6}\cdot(1,854:1,8-1,5\cdot 2,02)$ amallarni bajaring.

A) -4 B) $-2\frac{5}{6}$ C) 4 D) $-2\frac{1}{2}$

630. $\frac{5}{6}+2\cdot(0,63:0,6-1,6)$ amallarni bajaring.

A) $\frac{19}{30}$ B) $-\frac{4}{15}$ C) $\frac{8}{15}$ D) $-1\frac{1}{6}$

631. $\frac{3}{16}+\frac{1}{16}\cdot(0,312:0,3-3,15\cdot 1,6)$ amallarni bajaring.

A) $\frac{1}{4}$ B) $\frac{3}{16}$ C) $-\frac{1}{16}$ D) $-\frac{1}{8}$

Chekli va cheksiz o'nli kasrlar

✓ Qaysi javobda cheksiz o'nli kasr berilgan?

A) $3\frac{9}{40}$ B) $\frac{7}{16}$ C) $\frac{5}{18}$ D) $\frac{23}{25}$

Yechimi:

Qoida: maxrajini tub ko'paytuvchilar ajratganda 2 va 5 dan boshqa tub sonlar qatnashsa u cheksiz o'nli kasr bo'ladi

A) $3\frac{9}{40}\Rightarrow 40=2^3\cdot 5$ *chekli* *B)* $\frac{7}{16}\Rightarrow 16=2^4$ *chekli*

(C) $\frac{5}{18}\Rightarrow 18=3^2\cdot 2$ *cheksiz* *D)* $\frac{23}{25}\Rightarrow 25=5^2$ *chekli*

632. Qaysi javobda cheksiz o'nli keltirilgan?

A) $11\frac{7}{80}$ B) $1\frac{5}{64}$ C) $\frac{9}{28}$ D) $\frac{4}{125}$

633. Qaysi javobda cheksiz o'nli keltirilgan?

A) $\frac{9}{250}$ B) $18\frac{4}{65}$ C) $\frac{2}{625}$ D) $\frac{4}{125}$

634. Qaysi javobda cheksiz o'nli keltirilgan?

A) $2017\frac{11}{144}$ B) $9\frac{3}{320}$ C) $4\frac{9}{200}$ D) $\frac{8}{25}$

✓ Qaysi javobda cheksiz o'nli kasr berilgan?

A) $\frac{9}{15}$ B) $\frac{21}{28}$ C) $6\frac{10}{196}$ D) $\frac{39}{65}$

Yechimi:

Qoida: mahrajini tub ko'paytuvchilar ajratganda 2 va 5 dan boshqa **tub sonlar** qatnashsa u cheksiz o'nli kasr bo'ladi.

A) $\frac{9}{15}=\frac{\cancel{9}}{1\cancel{5}}=\frac{3}{5}\Rightarrow 5=5$ *chekli*

B) $\frac{21}{28}=\frac{2\cancel{1}}{2\cancel{8}}=\frac{7}{4}\Rightarrow 4=2^2$ *chekli*

C) $6\frac{10}{196}=6\frac{1\cancel{0}}{1\cancel{96}}=6\frac{5}{98}\Rightarrow 98=7^2\cdot 2$ *cheksiz*

D) $\frac{39}{65}=\frac{\cancel{39}}{\cancel{65}}=\frac{3}{5}\Rightarrow 5=5$ *chekli*

635. Qaysi javobda cheksiz o'nli kasr keltirilgan?

A) $\frac{9}{90}$ B) $\frac{8}{42}$ C) $\frac{6}{64}$ D) $\frac{12}{24}$

636. Qaysi javobda cheksiz o'nli kasr keltirilgan?

A) $\frac{18}{252}$ B) $\frac{30}{75}$ C) $\frac{6}{48}$ D) $\frac{11}{88}$

637. Qaysi javobda cheksiz o'nli kasr keltirilgan?

A) $\frac{27}{30}$ B) $\frac{51}{68}$ C) $\frac{64}{98}$ D) $\frac{25}{625}$

✓ Quyidagi oddiy kasr ko'rinishda berilgan sonlardan qaysilarini chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi?

1) $\frac{7}{40}$ 2) $\frac{3}{28}$ 3) $\frac{13}{35}$ 4) $\frac{18}{250}$

A) 1;2 B) 2;3 C) 3;4 D) 1;4

Yechimi: J: (B)

1) $\frac{7}{40} \Rightarrow 40 = 2^3 \cdot 5$ *chekli* 2) $\frac{3}{28} \Rightarrow 28 = 2^2 \cdot 7$ *cheksiz*

3) $\frac{13}{35} \Rightarrow 35 = 5 \cdot 7$ *cheksiz* 4) $\frac{18}{250} = \frac{18}{250} = \frac{9}{125} \Rightarrow 125 = 5^3$ *chekli*

638. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilari chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi?

1) $\frac{7}{32}$ 2) $\frac{11}{160}$ 3) $\frac{5}{48}$ 4) $\frac{5}{14}$

A) 2;4 B) 1;4 C) 3;4 D) 2;3

639. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilari chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi?

1) $\frac{14}{625}$ 2) $\frac{3}{64}$ 3) $\frac{32}{75}$ 4) $\frac{11}{375}$

A) 2;4 B) 3;4 ✓ C) 1;4 D) 2;3

640. Quyidagi oddiy kasr ko'rinishida berilgan sonlardan qaysilari chekli o'nli kasr ko'rinishiga keltirib bo'lmaydi?

1) $\frac{35}{88}$ 2) $\frac{4}{125}$ 3) $\frac{34}{75}$ 4) $\frac{11}{80}$

A) 2;3 B) 1;4 C) 3;4 D) 1;3 ✓

Cheksiz davriy o'nli kasrlar

✓ Qaysi javobda cheksiz davriy o'nli kasr berilgan?

A) $3\frac{9}{40}$ B) $\frac{5}{28}$ C) $\frac{5}{18}$ D) $\frac{23}{25}$

Yechimi:

Qoida: maxrajini tub ko'paytuvchilar ajratganda 3 soni qatnashsa u cheksiz davriy o'nli kasr bo'ladi.

A) $3\frac{9}{40} \Rightarrow 40 = 2^3 \cdot 5$ *chekli* *B)* $\frac{5}{28} \Rightarrow 28 = 2^2 \cdot 7$ *cheksiz*

(C) $\frac{5}{18} \Rightarrow 18 = 3^2 \cdot 2$ *cheksiz davriy o'nli kasr*

D) $\frac{23}{25} \Rightarrow 25 = 5^2$ *chekli* **Javob: (C)**

641. Qaysi javobda cheksiz davriy o'nli kasr keltirilgan?

A) $11\frac{7}{80}$ B) $1\frac{5}{75}$ C) $\frac{9}{28}$ D) $\frac{4}{125}$

642. Qaysi javobda cheksiz davriy o'nli kasr keltirilgan?

A) $\frac{27}{45}$ B) $18\frac{4}{65}$ C) $\frac{2}{625}$ D) $\frac{4}{48}$

643. Qaysi javobda cheksiz davriy o'nli kasr keltirilgan?

A) $2017\frac{11}{144}$ B) $9\frac{3}{320}$ C) $4\frac{9}{200}$ D) $\frac{8}{25}$

✓ 5,24343... ni davrini aniqlang.

A) (243) B) (43) C) (434) D) (4343)

Yechimi:

5,24343...

5,24343...

5,24343...

5,24343...

5,24343 = ...

Izoh: davrini aniqlashda oxiridan boshlash lozim, tagiga chizilgan sonlarga e'tibor bering.

644. ...aniqlang.

A) (4545) C) (45) D) (454)

645. ...aniqlang.

A) (3) C) (333) D) (0)

646. ...aniqlang.

A) (2) C) (727) D) (27)

647. ...aniqlang.

A) (2) C) (52) D) (222)

648. ...aniqlang.

A) (1777) C) (77) D) (7)

649. ...aniqlang.

A) (9) C) (01) D) (901)

650. 0,7 ni davrini aniqlang.

A) (1) B) ... C) (0) D) (7)

651. 0,301 ni davrini aniqlang.

A) (0) B) ... C) (01) D) (1)

652. 4,21 ni davrini aniqlang.

A) (2) B) ... C) (1) D) (0)

653. 9,3111... ni davrini aniqlang.

A) (31) B) ... C) (111) D) (11)

654. 2,705444... ni davrini aniqlang.

A) (705) B) (05) C) (4) D) (54)

655. 2,3191919... ni davrini aniqlang.

A) (319) B) (919) C) (9) D) (19)

✓ Qaysi javobda sof davriy o'nli kasr berilgan?

A) 5,21999... ...373...

C) 9.136 ...

Yechimi:

davriy o'nli kasrlar

I. sof davriy *II. aralash davriy*

4,888... 4.2388...

Qoida: butun qismidan so'ng darhol davr boshlansa u sof davriy o'nli kasr bo'ladi.

Masalan: 0,777...; 6.1515...; 754,2020...

A) 5,21999... $\Rightarrow$ 21999... *aralash*

B) 0,35737373... $\Rightarrow$ 3573... *aralash*

C) 9,136 $\Rightarrow$ 9,136(0) *aralash*

D) 4,666... $\Rightarrow$ 666... *sof*

656. Qaysi javobda sof davriy o'nli kasr keltirilgan?

A) 0,4545... B) 0,301 C) 0,5222... D) 0,21777...

657. Qaysi javobda sof davriy o'nli kasr keltirilgan?

A) 0,335656... B) 5,7272... C) 9,3111... D) 2,705444...

658. Qaysi javobda sof davriy o'nli kasr keltirilgan?

A) 2,31919... B) 1,901901... C) 0,7 D) 5,24343...

✓ 5,2121... ni oddiy kasr ko'rinishini aniqlang.

A) $5\frac{7}{33}$ B) $5\frac{7}{9}$ C) $5\frac{7}{99}$ D) $5\frac{1}{3}$

Yechimi:

$5,2121\ldots = 5,(21) = 5\frac{21}{99} = 5\frac{\cancel{21}}{\cancel{99}} = 5\frac{7}{33}$ **Javob: (A)**

Izoh: davrini aniqlab, davrda nechta raqam bo'lsa, shuncha mahrajga "9" yozilishi lozim.

$n,(c) = n\frac{c}{9}; \quad n,(ck) = n\frac{ck}{99}; \quad n,(ckm) = n\frac{ckm}{999};$

659. 0,333... ni oddiy kasr ko'rishini aniqlang.

A) $\frac{5}{99}$ B) $\frac{1}{9}$ C) $\frac{1}{2}$ D) $\frac{1}{3}$

660. 12,7272... ni oddiy kasr ko'rishini aniqlang.

A) $12\frac{7}{99}$ B) $12\frac{8}{99}$ C) $12\frac{1}{2}$ D) $12\frac{8}{11}$

661. 0,4545... ni oddiy kasr ko'rishini aniqlang.

A) $\frac{5}{99}$ B) $\frac{2}{45}$ C) $\frac{1}{2}$. D) $\frac{5}{11}$

662. 1,901901901... ni oddiy kasr ko'rishini aniqlang.

A) $1\frac{1}{99}$ B) $1\frac{90}{999}$ C)$1\frac{901}{999}$ D) 1,901

663. 8,555... ni oddiy kasr ko'rishini aniqlang.

A) $8\frac{5}{9}$ B) $8\frac{2}{5}$ C) 0,55 D) $8\frac{5}{11}$

664. 86,346346346... ni oddiy kasr ko'rishini aniqlang.

A) $86\frac{463}{999}$ B) $86\frac{346}{999}$ C) $86\frac{1}{2}$ D)$86\frac{5}{11}$

665. 0,(8) ni oddiy kasr ko'rishini aniqlang.

A) $\frac{5}{9}$ B) $\frac{2}{45}$ C) $\frac{8}{9}$ D) 0,88

666. 0,(5) ni oddiy kasr ko'rishini aniqlang.

A) $\frac{5}{99}$ B) 0,555 C) $\frac{5}{9}$ D)$\frac{5}{11}$

667. 3,(27) ni oddiy kasr ko'rishini aniqlang.

A) $3\frac{5}{99}$ B) $3\frac{2}{45}$ C) 0,27 D) $3\frac{3}{11}$

668. 25,(18) ni oddiy kasr ko'rishini aniqlang.

A) $25\frac{5}{99}$ B) $25\frac{2}{11}$ C) $25\frac{1}{2}$ D)$\frac{5}{11}$

669. 167,(89) ni oddiy kasr ko'rishini aniqlang.

A) $167\frac{5}{99}$ B) $16\frac{89}{99}$ C) $167\frac{89}{99}$ D)$167\frac{5}{11}$

✓ Qaysi javobda aralash davriy o'nli kasr berilgan?

A) 7,444 B) 0,35737373...

C) 9,3636... D) 4,666...

Yechimi:

davriy o'nli kasrlar

I.sof davriy *II.aralash davriy*

4,888... 4,23888...

Qoida: butun qismidan so'ng bir nechta raqam aralashib so'ngra davr boshlansa u aralash davriy o'nli kasr bo'ladi.

Masalan: 8,13777...; 6,21515...; 754,129292...

A) $7,444\ldots \Rightarrow 444\ldots$ *sof*

(B) $0,357373\ldots \Rightarrow 3573\ldots$ *aralash*

C) $9,3636\ldots \Rightarrow 36$ *sof* *D)* $4,666\ldots \Rightarrow 666\ldots$ *sof*

Javob: (B)

670. Qaysi javobda aralash davriy o'nli kasr keltirilgan?

A) 0,4545... B) 0,20303... C) 0,222... D) 0,2121...

671. Qaysi javobda aralash davriy o'nli kasr keltirilgan?

A) 0,335656... B) 5,7272... C) 9,111... D) 2,705705...

672. Qaysi javobda aralash davriy o'nli kasr keltirilgan?

A) 2,1919... B) 1,901901 ... C) 0,7 D) 5,4343...

✓ 0,730303... ni oddiy kasr ko'rinishini aniqlang.

A) $5\frac{7}{33}$ B) $5\frac{7}{9}$ C) $5\frac{7}{99}$ D) $\frac{241}{330}$

Yechimi:

$0,730303\ldots = 0,73(03) = \frac{7303-73}{9900} =$

$= \frac{7230}{9900} = \frac{\cancel{7230}}{\cancel{9900}} = \frac{\cancel{723}}{\cancel{990}} = \frac{241}{330}$

Izoh: butundan keying barcha sonlar yoziladi va davrgacha bo'lgani ayrilishi lozim.

$0,\underline{73}\underline{(03)} = \frac{7303-73}{9900}$ **Javob: (D)**

673. 0,23535...oddiy kasr ko'rishini aniqlang.

A) $\frac{5}{9}$ B) $\frac{233}{990}$ C) $\frac{8}{9}$ D) 0,235

674. 0,21333... ni oddiy kasr ko'rishini aniqlang.

A) $\frac{7}{150}$ B) $\frac{213}{900}$ C) $\frac{1}{2}$ D) $\frac{16}{75}$

675. 1,81212... ni oddiy kasr ko'rishini aniqlang.

A) $1\frac{7}{99}$ B) $1\frac{134}{165}$ C) $1\frac{812}{990}$ D) $1\frac{8}{11}$

676. 8,52727... ni oddiy kasr ko'rishini aniqlang.

A) $8\frac{29}{55}$ B) $8\frac{2}{55}$ C) $\frac{527}{990}$ D) $\frac{29}{55}$

677. 58,1282282.... ni oddiy kasr ko'rishini aniqlang.

A) 58,128 B) $58\frac{1282}{9990}$ C) $58\frac{1280}{9990}$ D) $58\frac{427}{3330}$

678. 2,6444.... ni oddiy kasr ko'rishini aniqlang.

A) $2\frac{29}{45}$ B) $8\frac{2}{5}$ C) 2,64 D) $8\frac{5}{11}$

679. 0,13888... oddiy kasr ko'rishini aniqlang.

A) $\frac{138}{999}$ B) 0,138 C) $\frac{5}{36}$ D) $\frac{5}{11}$

680. 4,4(35) ni oddiy kasr ko'rishini aniqlang.

A) $4\frac{43}{99}$ B) 4,3535 C) $4\frac{5}{99}$ D) $4\frac{431}{990}$

681. 24,23(5) ni oddiy kasr ko'rishini aniqlang.

A) $24\frac{235}{99}$ B) $24\frac{235}{990}$ C) $24,23(5)$ D) $24\frac{53}{225}$

682. 0,2(4) ni oddiy kasr ko'rishini aniqlang.

A) $\frac{11}{90}$ B) $\frac{2}{11}$ C) $\frac{11}{45}$ D) $\frac{2}{45}$

683. 10,9(1) ni oddiy kasr ko'rishini aniqlang.

A) $10\frac{41}{45}$ B) $10\frac{8}{9}$ C) $10\frac{89}{99}$ D) $10\frac{5}{11}$

✓ Quyidagi sonlardan qaysi biri 0,(2) ga teng ?

A) $\frac{1}{9}$ B) $\frac{4}{18}$ C) $\frac{2}{3}$ D) 0,222

Yechimi:

$0,(2)=\frac{2}{9}$ $(B)\frac{4}{18}=\frac{\cancel{4}}{\cancel{18}}=\frac{2}{9}$ **Javob: (B)**

Izoh: javoblarni qisqartirib qidirish lozim.

$0,222\neq 0,222\ldots$

684. Quyidagi sonlardan qaysi biri $0,(5)$ ga teng?

A) $\frac{1}{2}$ B) $\frac{10}{18}$ C) $\frac{1}{5}$ D) 0,555

685. Quyidagi sonlardan qaysi biri $0,(7)$ ga teng?

A) $\frac{7}{3}$ B) $\frac{5}{9}$ C) $\frac{14}{18}$ D) 0,777

686. Quyidagi sonlardan qaysi biri $0,(4)$ ga teng?

A) $\frac{12}{27}$ B) $\frac{10}{18}$ C) $\frac{4}{3}$ D) 0,444

✓ 0,(8)+3,(7) ni hisoblang.

A) $\frac{1}{9}$ B) $4\frac{2}{3}$ C) $3\frac{2}{3}$ D) 0,222

Yechimi: $0,(8)=\frac{8}{9}$; $3,(7)=3\frac{7}{9}$

$0,(8)+3,(7)=\frac{8}{9}+3\frac{7}{9}=3\frac{8+7}{9}=3+\frac{15}{9}=3+1\frac{6}{9}=4\frac{6}{9}=4\frac{2}{3}$

687. 0,(5)+0,(1) ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{2}{3}$ C) $\frac{2}{9}$ D) 0,666

688. 0,(3)+0,(8) ni hisoblang.

A) $1\frac{4}{9}$ B) $1\frac{1}{3}$ C) $1\frac{2}{9}$ D) 1,(1)

689. 3,2(62)–1,(15) ni hisoblang.

A) 2,2 (47) B) 2,(12) C) 2,(1) D) 2,247

✓ a, b va c sonlar uchun $a=0,6(4)$; $b=\frac{59}{90}$; $c=1-0,36(9)$; quyidagi munosabatlardan qaysi biri o'rinli?

A) $a<c<b$ B) $b<c<a$

C) $c<a<b$ D) $c<b<a$

Yechimi:

$a=0,6(4)=0,6444\ldots$

$b=\frac{59}{90}=0,6555\ldots$

$59|90 \Rightarrow 590|90$ $590|90$

$0,$ 540 $0,6555\ldots$

500

450

$50\ldots$ **Javob:** (C)

$c=1-0,36(9)=0,63$

$1,0000\ldots0$ $-0,3699\ldots9$ $0,6300\ldots1$

$a=0,6444\ldots$ $b=0,6555\ldots$ $c=0,63$ $\Big\}c<a<b$

690. ushbu $a=0,5(3)$; $b=\frac{47}{90}$; $c=1-0,48(1)$; sonlari uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $a<b<c$ B) $c<b<a$

C) $b<a<c$ D) $a<c<b$

691. ushbu $a=1-0,3(5)$; $b=\frac{2}{3}$; $c=0,6(5)$; sonlari uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $a<b<c$ B) $c<b<a$

C) $b<a<c$ D) $a<c<b$

692. ushbu $a=0,7(2)$; $b=\frac{11}{15}$; $c=1-0,2(8)$; sonlari uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $a<b<c$ B) $c<b<a$

C) $b<a<c$ D) $c<a<b$

693. Sonlarni kamayish tartibida yozing.

$a=2,(4)$; $b=2,5-\frac{1}{8}$; $c=1,2:0,5$;

A) $a>b>c$ B) $c>b>a$

C) $a>c>b$ D) $c>a>b$

694. Sonlarni kamayish tartibida yozing.

$a=0,55(57)$; $b=0,5(557)$; $c=0,555(7)$;

A) $a>b>c$ B) $c>a>b$

C) $a>c>b$ D) $b>a>c$

✓ Davri 0 yoki 9 dan farqli bo'lgan cheksiz davriy o'nli kasrlarni ko'rsating?

$m=2,3266\ldots$; $n=\frac{7}{99}$; $p=\frac{5}{16}$; $q=7,145222\ldots$; $l=3,222$

A) m,n B) m,q C) m,n,q D) m,n,p

Yechimi:

$m=2,3266\ldots=2,32(6)\Rightarrow(6)$ $n=\frac{7}{99}=0,(07)\Rightarrow(07)$

$p=\frac{5}{16}=0,3125\Rightarrow(0)$ $q=7,145222\ldots;\Rightarrow(2)$ $l=3,222\Rightarrow(0)$

Javob: m,n,q

695. Davri 0 yoki 9 dan farqli bo'lgan cheksiz davriy o'nli kasrlarni ko'rsating?

$m=\frac{2}{3}$; $n=5,42$; $p=\frac{5}{8}$; $q=6,545111\ldots$; $l=0,777\ldots$

A) m,n B) m,q,l C) m,n,q D) m,n,p

696. Davri 0 yoki 9 dan farqli bo'lgan cheksiz davriy o'nli **kasrlarni ko'rsating?**

$m = \frac{1}{0,33}$; $n = 0,63(8)$; $p = 247,123123...$; $q = \frac{172}{99}$; $l = \frac{17}{20}$

A) m,n B) m,q,l C) m,n,q,p D) m,n,p

697. Davri 0 yoki 9 dan farqli bo'lgan cheksiz davriy o'nli **kasrlarni** ko'rsating?

$m = \frac{5}{12}$; $n = 5$; $p = 45,25$; $q = 2,77...$; $l = 0,777...$

A) m,n B) m,q,l C) $m,n,q,$ D) m,n,p

✓ $13,5 \cdot 5,8 - 8,3 \cdot 4,2 - 5,8 \cdot 8,3 + 13,5 \cdot 4,2$ ni hisoblang.

A) 50 B) 70 C) 40 D) 60

Yechimi:

$13,5 \cdot 5,8 - 8,3 \cdot 4,2 - 5,8 \cdot 8,3 + 4,2 \cdot 13,5 =$

$13,5 \cdot \overline{\overline{5,8}} - 8,3 \cdot 4,2 - \overline{\overline{5,8}} \cdot 8,3 + 4,2 \cdot 13,5 =$

$= 5,8 \cdot (13,5 - 8,3) + 4,2 \cdot (-8,3 + 13,5) =$

$= 5,8 \cdot 5 + 4,2 \cdot 5 = 5 \cdot (5,8 + 4,2) = 5 \cdot 10 = 50$

Javob: (A)

Izoh: Qavsdan tashqariga chiqadiganini qidirib toppish lozim.

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698. $19,9 \cdot 18 - 19,9 \cdot 16 + 30,1 \cdot 15 - 30,1 \cdot 13$ ni hisoblang.

A) 110 B) 102 C) 98 D) 100

699. $12,7 \cdot 64 + 17,3 \cdot 36 + 12,7 \cdot 36 + 17,3 \cdot 64$ ni hisoblang.

A) 3000 B) 2000 C) 1800 D) 3600

700. $109 \cdot \underline{9,17} - 5,37 \cdot 72 - 37 \cdot \underline{9,17} + 1,2 \cdot \underline{72}$ ni hisoblang.

A) 360 B) 280 C) 350 D) 380

✓ $3,4 \cdot 2,6 + 1,3 \cdot 2,6 + 5,3 \cdot 0,7 + 5,3 \cdot 1,9$ ni hisoblang.

A) 24,4 B) 22,6 C) 22,6 D) 28,6

Yechimi:

$3,4 \cdot \overline{2,6} + 1,3 \cdot \overline{2,6} + \overline{\overline{5,3}} \cdot 0,7 + \overline{\overline{5,3}} \cdot 1,9 =$

$= 2,6 \cdot (3,4 + 1,3) + 5,3 \cdot (0,7 + 1,9) =$ **J: (D)**

$= \underline{2,6} \cdot 5,7 + 5,3 \cdot \underline{2,6} = \underline{2,6} \cdot (5,7 + 5,3) =$

$= 2,6 \cdot 11 = 28,6$

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701. $\underline{3,3} \cdot 3,8 + 3,3 \cdot 1,6 + 2,7 \cdot 4,6 + 0,6 \cdot 4,6$ ni hisoblang.

A) 130 B) 330 C) 99 D) 33

702. $1,7 \cdot 2,3 - 1,7 \cdot 1,5 + 0,8 \cdot 2,2 - 0,8 \cdot 0,5$ ni hisoblang.

A) 2,72 B) 1,36 C) 2,52 D) 2,82

703. $2,5 \cdot 3,5 - 1,6 \cdot 2,5 + 1,9 \cdot 0,7 + 0,8 \cdot 1,9$ ni hisoblang.

A) 7,6 B) 7,36 C) 6,62 D) 8,6

✓ $\frac{3}{4}$ *va* $\frac{8}{9}$ sonlari orasida maxraji 36 ga teng bo'lgan nechta kasr son bor?

A) 1 B) 2 C) 4 D) 3

Yechimi:

$\frac{3}{4} \cdots \frac{8}{9} \Rightarrow \frac{3 \cdot 9}{4 \cdot 9} \cdots \frac{8 \cdot 4}{9 \cdot 4}$

$\frac{27}{36} \cdots \frac{32}{36} \Rightarrow \frac{27}{36} \underbrace{\frac{28}{36}, \frac{29}{36}, \frac{30}{36}, \frac{31}{36}}_{4\ ta} \frac{32}{36},$

Izoh: Umumiy mahrajga keltirish uchun ularni surat va mahrajini bir xil songa ko'paytirish lozim. $\frac{3 \cdot \overline{\overline{9}}}{4 \cdot \overline{\overline{9}}} \cdots \frac{8 \cdot \underline{4}}{9 \cdot \underline{4}}$

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704. $\frac{2}{3}$ *va* $\frac{5}{6}$ sonlari orasida maxraji 30 ga teng bo'lgan nechta kasr son bor?

A) 1 B) 2 C) 4 D) 3

705. $\frac{7}{15}$ *va* $\frac{13}{20}$ sonlari orasida maxraji 60 ga teng bo'lgan nechta kasr son bor?

A) 10 B) 11 C) 9 D) 12

706. $\frac{1}{8}$ *va* $\frac{5}{12}$ sonlari orasida maxraji 24 ga teng bo'lgan nechta kasr son bor?

A) 8 B) 7 C) 5 D) 6

✓ Natural sonni 18 ga bo'lganda, bo'linma 15 ga, qoldiq 3 ga teng bo'ldi bo'linuvchini toping.

A) 173 B) 243 C) 273 D) 253

Yechimi:

$\left.\begin{array}{l} a \,\underline{|\, b} \\ \underline{\quad}\ c \\ \ r \end{array}\right\} a = b \cdot c + r$ $\underbrace{ya'ni}$ $\Downarrow$

$Bo'linuvchi = bo'luvchi \cdot bo'linma + qoldiq$

$Bo'linuvchi = 18 \cdot 15 + 3 = 273$

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707. Natural sonni 21 ga bo'lganda, bo'linma 15 ga, qoldiq 4 ga teng bo'ldi bo'linuvchini toping.

A) 315 B) 319 C) 300 D) 353

708. Natural sonni 11 ga bo'lganda, bo'linma 13 ga, qoldiq 3 ga teng bo'ldi bo'linuvchini toping.

A) 146 B) 143 C) 273 D) 153

709. Natural sonni 43 ga bo'lganda, bo'linma 25 ga, qoldiq 18 ga teng bo'ldi bo'linuvchini toping.

A) 1003 B) 1083 C) 1093 D) 1075

710. Natural sonni 7 ga bo'lganda, bo'linma 104 ga, qoldiq 6 ga teng bo'ldi bo'linuvchini toping.

A) 714 B) 724 C) 704 D) 734

ALGEBRA

Daraja va uning xossalari

✓ 3^5 ni darajaga ko'taring.

A) 173 B) 273 C) 243 D) 253

Yechimi:

$a^n = \underbrace{a \cdot a \cdot a \cdot \ldots \cdot a}_{n\ ta}$ $a^n - a$ *ning n chi darajasi* **J: (C)**

$3^5 = 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 = 243$ $a -$ *daraja asosi*

Izoh: Darajada nechi bo'lsa, asosini shuncha marta ko'paytirilishi lozim:

$7^2 = 7 \cdot 7 = 49$

711. 2^4 ni darajaga ko'taring.
A) 32 B) 8 C) 16 D) 4

712. 5^3 ni darajaga ko'taring.
A) 125 B) 25 C) 16 D) 10

713. 4^4 ni darajaga ko'taring.
A) 32 B) 256 C) 16 D) 64

714. 3^4 ni darajaga ko'taring.
A) 81 B) 12 C) 16 D) 4

715. 8^4 ni darajaga ko'taring.
A) 32 B) 4096 C) 16 D) 512

716. 7^5 ni darajaga ko'taring.
A) 49 B) 343 C) 16807 D) 16800

717. 9^3 ni darajaga ko'taring.
A) 27 B) 81 C) 729 D) 36

718. 10^3 ni darajaga ko'taring.
A)10000 B) 1000 C) 100 D) 30

719. $2^4 \cdot (-15)$ ni darajaga ko'taring.
A) 120 B) -250 C) 240 D) -240

720. $5^3 \cdot 4$ ni darajaga ko'taring.
A) 500 B) 125 C) 400 D) 129

721. 7^2+3^3 ni darajaga ko'taring.
A) 49 B) 86 C) 76 D) 27

722. 10^2-3^2 ni darajaga ko'taring.
A) 91 B) 81 C) 71 D) 100

723. $11-3^4$ ni darajaga ko'taring.
A) –70 B) 70 C) –1 D) –60

724. $(10-7)^2$ ni darajaga ko'taring.
A) 32 B) 8 C) 9 D) 4

725. $(6+8)^2$ ni darajaga ko'taring.
A) 169 B) 196 C) 289 D) 186

726. 4^3-2^2 ni darajaga ko'taring.
A) 32 B) 8 C) 16 D) 60

✓ $2,3^3$ ni darajaga ko'taring.
A) 17,3 B) 12,167 C) 2,73 D) 12,16

Yechimi: $2,3^3=2,3\cdot 2,3\cdot 2,3=12,167$ **Javob: (B)**
Izoh: o'nli kasrlarda ham shu ishni bajarilishi lozim.

727. $0,5^2$ ni darajaga ko'taring.
A) 25 B) 2,5 C) 0,25 D) 4

728. $2,5^2$ ni darajaga ko'taring.
A) 6,25 B) 62,5 C) 425 D) 625

729. $1,5^3$ ni darajaga ko'taring.
A) 32 B) 33,75 C) 337,5 D) 3,375

730. $1,1^3$ ni darajaga ko'taring.
A) 1331 B) 1,331 C) 13,31 D) 133,1

✓ $1\frac{1}{9}\cdot 0,27-3\frac{1}{3}\cdot 0,15-1500\cdot 0,1^3$ ni hisoblang.

A) $\frac{7}{10}$ B) $-1\frac{7}{10}$ C) $1\frac{7}{10}$ D) 3

Yechimi:

$$1\frac{1}{9}\cdot 0,27-3\frac{1}{3}\cdot 0,15-1500\cdot 0,1^3=$$

$$=\frac{10}{9}\cdot\frac{27}{100}-\frac{10}{3}\cdot\frac{3}{20}-1500\cdot 0,001=$$

$$=\frac{\cancel{10}}{\cancel{9}}\cdot\frac{27^{3}}{\cancel{100}_{\cancel{10}}}-\frac{\cancel{10}}{\cancel{3}}\cdot\frac{\cancel{3}}{\cancel{20}_{2}}-1500\cdot\frac{1}{1000}=$$

$$=\frac{3}{10}-\frac{1}{2}-\frac{1\cancel{5}}{\cancel{10}}=\frac{{}^{1}3}{10}-\frac{{}^{5}1}{2}-\frac{{}^{5}3}{2}=\frac{3-5-15}{10}=$$

$$=\frac{-17}{10}=-1\frac{7}{10}$$

Izoh: Tezroq ishlashda shunday qilingani ma'qul ya'ni bir necha amallarni birgalikda bajarish lozim.

731. $\left(1,6^2-2,2\cdot\frac{3}{11}\right):1,4$ ni hisoblang.
A) 1,4 B) 1,2 C) 1,6 D) 1,8

732. $\left(\frac{5}{6}\cdot 5-5\right):\frac{2}{3}-0,5^2$ ni hisoblang.
A) -1,5 B) -1 C) 0,5 D) 1

733. $\left(\frac{2}{3}:3-1\right)\cdot 1,5^2-0,25$ ni hisoblang.
A) -2 B) 2 C) -1 D) 4

✓ $(-3)^5$ ni darajaga ko'taring.
A) 173 B) -243 C) 273 D) 253

Yechimi:

$$(-a)^n=\begin{cases} n \;\; juft = a^n \\ n \;\; toq = -a^n \end{cases}$$ **Javob: (B)**

$$(-3)^5=-3^5=-243$$

Izoh: Manfiy sonning darajasi toq bo'lsa"-", juft bo'lsa, "+" bo'lishi lozim.

734. $(-2)^4$ ni darajaga ko'taring.
A) 32 B) 8 C) 16 D) 4

735. $(-5)^3$ ni darajaga ko'taring.
A) 125 B) 25 C)-25 D) -125

736. $(-4)^2$ ni darajaga ko'taring.
A) 32 B) 8 C) 16 D) 64

737. $(-6)^3$ ni darajaga ko'taring.
A) -81 B) -243 C) -216 D) 4

738. $(-2)^3$ ni darajaga ko'taring.
A) 32 B) -8 C) -16 D) 512

739. $(-7)^3$ ni darajaga ko'taring.

A) -49 B) -343 C) 16807 D) 16800

740. $(-9)^2$ ni darajaga ko'taring.

A) 27 B) 81 C) 729 D) 36

741. $-1^3+(-2)^3$ ni darajaga ko'taring.

A) -9 B) 9 C) -1 D) -8

742. $10-5\cdot 2^4$ ni darajaga ko'taring.

A) 70 B) -70 C) -60 D) -80

743. $3^4-4\cdot(0,4)^2\cdot 6,25$ ni darajaga ko'taring.

A) 81 B) -77 C) 77 D) 129

744. $-6^2-(-1)^4$ ni darajaga ko'taring.

A) -49 B) -37 C) -76 D) -35

745. $-3^4-3\cdot 2^4$ ni darajaga ko'taring.

A) -33 B) 33 C) 63 D) -129

746. $0,2\cdot 3^3-0,4\cdot 2^4$ ni darajaga ko'taring.

A) -70 B) 70 C) -1 D) -60

747. $-8^3+(-3)^3$ ni darajaga ko'taring.

A) 549 B) -539 C) 539 D) -529

748. $2\cdot 5^3+5\cdot 2^3$ ni darajaga ko'taring.

A) 160 B) 190 C) 290 D) 280

✓ Quyidagi ifodalardan qaysi biri -1 ga teng?

A) $\left((-1)^2\right)^3$ B) $\left(-(-1)^2\right)^3$ C) $\left((-1)^3\right)^2$ D) $\left(-(-1)^3\right)^3$

Yechimi:

Bu turdagi savollarda ichidan boshlab hisoblab chiqish lozim.

$A)\ \left((-1)^2\right)^3=\left(\underset{1}{(-1)^2}\right)^3=(1)^3=1$

$B)\ \left(-(-1)^2\right)^3=\left(\underset{1}{-(-1)^2}\right)^3=(-1)^3=-1$

$C)\ \left((-1)^3\right)^2=\left(\underset{-1}{(-1)^3}\right)^2=(-1)^2=1$

$D)\ \left(-(-1)^3\right)^3=\left(\underset{-1}{-(-1)^3}\right)^3=(+1)^3=1$ **Javob: (B)**

Izoh: 1- Darajaga ko'tarishda ichida toq bo'lsa, "-1" juft bo'lsa, 1 qo'yildi.

749. Quyidagi ifodalardan qaysi biri -1 ga teng?

A) $\left(-(-1)^2\right)^4$ B) $\left(-(-1)^3\right)^3$ C) $\left((-1)^3\right)^{2017}$ D) $\left(-(-1)^5\right)^3$

750. Quyidagi ifodalardan qaysi biri -1 ga teng?

A) $\left((-1)^2\right)^5$ B) $\left(-(-1)^4\right)^3$ C) $\left(-(-1)^5\right)^{2019}$ D) $\left((-1)^2\right)^3$

751. Quyidagi ifodalardan qaysi biri 1 ga teng?

A) $\left(-(-1)^2\right)^4$ B) $\left((-1)^3\right)^3$ C) $\left((-1)^7\right)^{2001}$ D) $\left(-(-1)^8\right)^5$

✓ 2017^0 ni darajaga ko'taring.

A) 1 B) 0 C) *aniqlab bo'lmaydi* D) 315478

Yechimi:

$a^0=1$ | $2017^0=1$

$a^0=1$

$a\neq 0$ *ya'ni* 0^0 *– ma'noga ega emas*

Javob: (A)

Izoh: Istalgan sonning 0 chi darajasi 1ga teng.

752. $1346,4564545^0$ ni darajaga ko'taring.

A) 0 B) 1 C) *aniqlab bo'lmaydi* D) 4

753. $1346,4564545^0$ ni darajaga ko'taring.

A) 0 B) 1 C) *aniqlab bo'lmaydi* D) 4

754. $\left(\frac{6}{1354}\right)^0$ ni darajaga ko'taring.

A) 0 B) 1 C) *aniqlab bo'lmaydi* D) 4

755. 1000^0 ni darajaga ko'taring.

A) 0 B) 1 C) *aniqlab bo'lmaydi* D) 4

756. $0,0009^0$ ni darajaga ko'taring.

A) 0 B) 1 C) *aniqlab bo'lmaydi* D) 4

✓ $nnnnn$ ni daraja ko'rinishini toping.

A) n^3 B) n^6 C) n^5 D) n^4

Yechimi:

$nnnnn=n\cdot n\cdot n\cdot n\cdot n=n^5$

$a^n=\underbrace{a\cdot a\cdot\ldots\cdot a}_{n\ ta}$ **Javob: (C)**

endi teskarisi so'ralmoqda ya'ni

$a^n=\underbrace{a\cdot a\cdot\ldots\cdot a}_{n\ ta}=a^n$

Izoh: harflar orasiga hech qanday amallar (*,+,–,:) yo'q, bu ko'paytirish bor deb tushuniladi.

757. $cccccccc$ ni daraja ko'rinishini toping.

A) c^8 B) c^7 C) c^9 D) c^{10}

758. $0,3\cdot 0,3\cdot 0,3\cdot 0,3\cdot 0,3$ ni daraja ko'rinishini toping.

A) $0,3^4$ B) $0,3^5$ C) $0,3^6$ D) $0,3^8$

759. $\left(-\frac{2}{3}\right)\cdot\left(-\frac{2}{3}\right)\cdot\left(-\frac{2}{3}\right)$ ni daraja ko'rinishini toping.

A) $\left(-\frac{2}{3}\right)^5$ B) $\left(-\frac{2}{3}\right)^4$ C) $\left(-\frac{2}{3}\right)^3$ D) $\left(-\frac{2}{3}\right)^2$

760. $(-7)\cdot(-7)\cdot(-7)\cdot(-7)$ ni daraja ko'rinishini toping.

A) $(-7)^7$ B) $(-7)^6$ C) $(-7)^5$ D) $(-7)^4$

761. $\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2}\cdot\frac{1}{2}$ ni daraja ko'rinishini toping.

A) $\left(\frac{1}{2}\right)^5$ B) $\left(\frac{1}{2}\right)^4$ C) $\left(\frac{1}{2}\right)^3$ D) $\left(\frac{1}{2}\right)^6$

762. $(-x)(-x)(-x)(-x)(-x)$ ni daraja ko'rinishini toping.

A) $(-x)^8$ B) $(-x)^5$ C) $(-x)^6$ D) $(-x)^7$

763. $(a-b)\cdot(a-b)$ ni daraja ko'rinishini toping.

A) $(a-b)^4$ B) $(a-b)^3$

C) $(a-b)^2$ D) $(a-b)^5$

764. $(xy)(xy)(xy)(xy)(xy)(xy)$ ni daraja ko'rinishini toping.

A) $(xy)^8$ B) $(xy)^7$ C) $(xy)^9$ D) $(xy)^6$

765. $\underbrace{yy\cdots y}_{15\ marta}$ ni daraja ko'rinishini toping.

A) y^{11} B) y^{15} C) y^{12} D) y^{10}

766. $\underbrace{5\cdot 5\ldots 5}_{25}$ ni daraja ko'rinishini toping.

A) 5^{25} B) 5^{22} C) 5^{52} D) 25^{25}

✓ $x^5\cdot x$ ni daraja ko'rinishini toping.

A) x^3 B) x^6 C) x^5 D) x^4

Yechimi:

Formula: $a^n\cdot a^m=a^{n+m}$ | *misol*: $x^5\cdot x=x^5\cdot x^1=x^{5+1}=x^6$ **Javob: (B)**

Izoh: ifodadagi "x" ning darajasida hech nima qo'yilmagan bu esa "1" bor degani $x^5\cdot x=x^5\cdot x^1$

767. $c^7\cdot c^3$ ni daraja ko'rinishini toping.

A) c^8 B) c^{11} C) c^9 D) c^{10}

768. $b^8\cdot b^{15}$ ni daraja ko'rinishini toping.

A) b^{22} B) b^{23} C) b^{20} D) b^{23}

769. $\left(-\frac{2}{3}\right)^6\cdot\left(-\frac{2}{3}\right)^4$ ni daraja ko'rinishini toping.

A) $\left(-\frac{2}{3}\right)^5$ B) $\left(-\frac{2}{3}\right)^{10}$ C) $\left(-\frac{2}{3}\right)^9$ D) $\left(-\frac{2}{3}\right)^2$

770. $7^5\cdot 7$ ni daraja ko'rinishini toping.

A) 7^5 B) 7^6 C) 7^5 D) 7^4

771. $m^3\cdot m^8$ ni daraja ko'rinishini toping.

A) m^{11} B) m^{12} C) m^{10} D) m^{13}

772. $3^3\cdot 3^3$ ni daraja ko'rinishini toping.

A) 3^8 B) 3^5 C) 3^6 D) 3^7

773. $p^3\cdot p^{11}$ ni daraja ko'rinishini toping.

A) p^{16} B) p^{14} C) p^{15} D) p^{17}

✓ $x^2x^5x^4$ ni daraja ko'rinishini toping.

A) x^3 B) x^6 C) x^{10} D) x^{11}

Yechimi:

$a^n\cdot a^m=a^{n+m}$ | $x^2\cdot x^5\cdot x^4=x^{2+5+4}=x^{11}$ **Javob: (D)**

Izoh: ko'paytmalar nechta bo'lishidan qat'iy nazar darajalari qo'shilishi lozim.

774. $mm^3m^2m^5$ ni daraja ko'rinishini toping.

A) m^{13} B) m^{12} C) m^{11} D) m^{10}

775. $10^3\cdot 10^2\cdot 10^5$ ni daraja ko'rinishini toping.

A) 10^8 B) 10^7 C) 10^9 D) 10^{10}

776. $y^{23}y^3y$ ni daraja ko'rinishini toping.

A) y^{27} B) y^{28} C) y^{25} D) y^{29}

777. $a^4a^3a^2$ ni daraja ko'rinishini toping.

A) a^8 B) a^4 C) a^9 D) a^{10}

778. xx^4x^4x ni daraja ko'rinishini toping.

A) x^8 B) x^7 C) x^9 D) x^{10}

779. $3^4\cdot 3^3\cdot 3^{12}\cdot 3$ ni daraja ko'rinishini toping.

A) 3^{27} B) 3^{19} C) 3^{27} D) 3^{20}

780. $5\cdot 5^{14}\cdot 5^3\cdot 5^5$ ni daraja ko'rinishini toping.

A) 5^{22} B) 5^{23} C) 5^{21} D) 5^{20}

✓ $x^n\cdot x^3$ ni daraja ko'rinishini toping.

A) x^{n+3} B) x^{n+6} C) x^{n+10} D) x^{11}

Yechimi:

Formula: $a^n\cdot a^m=a^{n+m}$ | *misol*: $x^n\cdot x^3=x^{n+3}$ **Javob: (A)**

Izoh: ko'paytmaning darajasida qanday son bo'lishidan qat'iy nazar darajalari qo'shilishi lozim.

781. $a^5\cdot a^{4g}$ ni daraja ko'rinishini toping.

A) a^{4+5g} B) a^{5+4g} C) a^{4+g} D) a^{5+g}

782. $3^m\cdot 3^2$ ni daraja ko'rinishini toping.

A) 3^{m+1} B) 3^{m+4} C) 3^{m+3} D) 3^{m+2}

783. $y^c\cdot y$ ni daraja ko'rinishini toping.

A) y^{c+1} B) y^{c+2} C) y^c D) y^{10}

784. $k^9\cdot k^n$ ni daraja ko'rinishini toping.

A) k^{9+n} B) k^{8+n} C) k^{7+n} D) k^n

785. $c\cdot c^y$ ni daraja ko'rinishini toping.

A) c^{1+y} B) c^{2+y} C) c^{3+y} D) c^y

✓ $5^8 \cdot 25$ ni daraja ko'rinishini toping.

A) 5^3 B) 5^6 C) 5^{10} D) 5^{11}

Yechimi:

Formula: $a^n \cdot a^m = a^{n+m}$ | *misol:* $5^8 \cdot 25 = 5^8 \cdot 5^2 = 5^{10}$ **Javob: (C)**

Izoh: ko'paytmalarni asossini bir xilga keltirib ularni darajalarini qo'shish lozim. $5^8 \cdot 25 = 5^8 \cdot 5^2$

$2^2 = 4$	$2^6 = 64$	$3^2 = 9$
$2^3 = 8$	$2^7 = 128$	$3^3 = 27$
$2^4 = 16$	$2^8 = 256$	$3^4 = 81$
$2^5 = 32$	$2^9 = 512$	$3^5 = 243$
	$2^{10} = 1024$	$3^6 = 729$

$4^2 = 16$	$5^2 = 25$	$6^2 = 36$
$4^3 = 64$	$5^3 = 125$	$6^3 = 216$
$4^4 = 256$	$5^4 = 625$	

$7^2 = 49$	$9^2 = 81$	$10^2 = 100$
$7^3 = 343$	$9^3 = 729$	$10^3 = 1000$

786. 8 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^2 B) 2^4 C) 2^3 D) 2^5

787. 32 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^2 B) 2^4 C) 2^3 D) 2^5

788. 128 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^6 C) 2^3 D) 2^5

789. 16 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^4 C) 2^3 D) 2^5

790. 64 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^6 C) 2^3 D) 2^5

791. 256 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^6 C) 2^3 D) 2^8

792. 1024 ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^6 C) 2^{10} D) 2^8

793. $2 \cdot 16$ ni asosi 2 bo'lgan daraja ko'rinishini toping

A) 2^5 B) 2^6 C) 2^{10} D) 2^8

794. $2^9 \cdot 64$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^{15} B) 2^{16} C) 2^{10} D) 2^6

795. $2^7 \cdot 128$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^{15} B) 2^{16} C) 2^{14} D) 2^6

796. $2^{10} \cdot 32 \cdot 256$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^{22} B) 2^{23} C) 2^{24} D) 2^{26}

797. $2^n \cdot 8$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^{n+4} B) 2^{n+5} C) 2^{n+3} D) 2^{n-6}

798. $16 \cdot 2^k$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^{4+k} B) 2^{3+n} C) 2^{5+n} D) 2^{8+n}

799. 27 ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^2 C) 3^3 D) 3^5

800. 9 ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^2 C) 3^3 D) 3^5

801. 81 ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^2 C) 3^3 D) 3^5

802. 243 ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^2 C) 3^3 D) 3^5

803. 729 ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^6 C) 3^3 D) 3^5

804. $27 \cdot 3^3$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^6 C) 3^3 D) 3^5

805. $243 \cdot 3^5$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{10} B) 3^6 C) 3^9 D) 3^5

806. $3^k \cdot 81$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{k+4} B) 3^{k+3} C) 3^{k+2} D) 3^{k-5}

807. $9 \cdot 3^{5k}$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{2+5k} B) 3^{3+5k} C) 3^{2+k} D) 3^{3+k}

✓ $x^5 : x^3$ ni daraja ko'rinishini toping.

A) x^3 B) x^6 C) x^5 D) x^2

Yechimi:

Formula: $a^n : a^m = a^{n-m}$ | *misol:* $x^5 : x^3 = x^{5-3} = x^2$ **Javob: (D)**

Izoh: asoslar bir xil bo'lib, orasida bo'lish bo'lsa, ularni darajalarini ayrish lozim. $x^5 : x^3 = x^{5-3}$

808. $c^7 : c^3$ ni daraja ko'rinishini toping.

A) c^4 B) c^7 C) c^9 D) c^{10}

809. $b^{19} : b^{18}$ ni daraja ko'rinishini toping.

A) b B) b^2 C) b^{20} D) b^{23}

810. $\left(-\frac{2}{3}\right)^{21} : \left(-\frac{2}{3}\right)$ ni daraja ko'rinishini toping.

A) $\left(-\frac{2}{3}\right)^{22}$ B) $\left(-\frac{2}{3}\right)^{20}$ C) $\left(-\frac{2}{3}\right)^{9}$ D) $\left(-\frac{2}{3}\right)^{12}$

811. $7^{12} : 7^3$ ni daraja ko'rinishini toping.

A) 7^7 B) 7^9 C) 7^{20} D) 7^4

812. $m^{10} : m^7$ ni daraja ko'rinishini toping.

A) m^{17} B) m^{12} C) m^{10} D) m^3

813. $3^3 : 3^3$ ni daraja ko'rinishini toping.

A) 3^6 B) 1 C) 3 D) 3^8

814. $p^{39}:p^{25}$ ni daraja ko'rinishini toping.

A) p^{16} B) p^{14} C) p^{15} D) p^{17}

✓ $x^n:x^3$ ni daraja ko'rinishini toping.

A) x^{n+3} B) x^{n-3} C) x^{n+10} D) x^{11}

Yechimi:

Formula: $a^n:a^m=a^{n-m}$ *misol*: $x^n:x^3=x^{n-3}$ **Javob: (B)**

Izoh: Bo'linmaning darajasida qanday son bo'lishidan qat'iy nazar darajalari ayrilishi lozim.

815. $a^5:a^{4g}$ ni daraja ko'rinishini toping.

A) a^{4-5g} B) a^{5+4g} C) a^{5-4g} D) a^{5-g}

816. $3^m:3^2$ ni daraja ko'rinishini toping.

A) 3^{m-2} B) 3^{m+4} C) 3^{m-3} D) 3^{m+2}

817. $y^c:y$ ni daraja ko'rinishini toping.

A) y^{c-2} B) y^{c+1} C) y^c D) y^{c-1}

818. $k^9:k^n$ ni daraja ko'rinishini toping.

A) k^{9+n} B) k^{9-n} C) k^{7-n} D) k^n

819. $c:c^y$ ni daraja ko'rinishini toping.

A) c^{1-y} B) c^{1+y} C) c^{3+y} D) c^y

✓ $5^8:25$ ni asosi 5 bo'lgan daraja ko'rinishini toping.

A) 5^3 B) 5^6 C) 5^{10} D) 5^{11}

Yechimi:

Formula: $a^n:a^m=a^{n-m}$ *misol*: $5^8:25=5^8:5^2=5^{8-2}=5^6$ **Javob: (B)**

Izoh: Bo'linmalarni asossini bir xilga keltirib ularni darajalarini ayrish lozim. $5^8:25=5^8:5^2$

820. $8^8:64$ ni asosi 8 bo'lgan daraja ko'rinishini toping.

A) 8^8 B) 8^{11} C) 8^6 D) 8^5

821. $36\cdot6^{15}$ ni asosi 6 bo'lgan daraja ko'rinishini toping.

A) 6^2 B) 6^{17} C) 6^{16} D) 6^{15}

822. $243:27$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^7 B) 3^3 C) 3^2 D) 3^5

823. $128:16$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^7 B) 2^4 C) 2^3 D) 2^5

824. $\frac{3^{15}}{3}$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{14} B) 3^2 C) 3^3 D) 3^{16}

825. $\frac{3^8}{3^4}$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^4 B) 3^2 C) 3^3 D) 3^5

826. $\frac{256}{2^3}$ ni asosi 2 bo'lgan daraja ko'rinishini toping.

A) 2^4 B) 2^2 C) 2^3 D) 2^5

827. $\frac{3^k}{81}$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{k-4} B) 3^{k+3} C) 3^{k+4} D) 3^{k-5}

828. $\frac{9}{3^{5k}}$ ni asosi 3 bo'lgan daraja ko'rinishini toping.

A) 3^{2+5k} B) 3^{3-k} C) 3^{2-5k} D) 3^{3+k}

✓ $\frac{5^5\cdot5^3}{25\cdot5^4}$ ni hisoblang.

A) 125 B) 25 C) 5 D) 625

Yechimi:

$\frac{5^5\cdot5^3}{25\cdot5^4}=\frac{5^5\cdot5^3}{5^2\cdot5^4}=\frac{5^{5+3}}{5^{2+4}}=5^{8-6}=25$ **Javob: (B)**

829. $\frac{7^5}{7^3}$ ni hisoblang.

A) 14 B) 36 C) 49 D) 21

830. $\frac{8^6}{8^4}$ ni hisoblang.

A) 64 B) 16 C) 49 D) 21

831. $\frac{2\cdot3^3}{3^2}$ ni hisoblang.

A) 8 B) 6 C) 49 D) 9

832. $\frac{3^5\cdot3^{10}}{3^6\cdot3^7}$ ni hisoblang.

A) 8 B) 6 C) 49 D) 9

833. $\frac{2^4\cdot3^2}{2^3\cdot3}$ ni hisoblang.

A) 8 B) 6 C) 49 D) 9

834. $\frac{5^8\cdot5^7}{5^4\cdot5^9}$ ni hisoblang.

A) 25 B) 125 C) 49 D) 9

835. $\frac{8\cdot3^3}{2\cdot3^2}$ ni hisoblang.

A) 25 B) 12 C) 49 D) 9

836. $\frac{2^4\cdot2^6\cdot2^3}{2^5\cdot2^7}$ ni hisoblang.

A) 2 B) 12 C) 49 D) 9

837. $\frac{3^3\cdot3^6}{3^5\cdot3\cdot3}$ ni hisoblang.

A) 2 B) 12 C) 49 D) 9

✓ $\left(x^3\right)^5$ ni darajaga ko'taring.

A) x^3 B) x^6 C) x^{15} D) x^2

Yechimi:

Formula: *misol*:

$(a^n)^m = a^{nm}$ | $(x^3)^5 = x^{3\cdot5} = x^{15}$ **Javob: (C)**

Izoh: Darajaga ko'tarishda asos o'zgarmaydi daraja ko'rsatkichlari ko'paytiriladi. $(a^n)^m = a^{nm}$

838. $(c^7)^3$ ni darajaga ko'taring.

A) c^4 B) c^{21} C) c^9 D) c^{10}

839. $(a^5)^4$ ni darajaga ko'taring.

A) a^9 B) a^{21} C) a^9 D) a^{20}

840. $(b^3)^3$ ni darajaga ko'taring.

A) b^6 B) b^{21} C) b^9 D) b^{10}

841. $(y^7)^2$ ni darajaga ko'taring.

A) y^{14} B) y^9 C) y^6 D) y^{10}

842. $(x^6)^4$ ni darajaga ko'taring.

A) x^6 B) x^{24} C) x^9 D) x^{10}

843. $\left((c^2)^3\right)^4$ ni darajaga ko'taring.

A) c^{24} B) c^{21} C) c^9 D) c^{10}

844. $\left((a^5)^4\right)^2$ ni darajaga ko'taring.

A) a^9 B) a^{30} C) a^{40} D) a^{20}

845. $\left(\left(b^2\right)^2\right)^2$ ni darajaga ko'taring.

A) b^6 B) b^{21} C) b^9 D) b^8

✓ $x\cdot(x^3)^2\cdot x^7$ ni soddalashtiring.

A) x^{14} B) x^{16} C) x^{15} D) x^2

Yechimi:

$x\cdot(x^3)^2\cdot x^7 = x\cdot x^6\cdot x^7 = x^{1+6+7} = x^{14}$ **Javob: (A)**

Izoh: Darajaga ko'tarib, ko'paytirish bo'lgani uchun darajalarini qo'shish lozim. $a^n\cdot a^m = a^{n+m}$

846. $c^3(c^2)^5$ ni soddalashtiring.

A) c^4 B) c^{13} C) c^9 D) c^{10}

847. $(a^2)^3\cdot(a^4)^2$ ni soddalashtiring.

A) a^8 B) a^{21} C) a^{14} D) a^{20}

848. $(b^4)^4 b^4$ ni soddalashtiring.

A) b^{20} B) b^{21} C) b^9 D) b^{12}

849. $y^7y^5(y^2)^4$ ni soddalashtiring.

A) y^{14} B) y^9 C) y^6 D) y^{20}

850. $(x^2)^3x^4(x^3)^4$ ni soddalashtiring.

A) x^{22} B) x^{24} C) x^9 D) x^{10}

851. $m^5(m^3)^4(m^3)^2$ ni soddalashtiring.

A) m^{22} B) m^{24} C) m^{23} D) m^{10}

852. $(c^7)^5:(c^3)^4$ ni soddalashtiring.

A) c^{35} B) c^{13} C) c^{25} D) c^{23}

853. $(a^6)^4:(a^3)^5$ ni soddalashtiring.

A) a^8 B) a^9 C) a^{14} D) a^{20}

854. $\dfrac{(a^3)^5a^4}{a^{12}}$ ni soddalashtiring.

A) a^8 B) a^9 C) a^{14} D) a^7

855. $\dfrac{a^8(a^4)^4}{(a^5)^3}$ ni soddalashtiring.

A) a^8 B) a^9 C) a^{14} D) a^7

✓ $(-2x)^5$ ni darajaga ko'taring.

A) x^3 B) $-32x^5$ C) x^{15} D) $32x^5$

Yechimi:

Formula: *misol*:

$(a\cdot b)^n = a^n\cdot b^n$ | $(-2x)^5 = (-2)^5x^5 = -32x^5$ **Javob: (B)**

Izoh: Darajasi toq shuning uchun: $(-2)^5 = -2^5 = -32$

856. $(2c)^3$ ni darajaga ko'taring.

A) $8c^3$ B) $2c^8$ C) c^3 D) $2c^3$

857. $(3a)^4$ ni darajaga ko'taring.

A) $81a^9$ B) $81a^2$ C) $81a^4$ D) $3a^4$

858. $(-4b)^3$ ni darajaga ko'taring.

A) $64b^6$ B) $-64b^3$ C) $64b^3$ D) $3b^4$

859. $(-8bx)^2$ ni darajaga ko'taring.

A) $8b^3x^3$ B) $-64b^3x^3$ C) $64b^3x$ D) $64b^2x^2$

860. $(abc)^4$ ni darajaga ko'taring.

A) a^4b^4 B) a^4b^4c C) $a^4b^4c^4$ D) $a^4b^4c^3$

861. $(3\cdot5\cdot11)^8$ ni darajaga ko'taring.

A) $3^9\cdot5^8\cdot11^8$ B) $3^8\cdot5^8\cdot11^8$ C) $3^8\cdot5\cdot11^8$ D) $3^8\cdot5^8\cdot11$

862. $(xy^4)^2$ ni darajaga ko'taring.

A) x^2y^8 B) x^2y^2 C) x^2y^4 D) x^2y^6

863. $(a^2b)^3$ ni darajaga ko'taring.

A) a^2b^6 B) a^6b^2 C) a^6b^3 D) a^3b^3

864. $(2y^4)^5$ ni darajaga ko'taring.

A) $8y^9$ B) $32y^{20}$ C) $32y^9$ D) $16y^{20}$

865. $(3a^2b^4y^3)^3$ ni darajaga ko'taring.

A) $27a^6b^4y^9$ B) $81a^6b^{12}y^9$

C) $27a^6b^{12}y^9$ D) $27a^{12}b^{12}y^9$

✓ c^2d^{10} ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(cd)^2$ B) $(cd^5)^2$ C) $(c^3d^5)^2$ D) $(c^2d^5)^2$

Yechimi:

Formula :	*misol :*	
$a^n \cdot b^n = (a \cdot b)^n$	$c^2d^{10} = c^2(d^5)^2 = (cd^5)^2$	**Javob: (B)**

866. a^4b^6 ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(a^3b^2)^2$ B) $(a^2b^3)^2$ C) $(a^2b^2)^2$ D) a^9b^6

867. $25y^4$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(5y^2)^2$ B) $(25y^2)^2$ C) $(5y^4)^2$ D) $(25y^4)^2$

868. $81m^2$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(81m^2)^2$ B) $(9m^2)^2$ C) $(3m)^2$ D) $(9m)^2$

869. $a^4b^6c^2$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(a^2b^3c^2)^2$ B) $(a^4b^3c^2)^2$ C) $(a^2b^3c)^2$ D) $(a^3b^3c)^2$

870. $x^2y^4z^8$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(x^2y^2z^4)^2$ B) $(xy^2z^4)^2$ C) $(xy^4z^2)^2$ D) $(x^2y^2z^4)^2$

871. $49x^8y^6$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(7x^2y^2)^2$ B) $(3xy^2)^2$ C) $(x^4y^3)^2$ D) $(7x^4y^3)^2$

872. $100c^{10}x^{10}$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(10c^5x^5)^2$ B) $(10c^2x^2)^2$ C) $(c^2x^3)^2$ D) $(10c^4x^3)^2$

873. $0,25a^{10}b^6$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(0,5a^5b^3)^2$ B) $(a^5b^3)^2$ C) $(0,5a^2b^3)^2$ D) $(a^5b^2)^2$

874. $0,49n^2m^{10}$ ni ko'rsatkichi 2 bo'lgan daraja ko'rinishini toping.

A) $(0,7nm^5)^2$ B) $(0,7nm^{10})^2$

C) $(0,7nm^3)^2$ D) $(0,7nm^2)^2$

✓ $b^9c^{12}d^3$ ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(b^3c^4d)^3$ B) $(b^4c^3d)^3$

C) $(b^3c^2d)^3$ D) $(b^3c^5d)^3$

Yechimi:

Formula :	*misol :*	
$a^n \cdot b^n = (a \cdot b)^n$	$b^9c^{12}d^3 = (b^3)^3(c^4)^3d^3 = (b^3c^4d)^3$	**Javob: (A)**

875. a^6 ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(a^4)^2$ B) $(a^2)^2$ C) $(a^2)^3$ D) $(a^4)^3$

876. b^9 ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(b^3)^2$ B) $(b^3)^3$ C) $(b^6)^3$ D) $(b^2)^3$

877. 5^{15} ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(5)^{15}$ B) $(5^5)^3$ C) $(5^7)^{13}$ D) $(5^4)^3$

878. x^3y^9 ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(xy^3)^3$ B) $(x^3y)^3$ C) $(x^2y^3)^3$ D) $(xy)^3$

879. $x^{12}y^9z^6$ ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(x^6y^3z^3)^2$ B) $(x^4y^3z^4)^3$

C) $(x^3y^4z^2)^3$ D) $(x^4y^3z^2)^3$

880. $-0,125n^6m^6$ ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(0,5n^2m^2)^3$ B) $(5n^2m^2)^3$

C) $(-0,5n^2m)^3$ D) $(-0,5n^2m^2)^3$

881. $-27a^3$ ni ko'rsatkichi 3 bo'lgan daraja ko'rinishini toping.

A) $(-3a^5)^3$ B) $(3a)^3$ C) $(-3a)^3$ D) $(-3a^3)^3$

✓ $\left(\frac{2}{3}\right)^2$ ni darajaga ko'taring.

A) $\frac{4}{9}$ B) $\frac{4}{27}$ C) $\frac{4}{36}$ D) $\frac{4}{25}$

Yechimi:

Formula :	*misol :*	
$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$	$\left(\frac{2}{3}\right)^2 = \frac{2^2}{3^2} = \frac{4}{9}$	**Javob: (A)**

882. $\left(\frac{5}{7}\right)^2$ ni darajaga ko'taring.

A) $\frac{25}{14}$ B) $\frac{25}{49}$ C) $\frac{10}{49}$ D) $\frac{25}{9}$

883. $\left(\frac{3}{a}\right)^2$ ni darajaga ko'taring.

A) $\frac{6}{a^2}$ B) $\frac{9}{a^2}$ C) $\frac{9}{a^3}$ D) $\frac{25}{9}$

884. $\left(\frac{b}{8}\right)^3$ ni darajaga ko'taring.

A) $\frac{b^3}{8}$ B) $\frac{8}{b^3}$ C) $\frac{b^3}{8^2}$ D) $\frac{b^3}{8^3}$

885. $\left(-\frac{m}{11}\right)^3$ ni darajaga ko'taring.

A) $\frac{m^3}{11^3}$ B) $-\frac{m^2}{11^2}$ C) $-\frac{m^3}{11^3}$ D) $\frac{m^2}{11^2}$

886. $\left(-\frac{13}{n}\right)^2$ ni darajaga ko'taring.

A) $\frac{169}{n^2}$ B) $\frac{26}{n^2}$ C) $-\frac{169}{n^2}$ D) $\frac{179}{n^2}$

887. $\left(\frac{d}{-2}\right)^2$ ni darajaga ko'taring.

A) $\frac{d^2}{2}$ B) $\frac{d^3}{4}$ C) $\frac{d^2}{8}$ D) $\frac{d^2}{4}$

888. $\left(\frac{-4}{c}\right)^3$ ni darajaga ko'taring.

A) $-\frac{64}{c^3}$ B) $\frac{64}{c^3}$ C) $-\frac{16}{c^3}$ D) $\frac{64}{c^4}$

889. $\left(\frac{2^3}{3^2}\right)^7$ ni darajaga ko'taring.

A) $\frac{2^{10}}{3^{14}}$ B) $\frac{2^{21}}{3^9}$ C) $\frac{2^{21}}{3^{14}}$ D) $\frac{2^6}{3^4}$

890. $\left(\frac{5^2}{7^4}\right)^3$ ni darajaga ko'taring.

A) $\frac{5^2}{7^4}$ B) $\frac{5^6}{7^{12}}$ C) $\frac{5^6}{7^4}$ D) $\frac{5^{12}}{7^4}$

✓ $\frac{14^4}{2^2\cdot 7^3}$ ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{4}{27}$ C) $\frac{4}{36}$ D) 28

Yechimi:

$\frac{14^4}{2^2\cdot 7^3}=\frac{(2\cdot 7)^4}{2^2\cdot 7^3}=\frac{2^4\cdot 7^4}{2^2\cdot 7^3}=2^{4-2}\cdot 7^{4-3}=2^2\cdot 7=28$ **J: (D)**

891. $\frac{2^8\cdot 3^8}{6^5}$ ni hisoblang.

A) 36 B) 216 C) 12 D) 18

892. $\frac{4^5\cdot 3^5}{12^3}$ ni hisoblang.

A) 144 B) 24 C) 12 D) 18

893. $\frac{10^5}{2^5\cdot 5^5}$ ni hisoblang.

A) 144 B) 24 C) 12 D) 1

✓ $\frac{15^4}{3^4\cdot 5^2\cdot 25}$ ni hisoblang.

A) $\frac{4}{9}$ B) 1 C) $\frac{4}{36}$ D) $\frac{4}{25}$

Yechimi:

$\frac{15^4}{3^4\cdot 5^2\cdot 25}=\frac{15^4}{3^4\cdot 5^2\cdot 5^2}=\frac{15^4}{3^4\cdot 5^4}=\frac{15^4}{(3\cdot 5)^4}=\frac{15^4}{15^4}=1$ **Javob: (B)**

894. $\frac{6^{12}\cdot 4^{12}}{3^{12}\cdot 8^{12}}$ *ni hisoblang.*

A) 36 B) 1 C) 12 D) 18

895. $\frac{4^{10}\cdot 3^{10}}{2^{10}\cdot 6^{10}}$ ni hisoblang.

A) 144 B) 24 C) 1 D) 18

896. $\frac{4^{16}}{8^{10}}$ ni hisoblang.

A) 144 B) 24 C) 12 D) 4

✓ $\frac{16^2\cdot 3^5}{12^4}$ ni hisoblang.

A) $\frac{4}{9}$ B) 1 C) $\frac{4}{36}$ D) 3

Yechimi:

$\frac{16^2\cdot 3^5}{12^4}=\frac{\left(2^4\right)^2\cdot 3^5}{(4\cdot 3)^4}=\frac{2^8\cdot 3^5}{2^8\cdot 3^4}=3$ **Javob: (D)**

897. $\frac{8\cdot 27^3}{3^8}$ ni hisoblang.

A) 36 B) 24 C) 12 D) 18

898. $\frac{2^8\cdot\left(7^2\right)^4}{14^7}$ ni hisoblang.

A) 144 B) 24 C) 14 D) 18

899. $\frac{2^9\cdot\left(2^2\right)^5}{\left(2^5\right)^3}$ ni hisoblang.

A) 144 B) 24 C) 12 D) 16

✓ $(0,25)^7\,4^7$ *ni hisoblang.*

A) $\frac{4}{9}$ B) 1 C) $\frac{4}{36}$ D) 3

Yechimi:

$(0,25)^7\,4^7=\left(\frac{1}{4}\right)^7 4^7=\left(\frac{1}{4}\cdot 4\right)^7=\left(\frac{1}{\cancel{4}}\cdot\cancel{4}\right)^7=1$ **J: (B)**

900. $\left(\frac{4}{5}\right)^{17}\cdot\left(\frac{5}{4}\right)^{17}$ ni hisoblang.

A) 36 B) 1 C) 12 D) 18

901. $(0{,}125)^{11}\,8^{11}$ ni hisoblang.

A) 1 B) 24 C) 14 D) 18

902. $(-0{,}2)^5\,5^5$ ni hisoblang.

A) 1 B) 24 C) 12 D) –1

903. $(-0{,}25)^9\,(-4)^9$ ni hisoblang.

A) 1 B) 24 C) 12 D) –1

904. $\left(\frac{6}{11}\right)^3\cdot(5{,}5)^3$ ni hisoblang.

A) 8, 5 B) 1 C) 27 D) –1

905. $\left(\frac{1}{9}\right)^5\cdot(4{,}5)^5$ ni hisoblang.

A) 8,5 B) $\frac{1}{32}$ C) 35 D)–1

✓ $\left(\frac{5^3}{6^2}\right)^4\cdot\left(\frac{2}{3}\right)^5\cdot\left(\frac{3}{5}\right)^7$ ni hisoblang.

A)1/24 B) 1 C) 24 D) 3

Yechimi:

$$\left(\frac{5^3}{6^2}\right)^4\cdot\left(\frac{2}{3}\right)^5\cdot\left(\frac{3}{5}\right)^7=\frac{\left(5^3\right)^4}{\left(6^2\right)^4}\cdot\frac{2^5}{5^5}\cdot\frac{3^7}{5^7}=\frac{5^{12}\cdot2^5\cdot3^7}{6^8\cdot5^5\cdot5^7}=$$

$$=\frac{5^{12}\cdot2^5\cdot3^7}{(2\cdot3)^8\cdot5^{12}}=\frac{2^5\cdot3^7}{2^8\cdot3^8}=\frac{1}{2^3\cdot3}=\frac{1}{24}$$ **J: (A)**

906. $\frac{5^3}{3^2}\cdot\left(\frac{3}{5}\right)^4$ ni hisoblang.

A) $\frac{5}{9}$ B) 1 C) $\frac{9}{5}$ D) 9

907. $\frac{7^5}{5^7}\cdot\left(\frac{5}{7}\right)^6$ ni hisoblang.

A) 1 B) 35 C) 14 D) $\frac{1}{35}$

908. $\left(\frac{3}{4}\right)^6\cdot\left(\frac{4}{3}\right)^8$ ni hisoblang.

A) 1 B) $\frac{9}{16}$ C) $\frac{16}{9}$ D) –1

909. $\left(\frac{35}{48}\right)^2\cdot\left(\frac{6}{7}\right)^3\cdot\left(\frac{8}{5}\right)^2$ ni hisoblang.

A) 1 B) $\frac{6}{7}$ C) $\frac{7}{6}$ D) –1

910. $\left(\frac{14}{15}\right)^4\cdot(2{,}5)^3\cdot\left(\frac{3}{7}\right)^4$ ni hisoblang.

A) 2,5 B) 0,4 C) 27 D)–1

✓ $2\cdot11^{31}-5\cdot11^{30}$ ni hisoblang.

A) 11^{30} B) $17\cdot11^{30}$ C) $25\cdot11^{30}$ D)3

Yechimi:

$2\cdot11^{31}-5\cdot11^{30}=11^{30}(2\cdot11-5)=17\cdot11^{30}$ **J: (B)**

Izoh: $c\cdot a+c\cdot b=c\cdot(a+b)$ darajasi kichigi qavsdan tashqariga chiqishi lozim.

911. $4^{13}\cdot5+2\cdot4^{13}$ ni hisoblang.

A) $16\cdot4^{11}$ B) $82\cdot4^{11}$ C) $80\cdot4^{11}$ D) $82\cdot4^{13}$

912. $7^{49}\cdot5+26\cdot7^{48}$ ni hisoblang.

A) 7^{48} B) $35\cdot7^{48}$ C) $46\cdot7^{48}$ D) $61\cdot7^{48}$

913. $6^{22}\cdot7-10\cdot6^{21}$ ni hisoblang.

A) 1 B) $10\cdot6^{21}$ C) $32\cdot6^{21}$ D) $22\cdot6^{21}$

✓ $\frac{5\cdot\left(3\cdot7^{15}-19\cdot7^{14}\right)}{7^{16}+3\cdot7^{15}}$ ni hisoblang.

A) $\frac{1}{10}$ B) $\frac{1}{70}$ C) $\frac{1}{7}$ D) $\frac{1}{4}$

Yechimi:

$$\frac{5\cdot\left(3\cdot7^{15}-19\cdot7^{14}\right)}{7^{16}+3\cdot7^{15}}=\frac{5\cdot7^{14}(3\cdot7-19)}{7^{15}(7+3)}=\frac{5\cdot2}{7\cdot10}=\frac{1}{7}$$

Javob: (C)

Izoh: $(3\cdot7^{15}-19\cdot7^{14})=7^{14}(3\cdot7-19)$ darajasi kichigi qavsdan tashqariga chiqishi lozim.

914. $\frac{2\cdot5^{22}-9\cdot5^{21}}{25^{10}}$ ni hisoblang.

A) 5 B) 25 C) 125 D) $\frac{1}{5}$

915. $\frac{5\cdot2^{32}-4\cdot2^{30}}{4^{16}}$ ni hisoblang.

A) 16 B) 4 C) $\frac{1}{4}$ D) 64

916. $\frac{\left(4\cdot3^{22}+7\cdot3^{21}\right)\cdot57}{\left(19\cdot27^4\right)^2}$ ni hisoblang.

A) $\frac{1}{3}$ B) 9 C) $\frac{1}{9}$ D) 27

✓ $\left(\frac{5}{7}\right)^{-2}$ ni hisoblang.

A) 7 B) $\frac{1}{7}$ C) $\frac{5}{7}$ D) $\frac{49}{25}$

Formula: $\left(\frac{a}{b}\right)^{-n}=\left(\frac{b}{a}\right)^{n}$ *misol:* $\left(\frac{5}{7}\right)^{-2}=\left(\frac{7}{5}\right)^{2}=\frac{7^2}{5^2}=\frac{49}{25}$

Yechimi: **Javob: (D)**

Izoh: darajasi manfiy son bo'lsa, ularni teskarisi qilib yozish lozim. $\left(\frac{5}{7}\right)^{-2}=\left(\frac{7}{5}\right)^{2}$

917. $\left(\frac{3}{4}\right)^{-2}$ ni hisoblang.

A) $\frac{16}{9}$ B) $\frac{9}{16}$ C) –2 D) $\frac{1}{16}$

918. $\left(\frac{5}{8}\right)^{-2}$ ni hisoblang.

A) $\frac{64}{10}$ B) 4 C) $\frac{25}{64}$ D) $\frac{64}{25}$

919. $(7,5)^{-1}$ ni hisoblang.

A) $\frac{4}{27}$ B) $\frac{4}{15}$ C) $\frac{2}{15}$ D) 27

920. $(1,5)^{-3}$ ni hisoblang.

A) $\frac{4}{27}$ B) $\frac{8}{27}$ C) $\frac{1}{9}$ D) 27

921. $(2,5)^{-3}$ ni hisoblang.

A) $\frac{4}{27}$ B) $\frac{8}{27}$ C) $\frac{125}{8}$ D) $\frac{8}{125}$

✓ 5^{-2} ni hisoblang.

A) $\frac{1}{25}$ B) $\frac{2}{5}$ C) $\frac{5}{7}$ D) $\frac{49}{25}$

Yechimi:

Formula: $a^{-n}=\frac{1}{a^n}$ *misol:* $5^{-2}=\frac{1}{5^2}=\frac{1}{25}$ **Javob: (A)**

Izoh: istalgan sonni minus darajasi bir taqsim qilib yozish lozim. $5^{-2}=\frac{1}{5^2}$

922. 4^{-2} ni hisoblang.

A) $\frac{16}{9}$ B) 4 C) $\frac{25}{64}$ D) $\frac{1}{16}$

923. 8^{-2} ni hisoblang.

A) $\frac{64}{10}$ B) 8 C) $\frac{25}{64}$ D) $\frac{1}{64}$

924. $(0,5)^{-1}$ ni.hisoblang.

A) $\frac{4}{27}$ B) $\frac{1}{2}$ C) $\frac{2}{15}$ D) 2

925. $(0,25)^{-2}$ ni hisoblang.

A) $\frac{1}{16}$ B) 16 C) $\frac{1}{9}$ D) 4

926. 5^{-3} ni hisoblang.

A) $\frac{4}{27}$ B) $\frac{8}{27}$ C) $\frac{1}{125}$ D) $\frac{1}{25}$

✓ $4\frac{1}{2}\cdot 6^{-2}+\left(\frac{2}{5}\right)^{-3}-\left(\frac{2}{5}\right)^{0}$ ni hisoblang.

A) 7 B) $14\frac{3}{4}$ C) $13\frac{3}{4}$ D) $\frac{49}{25}$

Yechimi:

Formula: $a^{-n}=\frac{1}{a^n}$ *misol:* $6^{-2}=\frac{1}{6^2}=\frac{1}{36}$ $4\frac{1}{2}\cdot\frac{1}{36}=\frac{9}{2}\cdot\frac{1}{36}=\frac{1}{8}$

Formula: $\left(\frac{a}{b}\right)^{-n}=\left(\frac{b}{a}\right)^{n}$ *misol:* $\left(\frac{2}{5}\right)^{-3}=\left(\frac{5}{2}\right)^{3}=\frac{5^3}{2^3}=\frac{125}{8}$

Formula: $a^0=1$ *misol:* $\left(\frac{2}{5}\right)^{0}=1$ $\frac{1}{8}+\frac{125}{8}-1=\frac{1+125-8}{8}=\frac{118}{8}=14\frac{3}{4}$ **J: (B)**

927. $\left(\frac{1}{7}\right)^{0}+6\cdot 2^{-3}+\left(\frac{2}{5}\right)^{-2}$ ni hisoblang.

A) $7\frac{1}{7}$ B) $-4\frac{4}{25}$ C) 7 D) 8

928. $\left(4\frac{5}{8}\cdot 4\frac{1}{5}\cdot\frac{8}{37}-3\frac{3}{5}\right)^{-1}$ ni hisoblang.

A) $1\frac{3}{5}$ B) $1\frac{2}{5}$ C) $1\frac{3}{4}$ D) $1\frac{2}{3}$

929. $2\cdot 4^{-2}+\left(\frac{2}{3}\right)^{-3}-\left(\frac{1}{99}\right)^{0}$ ni hisoblang.

A) $3\frac{1}{2}$ B) $4\frac{2}{3}$ C) 2,5 D) 2

✓ 4^{24} *va* 9^{12} nitaqqoslang.

A) $4^{24} > 9^{12}$ B) $4^{24} < 9^{12}$

C) $4^{24} = 9^{12}$ D) $4^{24} \le 9^{12}$

Yechimi: **Javob: (A)**

4^{24} *va* 9^{12}

$\left(4^2\right)^{12}$ *va* 9^{12}

16^{12} *va* 9^{12} Darajalari bir xil $16^{12} > 9^{12} \Rightarrow 4^{24} > 9^{12}$

Izoh: taqqoslash uchun darajalarini bir xil qilish lozim. $16^{12} > 9^{12}$

930. 6^{20} *va* 3^{40} ni taqqoslang.

A) $6^{20} = 3^{40}$ B) $6^{20} < 3^{40}$

C) $6^{20} > 3^{40}$ D) $6^{20} \le 3^{40}$

931. 10^{20} *va* 20^{10} ni taqqoslang.

A) $10^{20} < 20^{10}$ B) $10^{20} \le 20^{10}$

C) $10^{20} > 20^{10}$ D) $10^{20} = 20^{10}$

932. 10^{20} *va* 900^{10} ni taqqoslang.

A) $10^{20} = 900^{10}$ B) $10^{20} > 900^{10}$

C) $10^{20} \le 900^{10}$ D) $10^{20} < 900^{10}$

✓ $\left(-2\frac{2}{3}\right)^{-2}$ ni hisoblang.

A) $\frac{9}{64}$ B) $\frac{1}{7}$ C) $\frac{5}{7}$ D) $\frac{49}{25}$

Yechimi:

$\left(-2\frac{2}{3}\right)^{-2}=\left(-\frac{8}{3}\right)^{-2}=\left(-\frac{3}{8}\right)^{2}=\frac{9}{64}$ **Javob: (A)**

Izoh: Darajasi juft bo'lgani uchun minus qo'yilmadi: $\left(-\frac{3}{8}\right)^{2}=\frac{9}{64}$

933. $\left(-2\frac{1}{5}\right)^{-2}$ ni hisoblang.

A) $\frac{4}{121}$ B) $\frac{8}{27}$ C) $\frac{1}{125}$ D) $\frac{25}{121}$

934. $\left(-2\frac{1}{2}\right)^{3}$ ni hisoblang.

A) $8\frac{1}{8}$ B) $2\frac{1}{8}$ C) $-8\frac{1}{8}$ D) $-15\frac{5}{8}$

935. $\left(-1\frac{1}{2}\right)^{-3}$ ni hisoblang.

A) $-\frac{8}{27}$ B) $2\frac{1}{8}$ C) $-8\frac{1}{8}$ D) $-15\frac{1}{8}$

936. $\left(-1\frac{1}{2}\right)^{3}$ ni hisoblang.

A) $6\frac{3}{4}$ B) $-3\frac{3}{8}$ C) $-8\frac{1}{8}$ D) $-2\frac{1}{4}$

✓ $\frac{1}{1+3^{-2}}$ ni hisoblang.

A) $\frac{9}{64}$ B) $\frac{9}{10}$ C) $\frac{5}{7}$ D) $\frac{49}{25}$

Yechimi:

$\frac{1}{1+3^{-2}}=\frac{1}{1+\frac{1}{9}}=\frac{1}{\frac{10}{9}}=\frac{9}{10}$ **Javob: (B)**

Izoh: Agar kasrning suratida 1 bo'lsa, u holda:

$\frac{1}{\frac{a}{b}}=\frac{b}{a}=\frac{1}{\frac{10}{9}}=\frac{9}{10}$

937. $\frac{1}{1+2^{-3}}$ ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{8}{27}$ C) $\frac{1}{125}$ D) $\frac{8}{9}$

938. $\frac{1}{2+2^{-3}}$ ni hisoblang.

A) $\frac{17}{8}$ B) $\frac{8}{17}$ C) $\frac{1}{8}$ D) $5\frac{5}{8}$

939. $\frac{1}{2+2^{-2}}$ ni hisoblang.

A) $-\frac{8}{27}$ B) $-3\frac{3}{8}$ C) $\frac{4}{9}$ D) $\frac{1}{8}$

940. $\frac{1}{4+4^{-1}}$ ni hisoblang.

A) $\frac{4}{17}$ B) $-3\frac{3}{8}$ C) $\frac{1}{8}$ D) $\frac{1}{4}$

✓ $\frac{1}{1-\frac{1}{1-3^{-1}}}+\frac{1}{1+\frac{1}{1+3^{-1}}}$ ni hisoblang.

A) $-\frac{10}{7}$ B) $-\frac{1}{7}$ C) $\frac{5}{7}$ D) $\frac{49}{25}$

Yechimi:

$\frac{1}{1-\frac{1}{1-3^{-1}}}+\frac{1}{1+\frac{1}{1+3^{-1}}}$

$\frac{1}{1-3^{-1}}=\frac{1}{1-\frac{1}{3}}=\frac{1}{\frac{2}{3}}=\frac{3}{2}$ $\frac{1}{1+3^{-1}}=\frac{1}{1+\frac{1}{3}}=\frac{1}{\frac{4}{3}}=\frac{3}{4}$ **Javob: (A)**

$\frac{1}{1-\frac{3}{2}}+\frac{1}{1+\frac{3}{4}}=\frac{1}{-\frac{1}{2}}+\frac{1}{\frac{7}{4}}=-2+\frac{4}{7}=\frac{-2\cdot7+4}{7}=-\frac{10}{7}$

941. $\frac{1}{1-\frac{1}{1-2^{-1}}}+\frac{1}{1+\frac{1}{1+2^{-1}}}$ ni hisoblang.

A) $-\frac{2}{5}$ B) $-\frac{2}{3}$ C) $-\frac{4}{5}$ D) $\frac{1}{2}$

942. $\frac{1}{1+\frac{1}{1+2^{-1}}}+\frac{1}{1+\frac{1}{1-2^{-1}}}$ ni hisoblang.

A) $\frac{17}{8}$ B) $\frac{8}{17}$ C) $\frac{14}{15}$ D) $\frac{4}{15}$

943. $\frac{2}{1-\frac{1}{1-5^{-1}}}-\frac{2}{1+\frac{1}{1+5^{-1}}}$ ni hisoblang.

A) $\frac{4}{15}$ B) $\frac{11}{18}$ C) $-\frac{100}{11}$ D) $\frac{100}{11}$

BIRHADLAR

✓ Quyidagilardan qaysi biri birhad?

A) $3ab^{-2}$ B) $a+b$ C) $\frac{5}{7}abc$ D) $1:(2c)$

Yechimi: sonlar va darajali o'zgaruvchilarning ko'paytmasiga *birhad* deyiladi.

Masalan: $3x^2y$; $-2a^6$; 8; $-2ab$

Eslatma: $\frac{ax^2}{b}$ **– birhad emas**

$4nm^{-2}$ **– birhad emas**

a^2+1 **– birhad emas**

$\frac{ax^2}{8}$ **– birhad !!!**

A) $3ab^{-2}$ — birhadda harflarning darajasi manfiy bo'lmaydi, birhad emas.

B) $a+b$ — birhadda "+"bo'lmaydi, birhad emas.

(C) $\frac{5}{7}abc$ — birhad

D) $1:(2c)$ — birhad emas. **Javob: (C)**

944. Quyidagilardan qaysi biri birhad?

A) $-\frac{2}{5}ac^2$ B) $3:mn$ C) $a+c+d$ D) $-a^{-3}b^2$

945. Quyidagilardan qaysi biri birhad?

A) $a+c^2$ B) $mn:3$ C) $a:cd$ D) $\frac{a^{-3}b^2}{5}$

946. Quyidagilardan qaysi biri birhad?

A) $a-b$ B) mn^{-1} C) $2c:3$ D) $\frac{a^{-3}b^2}{5}$

✓ $4b^2\cdot(-3b^3)$ birhadlarni ko'paytmasini toping.

A) $-12b^5$ B) $24b^5$ C) $6b^5$ D) $12b^5$

Yechimi:

$4b^2\cdot(-3b^3)=4\cdot(-3)b^2b^3=-12b^{2+3}=-12b^5$ **J: (A)**

Izoh: Soni songa, harfni harflarga ko'paytirish lozim. Ishora $(+)\cdot(-)=-$ e'tiborga olish shart.

947. $(2a)(3b)$ birhadlarni ko'paytmasini toping.

A) $5ab$ B) $6ab$ C) $8ab$ D) $6a^2b^2$

948. $(3a)(2b)$ birhadlarni ko'paytmasini toping.

A) $5ab$ B) $6ab$ C) $8ab$ D) $6a^2b^2$

949. $(2a)a^2$ birhadlarni ko'paytmasini toping.

A) $-2a^3$ B) $2a^2$ C) $2a^3$ D) $-2a^2$

950. $(2p)(3c^2)$ birhadlarni ko'paytmasini toping.

A) $6pc^2$ B) $5pc^2$ C) $4pc^2$ D) $6p^2c$

951. $(4a^2)(6a^3)$ birhadlarni ko'paytmasini toping.

A) $-24a^5$ B) $10a^5$ C) $-24a^6$ D) $24a^5$

952. $(-5m^2)(-7n)$ birhadlarni ko'paytmasini toping.

A) $-35m^2n$ B) $30m^2n$

C) $35mn^2$ D) $35m^2n$

953. $\left(-\frac{1}{2}b^3\right)(8b^6)$ birhadlarni ko'paytmasini toping.

A) $4b^9$ B) $-4b^{18}$ C) $-4b^9$ D) $-8b^9$

954. $(0,3a^2)\left(\frac{1}{4}b^3\right)$ birhadlarni ko'paytmasini toping.

A) $\frac{3}{40}a^2b^3$ B) $\frac{3}{4}a^2b^3$ C) $\frac{1}{40}a^2b^3$ D) $\frac{3}{40}a^3b^2$

✓ $\left(\frac{3}{2}a^3xy^3\right)\left(\frac{3}{4}ax^2y\right)$ ni standart ko'rinishini toping.

A) $\frac{9}{8}a^4x^3y^4$ B) $\frac{1}{7}a^4x^3y^4$

C) $a^4x^3y^4$ D) $-\frac{9}{8}a^4x^3y^4$

Yechimi:

$\left(\frac{3}{2}a^3xy^3\right)\left(\frac{3}{4}ax^2y\right)=\frac{3}{2}\cdot\frac{3}{4}a^3xy^3ax^2y=\frac{9}{8}a^4x^3y^4$

Javob: (A)

Izoh: kasr bo'lganda ham, soni songa, harfni harflarga ko'paytirish lozim "ni standart ko'rinishini toping" deganda ko'paytirishni tushunilsin.

955. $(3ab)(-2a^2b)$ ni standart ko'rinishini toping.

A) $-6a^2b^2$ B) $-6a^3b^2$ C) a^3b^2 D) $-6a^2b^3$

956. $(-4x^2y)(-7xy^2)$ ni standart ko'rinishini toping.

A) $-28x^3y^3$ B) $28x^3y^3$ C) x^3y^3 D) $-14x^3y^3$

957. $(8ab^2)\left(\frac{1}{4}ac^2\right)$ ni standart ko'rinishini toping.

A) $-2a^2b^2c^2$ B) $2b^2c^2$

C) $2a^2b^4c$ D) $2a^2b^2c^2$

958. $(3a^2b^5c)(6a^3bc^2)$ ni standart ko'rinishini toping.

A) $18a^2b^5c$ B) $18a^2b^5c^3$

C) $18a^2b^6c^3$ D) $-18a^2b^5c$

959. $(7a^5b^2c)(-3ab^4c)$ ni standart ko'rinishini toping.

A) $-21a^6b^6c$ B) $21a^6b^6c^2$

C) $-21a^6b^6c^2$ D) $-a^6b^6c$

960. $\left(-\frac{2}{3}a^2b^3x\right)\left(\frac{3}{4}a^3bx^2\right)$ ni standart ko'rinishini toping.

A) $a^3bx^4x^3$ B) $\frac{1}{2}a^5b^4x^3$

C) $-\frac{1}{2}a^5b^4x^3$ D) $a^5b^4x^3$

961. $(-0,4x^5y^6z^2)(-1,2xyz^3)$ ni standart ko'rinishini toping.

A) $0,48x^6y^7z^5$ B) $0,24x^6y^7z^5$

C) $-0,48x^6y^7z^5$ D) $4,8x^6y^7z^5$

962. $(-2,5n^4m^5r^2)(3nm^3r^5)$ ni standart ko'rinishini toping.

A) $-7,5n^5m^8r^7$ B) $7,5n^5m^8r^7$

C) $-0,75n^5m^7r^7$ D) $-6,5n^5m^7r^7$

963. $\left(-1\frac{1}{3}x^2y^3z\right)\left(-1\frac{1}{2}xy^2z^3\right)$ ni standart ko'rinishini toping.

A) $-2x^3y^5z^4$ B) $\frac{1}{3}x^3y^5z^4$

C) $2x^3y^5z^4$ D) $x^3y^5z^4$

964. $\left(2\frac{1}{4}a^2b^5c^3\right)\left(-3\frac{1}{3}a^3b^2c^4\right)$ ni standart ko'rinishini toping.

A) $-\frac{15}{2}a^5b^7c^7$ B) $\frac{15}{2}a^5b^7c^7$

C) $-6\frac{1}{12}a^5b^7c^7$ D) $-18a^5b^7c^7$

965. $\left(-\frac{1}{3}m^2\right)(-24n)(4mn)$ ni standart ko'rinishini toping.

A) $-32m^3n^2$ B) $32m^2n^3$ C) $-24m^3n^2$ D) $32m^3n^2$

966. $(a)(3b)(4a^2b)(5ab^2)$ ni standart ko'rinishini toping.

A) $18a^2b^5$ B) $-18a^2b^5$ C) $60a^4b^4$ D) $-60a^4b^4$

967. $(5a)(a^2b^2)(-2b)(-3a)$ ni standart ko'rinishini toping.

A) $21a^6b^6$ B) $30a^4b^3$ C) $-30a^4b^3$ D) $-a^4b^3$

968. $(-2a)^3(-3a)$ ni standart ko'rinishini toping.

A) $24a^4$ B) $24a^2$ C) $24a^3$ D) $-24a^4$

✓ $\left(-1\frac{3}{5}x^3y^2\right)\left(-\frac{1}{2}c^2x^2\right)^3$ ni standart ko'rinishini toping.

A) $\frac{9}{8}a^4x^3c^4$ B) $\frac{1}{7}y^4x^3c^6$

C) $y^4x^3c^4$ D) $\frac{1}{5}x^9y^2c^6$

Yechimi:

$\left(-1\frac{3}{5}x^3y^2\right)\left(-\frac{1}{2}c^2x^2\right)^3=\left(-1\frac{3}{5}x^3y^2\right)\left(-\frac{1}{8}c^6x^6\right)=-\frac{8}{5}\cdot-\frac{1}{8}x^3y^2c^6x^6=$

$=\frac{1}{5}x^9y^2c^6$ **Javob:** (D)

Izoh: Avval darajaga ko'tarib $(2a)^3=8a^3$ so'ngra, Soni songa harfni harflarga ko'paytirish lozim.

969. $(2a)^3(3a)$ ni tandart ko'rinishini toping.

A) $24a^4$ B) $24a^2$ C) $24a^3$ D) $-24a^4$

970. $(-a)^3(2a)$ ni standart ko'rinishini toping.

A) $-2a^4$ B) $2a^2$ C) $2a^3$ D) $4a^4$

971. $(2,2bc^2)^2(25cx^2)$ ni standart ko'rinishini toping.

A) $0,8b^2c^3x^2$ B) $121b^2c^5x^2$

C) $8b^2c^5x^2$ D) $0,4b^2c^5x^2$

972. $(-0,1ab^2c)^2(100by^2)$ ni standart ko'rinishini toping.

A) $10a^2b^4c^2y^2$ B) $10a^3b^4c^2y^2$

C) $10a^2b^4c^2y^2$ D) $a^2b^5c^2y^2$

973. $(-3bc^2)^3(2ab^2)^2$ ni standart ko'rinishini toping.

A) $108a^2b^7c^6$ B) $36a^2b^7c^6$

C) $-108a^2b^7c^6$ D) $a^2b^7c^6$

974. $(-2a^2b)^2(-a^2b^3)^3$ ni standart ko'rinishini toping.

A) $-4a^{10}b^{11}$ B) $4a^{10}b^{11}$ C) $-4a^{11}b^{11}$ D) $a^{10}b^{11}$

✓ $-2,1a^2y$ ni koeffitsiyentini toping.

A) 2,1 B) –2 C) 1 D) –2,1

Yechimi:

Harf oldida turgan son ko'paytuvchi *koeffitsiyent* deyiladi.

$-2,1a^2y \Rightarrow -2,1$

***a* ning koeffitsiyenti** $\Rightarrow 1$

***–a* ning koeffitsiyenti** $\Rightarrow 1$ **Javob: (D)**

975. 5,5*b* ni koeffitsiyentini toping.

A) 5,5 B) 5 C) 0,5 D) –5,5

976. 9*c* ni koeffitsiyentini toping.

A) 9 B) – 9 C) –1,8 D) $-4\frac{1}{3}$

977. Quyidagi ifodalarning qaysilarining koeffitsiyenti 1,8 ni ga teng.

1) $1,8x^4$ 2) $-1,8ac$ 3) $4,8a^3$ 4) $1\frac{4}{5}nm^3$ 5) $0,8y^2b$ 6) $1\frac{4}{5}c^2d$

A) 1; 2; 3 B) 1; 4; 5 C) 1; 4; 6 D) 1; 2; 4

978. Quyidagi ifodalarning qaysilarining koeffitsiyenti $-2\frac{1}{4}$ gateng.

1) $-2,25x^4$ 2) $-0,25a$ 3) $2,25d^3$ 4) $2\frac{1}{4}nm^3$ 5) $-1\frac{1}{4}y^2b$ 6) $-2,25c^2d$

A) 1; 2; 3 B) 1; 4; 6 C) 1; 4; 5 D) 1; 6

✓ $(1,5ab)\cdot\left(\frac{1}{3}a^2b^2\right)$ ni standart shaklga keltirib koeffitsiyentini toping.

A) $\frac{1}{3}$ B) $\frac{3}{8}$ C) $\frac{1}{2}$ D) –6

Yechimi:

$(1,5ab)\cdot\left(\frac{1}{3}a^2b^2\right)=1\frac{5}{10}aba^2b^2=\frac{3}{2}\cdot\frac{1}{3}a^3b^3=\frac{1}{2}a^3b^3$

$\frac{1}{2}a^3b^3$ *ni koeffitsiyenti* $\frac{1}{2}$ **Javob:** (C)

979. $2yyy(-4xyz)$ ni standart shaklga keltirib koeffitsiyentini toping.

A) –8 B) 8 C) 6 D) –6

980. $2mnk\cdot\left(5m^2nk^2\right)$ ni standart shaklga keltirib koeffitsiyentini toping.

A) –8 B) 10 C) 6 D) –6

981. $(3a)\left(\frac{1}{9}ab^2\right)$ ni standart shaklga keltirib koeffitsiyentini toping.

A) $\frac{1}{3}$ B) $\frac{3}{8}$ C) $\frac{2}{5}$ D) –6

Oxirgi Raqam

✓ 1^{156} ni oxirgi raqami…ga teng.

A) 1 B) 64 C) 2 D) 156

Yechimi:

Formula: *misol*:

$\underline{1^n=1}$ $\underline{1^{156}=1}$

" 1" ning istalgan darajasi "1" ga teng. **Javob: (A)**

982. 1^{2017} ni oxirgi raqami … ga teng.

A) 1 B) 2 C) 456132 D) –1

983. 1^{7777} ni oxirgi raqami … ga teng.

A) 1 B) 2 C) 456132 D) –1

984. $1^{9999999}$ ni oxirgi raqami … ga teng.

A) 1 B) 2 C) 456132 D) –1

✓ 2^{678} ni oxirgi raqami…ga teng.

A) 2 B) 4 C) 6 D) 8

Yechimi:

" 2" ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$\boxed{2^1=2}$ $\boxed{2^5=32}$

$\boxed{2^2=4}$ $\boxed{2^6=64}$

$\boxed{2^3=8}$ $\boxed{2^7=128}$

$\boxed{2^4=16}$ $\boxed{2^8=256}$

4 tadan keyin oxirgi raqam takrorlanayapti demak,

$678 \,|\, \underline{4}$ … 169; $2(qoldiq)$

$2^1=2$

$2^{2(qoldiq)}=4 \Rightarrow 2^{678}=\dots4$ **Javob: (B)**

$2^3=8$

$2^4=16$

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi.

$2^{44}=\dots6$

Izoh: "4" ning bo'linish belgisini qo'llash yechimni topishni tezlashtiradi.

985. 2^{2017} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

986. 2^{566} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

987. 2^{427} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

988. 2^{200} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

✓ 1452^{855} ni oxirgi raqami…ga teng.
A) 4 B) 2 C) 6 D) 8

Yechimi:

$1452^{855}=$ ~~145~~$2^{855}=\dots2^{855}$ $\quad 2^1=2$

$855 \,|\, \underline{4}$ 213 $\quad 2^2=4$

… $\quad 2^{3(qoldiq)}=8 \Rightarrow 2^{855}=\dots8$

$3(qoldiq)$ $\quad 2^4=16$

Javob: (D)

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi.

$2^{84}=\dots6$

989. 8562^{90} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

990. 9642^{9643} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

991. 15456762^{7897} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

992. 2222^{6888} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

993. 2222^{6^2} ni oxirgi raqami … ga teng.
A) 4 B) 2 C) 8 D) 6

✓ 3^{333} ni oxirgi raqami … ga teng.
A) 1 B) 3 C) 9 D) 7

Yechimi:

" 3 " ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$3^1=3$	$3^5=243$
$3^2=9$	$3^6=729$
$3^3=27$	$3^7=2187$
$3^4=81$	$3^8=6561$

4 tadan keyin oxirgi raqam takrorlanayapti demak,

$333 \,|\, \underline{4}$ 83 … $1(qoldiq)$

$3^{1(qoldiq)}=3 \Rightarrow 3^{333}=\dots3$

$3^2=9$

$3^3=27$

$3^4=81$

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi. $3^{64}=\dots1$

Izoh: "4" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi. **Javob: (B)**

994. 3^{6549} ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

995. 3^{2018} ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

996. 3^{8100} **ni oxirgi raqami … ga teng.**
A) 3 B) 1 C) 7 D) 9

997. 3^{3^3} ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

✓ 9713^{112} nioxirgi raqami…ga teng.
A) 3 B) 1 C) 7 D) 9

Yechimi:

$9713^{112}=$ ~~971~~$3^{112}=\dots3^{112}$ $\quad 3^1=3$

$112 \,|\, \underline{4}$ 28 $\quad 3^2=9$

$3^3=27$

…

$0(qoldiq)$ $\quad 3^4=1 \Rightarrow 3^{0(qoldiq)} \Rightarrow 3^{112}=\dots1$

Izoh: "4" ning *bo'linish be'lgisini* qo'llash yechimni topishni tezlashtiradi. **Javob: (B)**

998. 1013^{6572} nioxirgiraqami … ga teng.
A) 3 B) 1 C) 7 D) 9

999. $987513^{19114641}$ ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

1000. 131853^{83} ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 9 D) 7

1001. 4513293^{7^2} ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

1002. $4513293^{5^{2+1}}$ ni oxirgi raqami … ga teng.
A) 3 B) 1 C) 7 D) 9

✓ 4^{515} ni oxirgi raqami…ga teng.
A) 4 B) 1 C) 7 D) 6

Yechimi:

" 4 " ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$4^1=4$	$4^3=64$
$4^2=16$	$4^4=256$

2 tadan keyin oxirgi raqam takrorlanayapti demak,

$515 \mid \underline{2}$ $\quad 4^{1(qoldiq)} = 4 \Rightarrow 4^{515} = \ldots 4$

257

$4^2 = 16$

$\ldots$ **Javob: (A)**

$1(qoldiq)$ $\quad 4^3 = 64$

$4^4 = 256$

Izoh: "2" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi.

1003. 4^{8942} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

1004. 4^{2017} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

1005. 4^{4^2} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

1006. 4^{5^2} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

✓ 9524^{891} ni oxirgi raqami...ga teng.
A) 4 B) 1 C) 7 D) 6
Yechimi:

$9524^{891} = \ldots 4^{891} = \ldots 4^{891}$

$891 \mid \underline{2}$ $\quad 4^{1(qoldiq)} = 4 \Rightarrow 4^{515} = \ldots 4$

445

$4^2 = 16$

$\ldots$ **J: (A)**

$1(qoldiq)$ $\quad 4^3 = 64$

$4^4 = 256$

Izoh: "2" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi.

1007. 4564^{2486} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

1008. 488994^{1771} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

1009. 54784^{3^2+4} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 7 D) 6

✓ 5^{256} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 5 D) 6
Yechimi:
"5" ning istalgan darajasining oxirgi raqami "5" ga teng.

$5^1 = 5 \quad 5^2 = 25$

$5^3 = 125 \quad 5^4 = 625 \Rightarrow 5^{256} = \ldots 5$ **Javob: (C)**

1010. 5^{2017} ni oxirgi raqami ... ga teng.
A) 1 B) 5 C) 456132 D) –1

1011. $5^{5^{777}}$ ni oxirgi raqami ... ga teng.
A) 1 B) 5 C) 456132 D) –1

1012. $5^{99^{9999}}$ ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 5 D) –1

✓ 5^{998877} ni oxirgi 2 ta raqami ... ga teng.
A) 1 B) 25 C) 5 D) –1
Yechimi:
"5" ning istalgan darajasining oxirgi 2 ta raqami "25" ga teng.

$5^1 = 5 \quad 5^4 = 625$

$5^2 = 25 \quad 5^5 = 3125$ **Javob: (B)**

$5^3 = 125 \quad 5^6 = 15625$

$\Rightarrow 5^{998877} = \ldots 25$

1013. 5^{2017} ni oxirgi 2 ta raqami ... ga teng.
A) 11 B) 56 C) 25 D) 55

1014. $5^{5^{777}}$ ni oxirgi 2 ta raqami ... ga teng.
A) 11 B) 56 C) 25 D) 55

1015. $5^{99^{9999}}$ ni oxirgi 2 ta raqami ... ga teng.
A) 11 B) 55 C) 25 D) 56

✓ 6^{44656} ni oxirgi raqami...ga teng.
A) 0 B) –2 C) 1 D) 6
Yechimi:
"6" ning istalgan darajasining oxirgi raqami "6" ga teng.

$6^1 = 6 \quad 6^2 = 36 \quad 6^3 = 216 \quad \Rightarrow 6^{44656} = \ldots 6$

Javob: (D)

1016. 6^{2017} ni oxirgi raqami ... ga teng.
A) 1 B) 5 C) 482660 D) 6

1017. $6^{6^{999}}$ ni oxirgi raqami ... ga teng.
A) 1 B) 5 C) 456132 D) 6

1018. $6^{99^{9999}}$ ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 5 D) 6

✓ 7^{786} ni oxirgi raqami ...ga teng.
A) 4 B) 7 C) 9 D) 1
Yechimi:
" 7" ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$7^1 = 7 \quad 7^5 = 16807$

$7^2 = 49 \quad 7^6 = 117649$

$7^3 = 343 \quad 7^7 = 823543$

$7^4 = 2401 \quad 7^8 = 5764801$

4 tadan keyin oxirgi raqam takrorlanayapti demak,

$786 \mid \underline{4}$ $\quad 7^1 = 7$

196

$7^{2(qoldiq)} = 49 \Rightarrow 7^{786} = \ldots 9$

$\ldots$

$2(qoldiq)$ $\quad 7^3 = 343$

$7^4 = 2401$ **Javob: (C)**

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi.

$7^{44} = \ldots 1$

Izoh: "4" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi

1019. 7^{3117} ni oxirgi raqami ... ga teng.
A) 1 B) 9 C) 7 **D) 6**

1020. 7^{7^2+1} ni oxirgi raqami ... ga teng.
A) 1 B) 9 C) 7 D) 6

1021. 7^{648} ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 7 D) 6

✓ 3897^{528} ni oxirgi raqami...ga teng.
A) 4 B) 3 C) 1 **D) 9**

Yechimi:

$3897^{528} = \cancel{389}7^{528} = \ldots 7^{528}$

$528 \mid \underset{132}{4}$

$7^1 = 7$

$7^2 = 49$

$7^3 = 343$

$\ldots$

$0(qoldiq)$ $7^4 = 2401$ $\quad 7^{0(qoldiq)} = \ldots 1$

$\Rightarrow 7^{528} = \ldots 1$

Javob: (C)

Izoh: "4" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi.

1022. 7^{9^2+1} ni oxirgi raqami ... ga teng.
A) 1 B) 9 C) 7 D) 6

1023. 15677^{767} ni oxirgi raqami ... ga teng.
A) 1 B) 3 C) 7 **D) 6**

1024. 797^{799} ni oxirgi raqami ... ga teng.
A) 1 B) 3 C) 7 **D) 6**

1025. 575757^{4488} ni oxirgi raqami ... ga teng.
A) 1 B) 3 C) 7 **D) 6**

✓ 8^{86} ni oxirgi raqami...ga teng.
A) 4 B) −2 C) 1 **D) 9**

Yechimi:

" 8" ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$8^1=8$	$8^5=32768$
$8^2=64$	$8^6=262144$
$8^3=512$	$8^7=2097152$
$8^4=4096$	$8^8=16777216$

4 tadan keyin oxirgi raqam takrorlanayapti demak,

$86 \mid \underset{21}{4}$

$8^1 = 8$

$8^{2(qoldiq)}=64 \Rightarrow 8^{86}=\ldots 4$

$\ldots$

$2(qoldiq)$ $8^3=512$

$8^4 = 4096$

Javob: (A)

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi.

$8^{16} = \ldots 6$

Izoh: "4" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi.

1026. 8^{2018} ni oxirgi raqami ... ga teng.
A) 8 B) 4 C) 7 D) 6

1027. 8^{8^2+1} ni oxirgi raqami ... ga teng.
A) 8 B) 9 C) 7 D) 6

1028. 8^{4^2} ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 4 D) 6

1029. 8^{99} ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 4 D) 6

✓ 9^{51} ni oxirgi raqami...ga teng.
A) 4 B) 9 C) 1 D) 8

Yechimi:

" 9 " ning oxirgi raqamini toppish uchun nechtadan keyin oxirgi raqami takrorlanayotganini toppish lozim.

$9^1 = 9$ $\quad 9^3 = 729$

$9^2 = 81$ $\quad 9^4 = 6561$

2 tadan keyin oxirgi raqam takrorlanayapti demak,

$51 \mid \underset{25}{2}$

$9^{1(qoldiq)} = 9 \Rightarrow 9^{51} = \ldots 9$

$\ldots$

$1(qoldiq)$ $9^2 = 81$

Eslatma: Agar qoldiq "0" bo'lib qolsa, nechtada takrorlansa, shuning oxirgisi javob bo'ladi.

$9^{26} = \ldots 1$

Izoh: "2" ning *bo'linish belgisini* qo'llash yechimni topishni tezlashtiradi.

1030. 9^{8942} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

1031. 9^{2017} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

1032. 9^{9^2} ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

✓ $58^{58}+47^{47}+5^7$ ni oxirgi raqami ... ga teng.
A) 4 B) 2 C) 7 D) 8

Yechimi:

$58^{58}+47^{47}+5^7 = \ldots 8^{58}+\ldots 7^{47}+5^7$

$\left.\begin{array}{l} 8^{58}=\ldots 4 \\ 7^{47}=\ldots 3 \\ 5^7=\ldots 5 \end{array}\right\} \ldots 4+\ldots 3+\ldots 5=\ldots 2$

Izoh: har bir qo'shiluvchini oxirgi raqamini topib, qo'shib chiqish lozim.

1033. $29^{99}+99^9+201^7$ ni oxirgi raqami ... ga teng.
A) 1 B) 2 C) 9 D) 6

1034. $109^{789}-895^{67}+6784^7$ ni oxirgi raqami ... ga teng.
A) 4 B) 8 **C) 9** D) 6

1035. $1999^{7989}-556^{6789}-84^{997}$ ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

1036. $21^{11}-13^4+254^7$ ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

1037. $222^{101}+2013^{41}-58^7$ ni oxirgi raqami ... ga teng.
A) 4 B) 3 C) 9 D) 6

✓ $345\cdot2456\cdot2354\cdot109-3456\cdot234\cdot123$ ni oxirgi raqami...ga teng.
A) 4 B) 9 C) 1 D) 8
Yechimi:
$345\cdot2456\cdot2354\cdot109-3456\cdot234\cdot123\Rightarrow$
$=\cancel{3}\cancel{4}5\cdot\cancel{2}\cancel{4}5\cancel{6}\cdot\cancel{2}\cancel{3}5\cancel{4}\cdot\cancel{1}0\cancel{9}-\cancel{3}\cancel{4}5\cancel{6}\cdot\cancel{2}\cancel{3}\cancel{4}\cdot\cancel{1}\cancel{2}3=$
$=5\cdot6\cdot4\cdot9-6\cdot4\cdot3=...0-...2=...8$
Javob: (D)
Izoh: ko'paytiriladigan sonlarni ohirlarini olib, ko'paytirib chiqilishi lozim.
$345\cdot2456\cdot2354\cdot109\Rightarrow...5\cdot6\cdot4\cdot9$

1038. $64\cdot45\cdot67\cdot4567-34\cdot24\cdot14\cdot89$ ni oxirgi raqami ... ga teng.
A) 4 B) 1 C) 9 D) 6

1039. $81917\cdot983\cdot2993\cdot8392-301\cdot876\cdot2373\cdot123$ ni oxirgi raqami ... ga teng.
A) 4 B) 8 C) 9 D) 2

1040. $97\cdot98\cdot29\cdot19-31\cdot27\cdot23\cdot12+178623$ ni oxirgi raqami ... ga teng.
A) 4 B) 7 C) 9 D) 6

1041. $14\cdot13\cdot12+11\cdot10\cdot9-8\cdot7\cdot6$ ni oxirgi raqami ... ga teng.
A) 8 B) 1 C) 9 D) 6

Butun va kasr qism

✓ $[9,85]$ ni hisoblang.
A) 4 B) 9 C) 1 D) 8
Yechimi: $[9,85]=9$
Qoida: kasr sonning butun qismi – berilgan songa eng yaqin va undan kichik butun sondir.
Masalan:
$[5,8]=5;\quad [8,0(3)]=8;\quad \left[\frac{11}{4}\right]=\left[2\frac{3}{4}\right]=2.$
kasrni butun qismini aniqlashda quyidagi belgidan foydalaniladi:. [ ]

1042. $[2,185]$ ni hisoblang.
A) 2 B) 1 C) 9 D) 6

1043. $[303,909]$ ni hisoblang.
A) 30 B) 303 C) 3 D) 6

1044. $[11,2]+5$ ni hisoblang.
A) 30 B) 11 C) 3 D) 16

1045. $\left[\frac{85}{3}\right]$ ni hisoblang.
A) 28 B) 11 C) 3 D) 24

1046. $\left[\frac{5}{13}\right]$ ni hisoblang.
A) 2 B) 0 C) 3 D) 24

✓ $\left[-7,8(5)\right]$ ni hisoblang.
A) 4 B) 9 C) 1 D) –8
Yechimi:
Qoida: Sonning butun qismi " –" berilgan songa eng yaqin va undan kichik butun sondir. Masalan:
$[-5,8]=-6;\ \left[-8,0(3)\right]=-9;\ \left[-\frac{11}{4}\right]=\left[-2\frac{3}{4}\right]=-3;$
Minus sonlarda, qoidada aytilgan o'zidan kichigiga e'tibor bering.
$[-7,8(5)]=-8$ **Javob: (D)**

1047. $[-6,85]$ ni hisoblang.
A) –6 B) 1 C) 7 D) –7

1048. $[-11,09]$ ni hisoblang.
A) 11 B) –11 C) –12 D) 12

1049. $[-0,72]-5$ ni hisoblang.
A) –5 B) –1 C) 3 D) –6

1050. $\left[-\frac{19}{2}\right]$ ni hisoblang.
A) –8 B) 11 C) –9 D) –10

1051. $\left[-\frac{2}{3}\right]$ ni hisoblang.
A) –1 B) 0 C) 3 D) 1

✓ $\{9,85\}$ ni kasr qismi ...ga teng.
A) 4 B) 9 C) 1 D) 0,85
Yechimi:
Qoida: Berilgan sondan uning butun qismini ayrilganda hosil bo'lgan son kasr qismidir.
Masalan: $8,25-8=0,25\quad \left\{4\frac{2}{3}\right\}=4\frac{2}{3}-4=\frac{2}{3}$
$\{9,85\}=9,85-9=0,85$
Sonning kasr qismini aniqlashdaquyidagi belgidan foydalaniladi: { } **Javob: (D)**

1052. $\{2,185\}$ ni hisoblang.
A) 2 B) 1 C) 0,85 D) 0,185

1053. $\{3,9\}$ ni hisoblang.
A) 30 B) 3036 C) 3 D) 0,9

1054. $\{11,2\}+7$ ni hisoblang.
A) 7,2 B) 11 C) 3 D) 0,2

1055. $\left\{\frac{25}{3}\right\}$ ni hisoblang.
A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) 0,6 D) 2,4

1056. $\left\{\frac{5}{11}\right\}$ ni hisoblang.
A) 2 B) 0 C) $\frac{5}{11}$ D) $\frac{1}{5}$

✓ $100\cdot\left[\frac{1}{7}\right]+\left\{\frac{25}{7}\right\}$ ni hisoblang.

A) 4 B) 9 C) $\frac{4}{7}$ D) $100\frac{4}{7}$

Yechimi: $100\cdot\left[\frac{1}{7}\right]+\left\{\frac{25}{7}\right\}=100\cdot\left[\frac{1}{7}\right]+\left\{3\frac{4}{7}\right\}=100\cdot 0+\frac{4}{7}=\frac{4}{7}$ **J: (C)**

1057. $8\cdot\left[3\frac{2}{3}\right]+\left\{12\frac{2}{3}\right\}$ ni hisoblang.

A) $\frac{2}{3}$ B) $24\frac{2}{3}$ C) 24 D) $8\frac{2}{3}$

1058. $\left[12\frac{2}{7}+5\frac{6}{7}\right]+\left\{\frac{100}{5^2}\right\}$ ni hisoblang.

A) 18 B) 36 C) 19 D) 17

1059. $\left[12\frac{2}{7}\right]+\left[5\frac{6}{7}\right]$ ni hisoblang.

A) 7,2 B) 17 C) 18 D) 17,2

1060. $\left[\frac{100}{7^2}\right]\cdot 7+\left[\frac{490}{100}\right]^2$ ni hisoblang.

A) $\frac{1}{30}$ B) $30\frac{2}{3}$ C) 26 D) 30

✓ Ushbu $1\cdot 2\cdot 3\cdot\ldots\cdot 80$ ko'paytma nechta nol bilan tugaydi?

A) 4 B) 19 C) 20 D) 15

Yechimi: Ketma-ket kelgan sonlar ko`paytmasi $(1\cdot 2\cdot 3\cdot\ldots\cdot n=n!)$ nechta nol bilantugashi:

$$x=\left[\frac{n}{5}\right]+\left[\frac{n}{5^2}\right]+\left[\frac{n}{5^3}\right]+\left[\frac{n}{5^4}\right]+\ldots$$

$1\cdot 2\cdot 3\cdot\ldots\cdot 80$

$$\left[\frac{80}{5}\right]+\left[\frac{80}{5^2}\right]+\left[\frac{80}{5^3}\right]+\left[\frac{80}{5^4}\right]=16+3+0+0=19$$

Javob: (B)

1061. Ushbu $1\cdot 2\cdot 3\cdot\ldots\cdot 90$ ko'paytma nechta nol bilan tugaydi?

A) 21 B) 19 C) 20 D) 15

1062. Ushbu $1\cdot 2\cdot 3\cdot\ldots\cdot 75$ ko'paytma nechta nol bilan tugaydi?

A) 18 B) 19 C) 20 D) 15

1063. Ushbu $1\cdot 2\cdot 3\cdot\ldots\cdot 50$ ko'paytma nechta nol bilan tugaydi?

A) 4 B) 12 C) 20 D) 13

Ko'phadlar

✓ Quyidagi ifodalarning qaysi biri ko'phad?

1) $3a+2b^2$ 2) $4c-5$ 3) $\frac{2}{c}+5$ 4) $d+cb^{-2}$

A) 1; 4 B) 1; 3 C) 1; 2 D) 2; 3

Yechimi:

Qoida: Birhadlar yig'indisi ko'phad deyiladi.

Masalan:

$8a^2-4xy+9b^2$; $9x^4+5x+9$; $\frac{2}{5}a^2b^4-\frac{1}{9}x+\frac{b}{3}$;

$\frac{y}{x^2}+3ax+9n-$ ko'phad emas!!

1) $3a+2b^2$ *ko'phad*

2) $4c-5$ *ko'phad*

3) $\frac{c}{2}+5$ *ko'phad emas* **Javob: 1; 2(C)**

4) $d+\underline{cb^{-2}}$ *ko'phad emas*

1064. Quyidagi ifodalarning qaysi biri ko'phad?

1) $x-n^2$ 2) $4y^{-1}-5x$ 3) $6xy+5r$ 4) $d:c+6$

A) 1; 4 B) 1; 3 C) 1; 2 D) 2; 3

1065. Quyidagi ifodalarning qaysi biri ko'phad?

1) $ay-2:m$ 2) $\frac{4}{5}a^4-2$ 3) $4b+mn$ 4) $7g+d$ 5) $\frac{d}{n}+6$ 6) $\frac{7}{d}-11a$

A) 1; 4; 6 B) 1; 3; 5 C) 1; 2; 5 D) 2; 3; 4

1066. Quyidagi ifodalarning qaysi biri ko'phad?

1) $\frac{3}{xy}+a$ 2) $6y^{-4}-1$ 3) $9+6d$ 4) $9+6d$ 5) $ab^{-2}-x$ 6) $\frac{5}{nm}-d$

A) 3; 4 B) 1; 3; 5 C) 1; 2; 6 D) 2; 3; 4

✓ Beshinchi darajali birhadni toping?

1) $3ab^2$ 2) $5cd$ 3) $a^{-3}b^8$ 4) $nmdb^2$

A) 4 B) 1; 3 C) 1; 2 D) 2; 3

Yechimi:

Qoida: Birhadning darajasida, harflarning darajasini qo'shish lozim.

Masalan:

$8a^2\Rightarrow 2$; $9x^4b\Rightarrow 4+1=5$; $\frac{2}{5}a^2b^4\Rightarrow 2+4=6$;

1) $3ab^2\Rightarrow 1+2=3$; $3-daraja$

2) $5cd\Rightarrow 1+1=2$; $2-daraja$

3) $a^{-3}b^8-birhad\ emas$

4) $nmdb^2-1+1+1+2=5$ $5-daraja$

Javob: 4(A)

1067. Sakkizinchi darajali birhadni toping.

1) x^6n^2 2) $4y^{-11}x^3$ 3) $5a^5c^8$ 4) $6a^4b^4$ 5) $4y^{-10}x^2$ 6) $5a^6c^3$

A) 1; 4; 5 B) 1; 4 C) 1; 2 ; 3 D) 2; 3; 6

1068. Ikkinchi darajali birhadni toping.

1) aym 2) $\frac{4}{5}a^2$ 3) $2017\frac{d^2}{n}$ 4) $7gd$ 5) $65\frac{d}{n}$ 6) a^2y^2m

A) 1; 4; 6 B) 2; 3; 4 C) 1; 2; 5 D) 2; 4

1069. To'rtinchi darajali birhadni toping.

1) $\frac{3a}{xy}$ 2) $6y^{-4}$ 3) ab^2x 4) a^4 5) a^4b^2x 6) $\frac{3}{nm^2}$

A) 1; 4; 6 B) 3; 4 C) 1; 2; 3 D) 3; 5

✓ Beshinchi darajali ko'hadni toping?

A) $3a+2b^2m+5x+5$ B) $4ck-3x^2y^4+2n+5$

C) $d+cb^2+2n^4m+5$ D) $ab^{-2}-3x^3m+6x$

Yechimi:

Qoida: ko'phadning darajasi deyilganda, ko'phadga kiruvchi birhadlarning eng katta darajasi tushuniladi.

Masalan: $9x^9+ax^9-2ax$

$9ab^3-\boxed{2a^2b^4}+3b^2 \Rightarrow 2+4=6;\ \ 6-darajali\ ko'phad$

$9x^9+\boxed{ax^9}-2ax \Rightarrow 1+9=10\ \ 10-darajali\ ko'phad$

$\boxed{\frac{2}{5}x^{14}}+bx^8-9b^4x+5 \Rightarrow 14\ 14-darajali\ ko'phad$

$(C)\ d+cb^2+\boxed{2n^4m}+5 \Rightarrow 2n^4m \Rightarrow 2n^4m=4+1=5$

Javob: (C)

1070. Sakkizinchi darajali ko'phadni toping.

A) $3a^3-15a^2b+5ab^2$ B) $7c^3k^3-3xy^4+a^5$

C) $x^2+xy^2+2x^4y+5$ D) $a^4+b^3a^5-6a^2$

1071. Oltinchi darajali ko'phadni toping.

A) $3a^3-15a^2b+5ab^2$ B) $7c^3k^3-3xy^4+a^5$

C) $x^2+xy^2+2x^4y+5$ D) $ab^{-2}+xy^3+6x$

1072. Yettinchi darajali ko'phadni toping.

A) $3m^3n^4-n^2m+5nm^2$ B) $7c^3k^3-3xy^4+a^5$

C) $x^2+xy^2+2x^4y+5$ D) $ab^{-2}+xy^3+6x$

O'xshash hadlarni ixchamlash

✓ $-0,5ab^2x^3$ ga o'xshash birhadni toping.

A) $3abx$ B) $-0,5ba^2x^3$ C) abx^3 D) $2ab^2x^3$

Yechimi:

O'xshash hadlarni harf va darajalari bir xil bo'lishi lozim.

$-0,5\boxed{ab^2x^3}$ { $3abx$; $-0,5ba^2x^3$; abx^3; $2\boxed{ab^2x^3}$ } **Javob: (D)**

1073. $121a$ o'xshash birhadni toping.

A) $121a^2$ B) $35a$ C) $8a^{121}$ D) $\frac{121}{a}$

1074. $89x^4$ ga o'xshash birhadni toping.

A) $121x^2$ B) $14x$ C) $8x^4$ D) $\frac{121}{x^4}$

1075. $-0,8a^2yz$ ga o'xshash birhadni toping.

A) $-0,8ayz$ B) $97ayz^2$

C) $-0,8ay^2z$ D) $-a^2yz$

1076. $45nm^2$ ga o'xshash birhadni toping.

A) $5,6nm^2$ B) $45nm$

C) $45n^2m$ D) $46nm^4$

✓ $-8a-5a+7a+2a$ ni o'xshash xadlarni ixchamlang.

A) $-3a$ B) $-8a$ C) $4a$ D) $-4a$

Yechimi:

O'xshash hadlarni ixchamlashda ko'phaddagi birhadning koeffitsiyentlarni hisoblash lozim.

Masalan:

$\underbrace{-5x+2x}_{-5+2=-3}=-3x\ \underbrace{-8a-5a+7a+2a}_{-8-5+7+2=-4}=-4a$ **Javob: (D)**

Izoh: O'xshash hadlari ixcham shaklga keltirildi.

Misol sharti: Soddalashtiring, standart shaklga keltiring deyilsa ham, shunday qilinadi.

1077. $21b-10b+9b-12b$ ni o'xshash hadlarini ixchamlang.

A) $11b$ B) $-8b$ C) $8b$ D) $-11b$

1078. $-5x+6x-3x+7x$ ni standart shaklga keltiring.

A) $5x$ B) $-5x$ C) $4x$ D) $3x$

1079. $15x-7x+9x-3x$ ni soddalashtiring.

A) $8x$ B) $-14x$ C) $14x$ D) $3x$

1080. $45x-57x+9x+3x$ ni soddalashtiring.

A) x B) $-14x$ C) 0 D) $3x$

✓ $-1,8m+2,8m-4,5m-2,9m$ ni o'xshash xadlarni ixchamlang.

A) $-6,4m$ B) $-6,4m$ C) $7,4m$ D) $3m$

Yechimi:

$\underbrace{-1,8m+2,8m-4,5m-2,9m}_{-1,8+2,8-4,5-2,9=-6,4}=-6,4m$ **Javob: (A)**

Izoh: O'nli kasrda ham, avvalgi misoldagi kabi ixchamlash lozim.

1081. $1,3n-4,3n-5,7n-2,9n$ ni o'xshash hadlarini ixchamlang.

A) $11,4n$ B) $-8n$ C) $8n$ D) $-11,6n$

1082. $-8x+3,5x+3x+1,5x$ ni standart shaklga keltiring.

A) x B) $-5x$ C) 0 D) $3x$

1083. $6a+7a-9,24a+2,24a$ ni soddalashtiring.

A) $6a$ B) $-6a$ C) $5a$ D) $3a$

✓ $1\frac{4}{9}z-3\frac{5}{9}z+2\frac{7}{9}z-2\frac{2}{9}z$ ni o'xshash xadlarni ixchamlang.

A) $-3z$ B) $-1\frac{5}{9}z$ C) $1\frac{5}{9}z$ D) $4z$

Yechimi:

$1\frac{4}{9}z-3\frac{5}{9}z+2\frac{7}{9}z-2\frac{2}{9}z=-1\frac{5}{9}z$

$1\frac{4}{9}-3\frac{5}{9}+2\frac{7}{9}-2\frac{2}{9}=\frac{13}{9}-\frac{32}{9}+\frac{25}{9}-\frac{20}{9}=\frac{13-32+25-20}{9}=-\frac{14}{9}=-1\frac{5}{9}$

Javob: (B)

Izoh: Oddiy kasrda ham, avvalgi misoldagi kabi ixchamlash lozim :

1084. $\frac{2}{5}a-a-\frac{3}{5}a$ ni o'xshash hadlarini ixchamlang.

A) $1\frac{1}{5}a$ B) $-2\frac{2}{5}$ C) $-1\frac{1}{5}$ D) $-1\frac{1}{5}a$

1085. $\frac{5}{7}x-\frac{2}{7}x+\frac{1}{7}x-\frac{3}{7}x$ ni standart shaklga keltiring.

A) x B) $-\frac{5}{7}x$ C) $\frac{2}{7}x$ D) $\frac{1}{7}x$

1086. $2\frac{1}{11}y+\frac{4}{11}y-4\frac{5}{11}y-3\frac{5}{11}y$ ni soddalashtiring.

A) $-3\frac{5}{11}y$ B) $-5\frac{5}{11}y$ C) $4\frac{5}{11}y$ D) $-4\frac{5}{11}y$

✓ $18a-13b+2a+3b$ ni o'xshash xadlarni ixchamlang.

A) $-3a$ B) $20a+10b$

C) $20a-10b$ D) $-20a-10b$

Yechimi:

$18a-13b+2a+3b=\underline{18a}-\underline{\underline{13b}}+\underline{2a}+\underline{\underline{3b}}=$

$=20a-10b$

$\underline{18a}+\underline{2a}=20a$; $\quad-\underline{\underline{13b}}+\underline{\underline{3b}}=-10b$

Izoh: O'xshash hadlarni qidirish lozim. ya'ni a bilan a va b bilan b

$\left.\underline{18a}-\underline{\underline{13b}}+\underline{2a}+\underline{\underline{3b}}\right\}\Rightarrow\underline{18a}+\underline{2a}=20a$

$-\underline{\underline{13b}}+\underline{\underline{3b}}=-10b$

1087. $2m+q+q-4m$ ni o'xshash hadlarini ixchamlang.

A) $-2m+2q$ B) $-2m-2q$

C) $-6m+2q$ D) $6m+2q$

1088. $3n+2b-b-n$ ni standart shaklga keltiring.

A) $4n+b$ B) $2n+b$

C) $3n+b$ D) $2n+3b$

1089. $x^2+3y^2+4x^2-y^2$ ni soddalashtiring.

A) $4x^2+2y^2$ B) $5x^2-2y^2$

C) $5x^2+2y^2$ D) $2x^2+5y^2$

1090. $5a^2-4b^2-3a^2+b^2$ ni o'xshash hadlarini ixchamlang.

A) $2a^2-3b^2$ B) $2a^2+3b^2$

C) $2a^2+2b^2$ D) $4a^2-3b^2$

1091. $-a+b+1,4b-1,4a$ ni standart shaklga keltiring.

A) $-2,8a+2,8b$ B) $-2,4a+2,4b$

C) $-0,6a+0,6b$ D) $2,4a+2,4b$

1092. $3a+27+2a-22$ ni soddalashtiring.

A) $5a+5$ B) $5a$ C) $a+5$ D) 5

1093. $11x^2+4x-x^2-4x$ ni o'xshash hadlarini ixchamlang.

A) $10x^2$ B) $10x^2+8x$

C) $10x^2-8x$ D) $10x^2-5x$

1094. $2y^2-3y+2y-2y^2$ ni standart shaklga keltiring.

A) $4y^2-y$ B) $-y$

C) $4y^2-5y$ D) $4y^2+5y$

1095. $1,2a^3+3,4a^2-0,8a^2$ ni soddalashtiring.

A) $1,2a^3+4,2a^2$ B) $1,2a^3-4,2a^2$

C) $1,2a^3+2,6a^2$ D) $1,2a^3-2,6a^2$

1096. $0,3c^2-0,1c^2-0,5c^3$ ni soddalashtiring.

A) $0,4c^2+0,5c^3$ B) $0,4c^2-0,5c^3$

C) $0,2c^2+0,5c^3$ D) $0,2c^2-0,5c^3$

✓ $-9,387a-3,89b+8,197a-1,11b$ ni o'xshash xadlarni ixchamlang.

A) $-1,19a-5b$ B) $1,19a-5b$

C) $-1,19a+5b$ D) $1,19a+5b$

Yechimi:

$-9,387a-3,89b+8,197a-1,11b=$

$=\underline{-9,387a}-\underline{3,89b}+\underline{8,197a}-\underline{1,11b}=-1,19a-5b$

$\underline{-9,387a}+\underline{8,197a}=-1,19a$

$\underline{-3,89b}-\underline{1,11b}=-5b$

Javob: (A)

1097. $2ab+0,7b^2-5ab+1,2b^2+8ab$ ni o'xshash hadlarini ixchamlang.

A) $5ab+1,9b^2$ B) $5ab-1,9b^2$

C) $11ab+1,9b^2$ D) $11ab-1,9b^2$

1098. $5xy-3,5y^2-xy+1,3y^2-xy$ ni standart shaklga keltiring.

A) $2xy+2,2y^2$ B) $3xy-2,2y^2$

C) $2xy-2,5y^2$ D) $4xy-2,2y^2$

1099. $\frac{1}{3}x^2-\frac{1}{3}y+\frac{2}{3}x^2+\frac{1}{3}y$ ni soddalashtiring.

A) $x^2+\frac{2}{3}y$ B) x^2+y^2 C) x^2 D) $x^2-\frac{2}{3}y$

1100. $\frac{1}{5}a^2-\frac{3}{4}b^2+\frac{4}{5}a^2-\frac{3}{4}b^2$ ni o'xshash hadlarini ixchamlang.

A) $a^2-1,5b^2$ B) $a^2+\frac{3}{2}b^2$

C) a^2-b^2 D) $4a^2-3b^2$

1101. $2a^2b-8b^2+5a^2b+5c^2-3b^2+4c^2$ ni standart shaklga keltiring.

A) $7a^2b-5b^2+9c^2$ B) $7a^2b-11b^2+9c^2$

C) $7a^2b-11b^2+c^2$ D) $7a^2b+9c^2$

Qavslarni ochish

✓ $-(-x)+(-y)$ ni qavisini oching.

A) $x-y$ B) $x+y$ C) $-x-y$ D) $-x+y$

Yechimi:

Agar qavs oldida "–"ishorasi bo'lsa, qavs ichidagilar qarama–qarshisiga o'zgaradi. $-(-x)=x$

Agar qavs oldida "+"ishorasi bo'lsa, qavs ichidagilar o'zgarmaydi. demak, $-(-x)+(-y)=x-y$

Javob: (A)

1102. $x+(-(-y))$ ni qavsini oching.

A) $x-y$ B) $x+y$ C) $-x-y$ D) $-x+y$

1103. $-(-x)-(-y)$ ni qavsini oching.

A) $x-y$ B) $x+y$ C) $-x-y$ D) $-x+y$

1104. $x-(-(-y))$ ni qavsini oching.

A) $x-y$ B) $x+y$ C) $-x-y$ D) $-x+y$

✓ $c-(m-n-b)$ ni qavisini oching.

A) $a+m-n-b$ B) $a+m-n+b$
C) $a+m+n-b$ D) $a-m+n+b$

Yechimi:

Agar qavs oldida "–"ishorasi bo'lsa, qavs ichidagilar qarama–qarshisiga o'zgaradi.

$a-(m-n-b)=a+m-n-b$

Agar qavs oldida "+"ishorasi bo'lsa, qavs ichidagilar o'zgarmaydi.

$a+(m-n-b)=a+m-n-b$ **Javob: (D)**

1105. $x+(b+c+d-m)$ ni qavsini oching.

A) $x+b+c+d-m$ B) $x+b-c-d-m$
C) $x+b+c+d+m$ D) $x-b-c-d+m$

1106. $a-(b-c-d)$ ni qavsini oching.

A) $a+b+c+d$ B) $a-b+c+d$
C) $a+b-c-d$ D) $a+b-c-d$

1107. $x+y-(b+c-m)$ ni qavsini oching.

A) $x+y-b+c-m$ B) $x-y-b+c-m$
C) $x+y-b-c+m$ D) $x+y+b-c+m$

1108. $x+(a-b)-(c-d)$ ni qavsini oching.

A) $x+a-b-c+d$ B) $x+a+b-c+d$
C) $x+a+b-c-d$ D) $x+a-b-c+d$

1109. $m+(a-k-b)$ ni qavsini oching.

A) $m-a-k-b$ B) $m+a-k-b$
C) $m+a-k+b$ D) $m+a+k-b$

1110. $x+a+(m-2)$ ni qavsini oching.

A) $x+a-m-2$ B) $x-a+m-2$
C) $x+a+m-2$ D) $x-a-m+2$

1111. $-(m-n+5)$ ni qavsini oching.

A) $-m+n-5$ B) $m+n-5$
C) $m-n-5$ D) $-m-n-5$

1112. $(a+b)-(c-d)$ ni qavsini oching.

A) $a+b+c+d$ B) $a+b-c+d$
C) $a+b-c-d$ D) $a+b-c-d$

1113. $-(2a-b)+(m-1)$ ni qavsini oching.

A) $-2a-b+m-1$ B) $-2a+b+m+1$
C) $-2a+b+m-1$ D) $2a+b+m-1$

1114. $a+(b-(c-d))$ ni qavsini oching.

A) $a+b-c+d$ B) $-a+b-c+d$
C) $a+b-c-d$ D) $a-b-c+d$

1115. $x-(y-(p+k))$ ni qavsini oching.

A) $x-y-p-k$ B) $x-y+p+k$
C) $x+y+p+k$ D) $x-y-p+k$

✓ $5-(a-3)$ ni soddalashtiring.

A) $8-a$ B) $-8-a$ C) $8+a$ D) $-8+a$

Yechimi:

$5-(a-3)=5-a+3=8-a$ **Javob: (A)**

Izoh: Avval qavs ochib so'ngra ixchamlaymiz.

1116. $7+(12-2b)$ ni soddalashtiring.

A) $19-2b$ B) $5-2b$ C) $19+2b$ D) $18-2b$

1117. $64-(14+7x)$ ni soddalashtiring.

A) $60-7x$ B) $50-7x$ C) $50+7x$ D) $60+7x$

1118. $38+(12p-7)$ ni soddalashtiring.

A) $31-12p$ B) $31-12p$ C) $31+12p$ D) $50-7p$

✓ $x+(2x+0,5)$ ni soddalashtiring.

A) $-3x-0,5$ B) $3x+0,5$
C) $-3x+0,5$ D) $3x-0,5$

Yechimi:

$x+(2x+0,5)=x+2x+0,5=3x+0,5$ **Javob: (B)**

Izoh: Avval qavs ochib so'ngra ixchamlaymiz.

1119. $3x-(x-2)$ ni soddalashtiring.

A) $2x+2$ B) $2x-2$ C) $4x+2$ D) $4x-2$

1120. $4a-(a+6)$ ni soddalashtiring.

A) $3a+6$ B) $3a-6$ C) $2a-6$ D) $5a-6$

1121. $6b+(10-4,5b)$ ni soddalashtiring.

A) $1,5b-10$ B) $10,5b-10$
C) $1,5b+10$ D) $10,5b+10$

✓ $(x-1)+(12-7,5x)$ ni soddalashtiring.

A) $-6,5x+11$ B) $-6,5x-11$
C) $6,5x+11$ D) $6,5x-11$

Yechimi:

$(x-1)+(12-7,5x)=x-1+12-7,5x=$
$=\underline{x}-1+12-\underline{7,5x}=-6,5x+11$ **Javob: (A)**

Izoh: Avval qavs ochib so'ngra ixchamlaymiz.

1122. $(2p+1,9)-(7-p)$ ni soddalashtiring.

A) $3p-5,1$ B) $3p+5,1$ C) $p+8,9$ D) $2p-5,1$

1123. $(3-0,4a)-(10-0,8a)$ ni soddalashtiring.

A) $7+0,8a$ B) $0,4a-7$
C) $-7-0,8a$ D) $-7+1,2a$

1124. $b-(4-2b)+(3b-1)$ ni soddalashtiring.

A) $6b-4$ B) $2b-5$ C) $6b-5$ D) $6b+5$

1125. $y-(y+4)+(y-4)$ ni soddalashtiring.

A) $3y-8$ B) $y-8$ C) $2y-8$ D) $y+8$

1126. $4x-(1-2x)+(2x-7)$ ni soddalashtiring.

A) $4x-8$ B) $8x+8$ C) $8x-8$ D) $-4x-8$

✓ $(5x-1)-(2-8x)$ ni x=0,75 ga teng bo'lgandagi son qiymatini toping.

A) –6,5 B) 6,5 C) 6,75 D) –6,75

Yechimi:

$(5x-1)-(2-8x)=5x-1-2+8x=$
$=\underline{5x}-1-2+\underline{8x}=13x-3$

Javob: (C)

$13x-3\Rightarrow x=0,75$ *ni qo'yamiz*

$13\cdot 0,75-3=6,75$

Izoh: Avval qavs ochib, ixchamlaymiz va so'ngra berilgan son qiymatini qo'yamiz.

1127. $(6-2y)-(15-3y)$ ni $y=-0,2$ ga teng bo'lgandagi son qiymatini toping.

A) 9,2 B) –9,2 C) 8,9 D) 8,2

1128. $12+7p-(1-3p)$ ni $p=-1,7$ ga teng bo'lgandagi son qiymatini toping.

A) –6 B) –5 C) –7 D) 11

1129. $37-(x-16)+(11x-53)$ ni $x=-0,03$ ga teng bo'lgandagi son qiymatini toping.

A) –0,3 B) –3 C) 0,3 D) –0,4

Ko'phadni birhadga ko'paytirish

✓ $4(6-3n)$ ko'phad va bir hadni ko'paytmasini toping.

A) $24-24n$ B) $24-12n$

C) $12-24n$ D) $12-12n$

Yechimi:

ko'paytirish qoidasi:

$n(a-b)=n\cdot a-n\cdot b$ *yoki* $(a-b)n=n\cdot a-n\cdot b$

$\boxed{4}(6-3n)=\boxed{4}\cdot 6-\boxed{4}\cdot 3n=24-12n$ **Javob: (B)**

Izoh: Agar qavs oldida "–" bo'lsa, qavs ichidagi ishoralar o'zgaradi :.

$\boxed{-5}(4a-7b)=\boxed{-5}\cdot 4a-\boxed{-5}\cdot 7b=-20a+35b$

1130. $8(6z+9)$ ko'phad va birhadni ko'paytmasini toping.

A) $72z-72$ B) $48+72z$ C) $72z+48$ D) $48z+72$

1131. $11(5c^3-2n)$ ko'phad va birhadni ko'paytmasini toping.

A) $22c^3-55n$ B) $55c-22n$

C) $55c^3-22n$ D) $5c^3-22n$

1132. $-5(10+m)$ ko'phad va birhadni ko'paytmasini toping.

A) $50-5m$ B) $-50+5m$

C) $-15-5m$ D) $-50-5m$

1133. $(-2m+3n)(-10)$ ko'phad va birhadni ko'paytmasini toping.

A) $-20m-30n$ B) $20m-30n$

C) $20m+30n$ D) $-20m+30n$

1134. $2(3a^2-4a+8)$ ko'phad va birhadni ko'paytmasini toping.

A) $6a^2-6a+16$ B) $6a^2-8a+16$

C) $6a^2-6a-16$ D) $6a^2+6a-16$

1135. $(3a-5b+bc)(-3)$ ko'phad va birhadni ko'paytmasini toping.

A) $-9a+15b-3bc$ B) $-9a+15b+3bc$

C) $-9a-15b-3bc$ D) $9a+15b-3bc$

1136. $(-5)(3x^3+7x^2-x)$ ko'phad va birhadni ko'paytmasini toping.

A) $8x^3-35x^2+5x$ B) $-8x^3-35x^2+5x$

C) $-15x^3-35x^2+5x$ D) $-15x^3+35x^2+5x$

✓ $\left(-\frac{2}{3}\right)(3n-4m)$ ko'phad va bir hadni ko'paytmasini toping.

A) $-2n+\frac{8}{3}m$ B) $-2n-\frac{8}{3}m$

C) $2n+\frac{8}{3}m$ D) $2n-\frac{8}{3}m$

Yechimi: ko'paytirish qoidasi:

$n(a-b)=n\cdot a-n\cdot b$ *yoki* $(a-b)n=n\cdot a-n\cdot b$

$\left(-\frac{2}{3}\right)(3n-4m)=\left(-\frac{2}{3}\right)3n-\left(-\frac{2}{3}\right)4m=$

$=\left(-\frac{2}{\cancel{3}}\right)\cancel{3}n-\left(-\frac{2}{3}\right)4m=-2n+\frac{8}{3}m$ **Javob: (A)**

1137. $-\frac{1}{2}(-2+x)$ ko'phad va birhadni ko'paytmasini toping.

A) $-1-\frac{1}{2}x$ B) $1+\frac{1}{2}x$ C) $-\frac{1}{2}x$ D) $1-\frac{1}{2}x$

1138. $\left(-\frac{1}{3}\right)(m-n+p)$ ko'phad va birhadni ko'paytmasini toping.

A) $-\frac{1}{3}m-\frac{1}{3}n-\frac{1}{3}p$ B) $-\frac{1}{3}m+\frac{1}{3}n+\frac{1}{3}p$

C) $-\frac{1}{3}m+\frac{1}{3}n-\frac{1}{3}p$ D) $3m-3n+3p$

1139. $(2y-5)\left(-\frac{1}{7}\right)$ ko'phad va birhadni ko'paytmasini toping.

A) $-\frac{2}{7}y+\frac{5}{7}$ B) $\frac{2}{7}y+\frac{5}{7}$

C) $-\frac{2}{7}y-\frac{5}{7}$ D) $\frac{2}{7}y-\frac{5}{7}$

✓ $3(6-5x)+17x-10$ ni soddalashtiring.

A) $8+2x$ B) $8-2x$

C) $-8+2x$ D) $-8-2x$

Yechimi:

$3(6-5x)+17x-10=18-15x+17x-10=$

$=18-\underline{15x}+\underline{17x}-10=8+2x$ **Javob: (A)**

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz.

1140. $2(7,3-1,6a)+(3,2a-9,6)$ ni soddalashtiring.

A) 10 B) 20 C) 15 D) 5

1141. $8(3y+4)-29y+14$ ni soddalashtiring.

A) $5y+46$ B) $5y-46$ C) $-5y-46$ D) $-5y+46$

1142. $-5(0,3b+1,7)+12,5-8,5b$ ni soddalashtiring.

A) $-10b+4$ B) $-10b-4$ C) $10b+4$ D) $10b-4$

✓ $p=0,5$ bo'lsa, $0,6(p-3)+p+2$ ni son qiymatini toping.

A) 8 B) 1 C) 3 D) 2

Yechimi:

$0,6(p-3)+p+2=0,6p-1,8+p+2=$

$=0,6p-1,8+p+2=1,6p+0,2$

Javob: (A)

$1,6p+0,2$ *ga* $p=0,5$ *ni qo'yamiz*

$1,6\cdot 0,5+0,2=0,8+0,2=1$

Izoh: Avval qavs ochib, ixchamlaymiz va so'ngra berilgan son qiymatini qo'yamiz.

1143. $q=\frac{1}{3}$ bo'lsa, $4(0,5q-6)-14q+12$ ni son qiymatini toping.

A) 16 B) -16 C) -15 D) -8

1144. $a=\frac{1}{4}$ bo'lsa, $-0,5(3a+4)+1,9a-1$ ni son qiymatini toping.

A) $-3,1$ B) 3,1 C) 31 D) -3

1145. $b=-16$ bo'lsa, $10(0,7-3b)+14b+13$ ni son qiymatini toping.

A) 256 B) -256 C) -276 D) 276

✓ $6(2t-3n)-3(3t-2n)$ ni soddalashtiring.

A) $3t-12n$ B) $3t+12n$

C) $-3t-12n$ D) $-3t+12n$

Yechimi:

$6(2t-3n)-3(3t-2n)=12t-18n-9t+6n=$

$=\underline{12t}-\underline{\underline{18n}}-\underline{9t}+\underline{\underline{6n}}=3t-12n$ **Javob: (A)**

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz.

1146. $-2(3x-2y)-5(2y-3x)$ ni soddalashtiring.

A) $9x-6y$ B) $9x+6y$

C) $21x-6y$ D) $-21x-6y$

1147. $5(a-b)-4(2a-3b)$ ni soddalashtiring.

A) $3a-7b$ B) $-3a+7b$

C) $-3a-7b$ D) $3a+7b$

1148. $7(4p+3)-6(5+7p)$ ni soddalashtiring.

A) $14p-9$ B) $14p+9$

C) $-14p+9$ D) $-14p-9$

✓ $\left(1\frac{4}{7}a^3x^3-2\frac{3}{4}a^2x-11ax^4\right)\left(-2\frac{6}{11}ax^6\right)$ ko'phad va bir hadni ko'paytmasini toping.

A) $4a^4x^9+7a^3x^7+28a^2x^{10}$ B) $-4a^4x^9-7a^3x^7-28a^2x^{10}$

C) $4a^4x^9+7a^3x^7+28a^2x^{10}$ D) $-4a^4x^9+7a^3x^7+28a^2x^{10}$

Yechimi:

$\left(1\frac{4}{7}a^3x^3-2\frac{3}{4}a^2x-11ax^4\right)\left(-2\frac{6}{11}ax^6\right)=$

$=\left(\frac{11}{7}a^3x^3-\frac{11}{4}a^2x-11ax^4\right)\left(-\frac{28}{11}ax^6\right)=$

Javob: (A)

$\frac{\cancel{11}}{\cancel{7}}a^3x^3\left(-\frac{\cancel{28}^4}{\cancel{11}}ax^6\right)=-4a^4x^9$

$-\frac{\cancel{11}}{\cancel{4}}a^2x\left(-\frac{\cancel{28}^7}{\cancel{11}}ax^6\right)=7a^3x^7$

$-\cancel{11}ax^4\left(-\frac{28}{\cancel{11}}ax^6\right)=28a^2x^{10}$

$=-4a^4x^9+7a^3x^7+28a^2x^{10}$

1149. $7ab(2a-3b)$ ko'phad va birhadni ko'paytmasini toping.

A) $14a^2b-21ab^2$ B) $-14a^2b+21ab^2$

C) $-14a^2b-21ab^2$ D) $14a^2b+21ab^2$

1150. $12p^2q(q^2p-q^2)$ ko'phad va birhadni ko'paytmasini toping.

A) $12p^3q^3-12p^2q$ B) $12p^2q^3-12p^2q^3$

C) $12p^3q^3-12p^3q^2$ D) $12p^3q^3-12p^2q^3$

1151. $3xy^2(xy-2x^3)$ ko'phad va birhadni ko'paytmasini toping.

A) $3x^2y^3-6x^4y^2$ B) $3x^3y^3-6x^4y^2$

C) $3x^3y^3+6x^4y^2$ D) $12x^3y^3-x^2y^2$

1152. $17a(5a+6b-3ab)$ ko'phad va birhadni ko'paytmasini toping.

A) $85a^2+102ab+51a^2b$ B) $85a^2+102ab-51a^2b$

C) $85a^2-102ab-51a^2b$ D) $85a^2+102ab-51ab^2$

1153. $8ab(2b-3ac+c^2)$ ko'phad va birhadni ko'paytmasini toping.

A) $16ab^2-24a^2bc+abc^2$

B) $16ab^2-24a^2bc+8abc^2$

C) $24ab^2-16a^2bc+8abc^2$

D) $16ab^2-24a^2bc-8abc^2$

1154. $\left(\frac{1}{2}a^3b^2-\frac{3}{4}ab^4\right)\frac{4}{3}a^3b$ ko'phad va birhadni ko'paytmasini toping.

A) $\frac{2}{3}a^6b^3-a^4b^5$ B) $\frac{2}{3}a^6b^3+a^4b^5$

C) $a^6b^3-\frac{2}{3}a^4b^5$ D) $a^6b^3+\frac{2}{3}a^4b^5$

1155. $\left(\frac{2}{3}a^2b^4+\frac{1}{2}a^3b\right)\frac{3}{2}ab^3$ ko'phad va birhadni ko'paytmasini toping.

A) $a^3b^7+\frac{3}{4}a^4b^5$ B) $a^3b^7-\frac{3}{4}a^4b^5$

C) $a^3b^7+\frac{3}{4}a^4b^4$ D) $a^3b^7-\frac{3}{4}a^4b^4$

✓ $3\left(\frac{1}{2}x-1\frac{1}{2}\right)+2\left(\frac{1}{4}x+\frac{1}{2}\right)$ ni soddalashtiring.

A) $-2x-3\frac{1}{2}$ B) $2x-3\frac{1}{2}$

C) $-2x+3$ D) $2x+3$

Yechimi: **Javob: (B)**

$3\left(\frac{1}{2}x-1\frac{1}{2}\right)+2\left(\frac{1}{4}x+\frac{1}{2}\right)=3\cdot\frac{1}{2}x-3\cdot\frac{3}{2}+2\cdot\frac{1}{4}x+2\cdot\frac{1}{2}=$

$=\frac{3}{2}x-\frac{9}{2}+\frac{1}{2}x+1=\frac{3}{2}x-\frac{9}{2}+\frac{1}{2}x+1=2x-3\frac{1}{2}$

$\frac{3}{2}x+\frac{1}{2}x=\frac{3+1}{2}x=2x \qquad -\frac{9}{2}+1=-3\frac{1}{2}$

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz .

1156. $5(0,8y-0,1)-0,7(4y+1)+8(0,7-0,4y)$ ni soddalashtiring.

A) $-2y+4,4$ B) $-2y+4,2$

C) $2y+4,4$ D) $-2y-4,4$

1157. $0,2(5y+6)-4(0,25y-1,3)+5(0,1y-1,62)$ ni soddalashtiring.

A) $0,5y-1,7$ B) $0,5y+1,7$

C) $0,5y-1,3$ D) $0,5y-1,6$

1158. $\frac{5}{4}\left(\frac{1}{5}x-\frac{1}{5}\right)-\frac{4}{5}\left(\frac{1}{4}x-\frac{3}{4}\right)$ ni soddalashtiring.

A) $\frac{1}{20}x-\frac{7}{20}$ B) $-\frac{1}{20}x+\frac{7}{20}$

C) $\frac{1}{20}x+\frac{9}{20}$ D) $\frac{1}{20}x+\frac{7}{20}$

Ko'phadni ko'phadga ko'paytirish

✓ $(7n-2m)(3n-5m)$ ko'phadlarni ko'paytiring.

A) $21n^2-41nm+10m^2$ B) $21n^2-41nm-10m^2$

C) $21n^2+41nm+10m^2$ D) $21n^2-41nm+10m$

Yechimi:

$(7n-2m)(3n-5m)=\overrightarrow{7n}(3n-5m)-\overrightarrow{2m}(3n-5m)=$

$=21n^2-\underline{35nm}-\underline{6nm}+10m^2=21n^2-41nm+10m^2$

Javob: (A)

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz .

1159. $(a+2)(a+3)$ ko'phadlarni ko'paytiring.

A) a^2+a+6 B) a^2+5a+6

C) a^2+5a-6 D) a^2-5a+6

1160. $(z-1)(z+4)$ ko'phadlarni ko'paytiring.

A) z^2-3z-4 B) z^2-z-4

C) z^2+3z-4 D) z^2+z-4

1161. $(m+6)(n-1)$ ko'phadlarni ko'paytiring.

A) $mn-m+6n-6$ B) $mn-m+6n+6$

C) $mn-m-6n-6$ D) $mn+m+6n-6$

1162. $(b+4)(c+5)$ ko'phadlarni ko'paytiring.

A) $bc+4b+5c+20$ B) $bc+5b+4c+20$

C) $bc+5b+3c+20$ D) $b+5bc+4c+20$

1163. $(c-4)(d-3)$ ko'phadlarni ko'paytiring.

A) $cd-3c-4d-12$ B) $cd-3c+4d+12$

C) $cd-3c-4d+12$ D) $cd-4c-3d+12$

1164. $(a-10)(-a-2)$ ko'phadlarni ko'paytiring.

A) $-a^2-12a+20$ B) $-a^2+8a-20$

C) $-a^2+8a-12$ D) $-a^2+8a+20$

1165. $(2a+3)(5a-4)$ ko'phadlarni ko'paytiring.

A) $10a^2+a-12$ B) $10a^2+7a-12$

C) $10a^2+8a-12$ D) $10a^2-7a-12$

1166. $(-p+q)(-1-q)$ ko'phadlarni ko'paytiring.

A) $p+pq-q+q^2$ B) $p+pq+q-q^2$

C) $p+pq-q-q^2$ D) $p-pq-q-q^2$

1167. $(5p-3q)(4p-q)$ ko'phadlarni ko'paytiring.

A) $20p^2-12pq+3q^2$ B) $20p^2-17pq+3q^2$

C) $20p^2-12pq-3q^2$ D) $-20p^2+12pq-3q^2$

1168. $\left(\frac{1}{2}a+3b\right)\left(\frac{1}{2}a-3b\right)$ ko'phadlarni ko'paytiring.

A) $\frac{1}{4}a^2+9b^2$ B) $\frac{1}{4}a^2-9b^2$

C) a^2+5a-b D) a^2+5a

1169. $\left(\frac{1}{3}a-2b\right)\left(\frac{1}{3}a+2b\right)$ ko'phadlarni ko'paytiring.

A) $\frac{1}{9}a^2+4b^2$ B) $\frac{1}{9}a^2-\frac{4}{3}ab-4b^2$

C) $\frac{1}{9}a^2-4b^2$ D) $\frac{1}{9}a^2+\frac{4}{3}ab-4b^2$

1170. $(0,3-m)(0,3+m)$ ko'phadlarni ko'paytiring.

A) $0,09-m^2$ B) $0,9-m^2$

C) $0,09+m^2$ D) $0,09-0,6m-m^2$

1171. $(a^2+b)(a+b^2)$ ko'phadlarni ko'paytiring.

A) $a^3+2a^2b^2+ab+b^3$ B) $a^3+a^2b^2+ab+b^3$

C) $a^3 2a^2b^2+2ab+b^3$ D) $a^3+a^2b^2-ab+b^3$

1172. $(a^2+2b)(2a+b^2)$ ko'phadlarni ko'paytiring.

A) $2a^3+a^2b^2+4ab+b^3$

B) $2a^3+a^2b^2+4ab-2b^3$

C) $2a^3+a^2b^2+4ab+2b^3$

D) $2a^3+a^2b^2+ab+2b^3$

1173. $(5x^2-6y^2)(6x^2-5y^2)$ ko'phadlarni ko'paytiring.

A) $30x^4-6x^2y^2+30y^4$ B) $30x^4-5x^2y^2+30y^4$

C) $30x^4+61x^2y^2+30y^4$ D) $30x^4-61x^2y^2+30y^4$

✓ $(2a-b)(4a^2+2ab+b^2)$ ko'phadlarni ko'paytiring.

A) $8a^3-b^3$ B) $8a^3+b^3$

C) $-8a^3-b^3$ D) $-8a^3+b^3$

Yechimi:

$(2a-b)(4a^2+2ab+b^2)=2a(4a^2+2ab+b^2)-$

$-b(4a^2+2ab+b^2)=8a^3+\cancel{4a^2b}+\cancel{2ab^2}-$

$-\cancel{4a^2b}-\cancel{2ab^2}-b^3=8a^3-b^3$

Javob: (A)

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz . o'xshash hadlar "+"va "–" bilan farq qilsa "0" bo'lib ketadi. $+\cancel{4a^2b}+\cancel{2ab^2}-\cancel{4a^2b}-\cancel{2ab^2}$

1174. $(3a-2b)(9a^2+6ab+4b^2)$ ko'phadlarni ko'paytiring.

A) $-27a^3-8b^3$ B) $27a^3-8b^3$

C) $27a^3+8b^3$ D) $-27a^3+8b^3$

1175. $(5x+3y)(25x^2-15xy+9y^2)$ ko'phadlarni ko'paytiring.

A) $125x^3-27y^3$ B) $-125x^3+27y^3$

C) $125x^3+27y^3$ D) $15x^3+27y^3$

1176. $(1-n)(1+n+n^2)$ ko'phadlarni ko'paytiring.

A) $1-n^3$ B) $1+n^3$ C) $-1-n^3$ D) $-1+n^3$

1177. $(5c-4y)(8c-2x+6y)$ ko'phadlarni ko'paytiring.

A) $40c^2-10cy-2cx+8xy-24y^2$

B) $40c^2-10cx-2cy+8xy-24y^2$

C) $40c^2-10cx+2cy+8xy-24y^2$

D) $40c^2-10cx-2xy+8cy-24y^2$

1178. $(4b-c)(-5b+3c-4y)$ ko'phadlarni ko'paytiring.

A) $-20b^2-17bc-16by-3c^2+4cy$

B) $20b^2+17by-16bc-3c^2+4cy$

C) $-20b^2+17bc-16by-3c^2+4cy$

D) $-20b^2+17bc-16by-3c^2+4cx$

1179. $(4x-3y+2z)(3x-3y)$ ko'phadlarni ko'paytiring.

A) $12x^2-21xz+6xy+9y^2-6yz$

B) $12x^2-21xy+6xz-9y^2-6yz$

C) $12x^2-21xy-6xz+9y^2-6yz$

D) $12x^2-21xy+6xz+9y^2-6yz$

1180. $(3a-3b+4c)(3a-5b)$ ko'phadlarni ko'paytiring.

A) $9a^2-24ac+12ab+15b^2-20bc$

B) $9a^2-24ab+12ac+15b^2-20bc$

C) $9a^2-24ab+12ac-15b^2-20bc$

D) $9a^2-24ab-12ac+15b^2-20bc$

✓ $2y^2(y+5)(y-3)$ ko'phadlarni ko'paytiring.

A) $2y^4+4y^3-30y^2$ B) $2y^4+4y+30$

C) $y^4+4y-30$ D) $2y^4+y+30$

Yechimi:

$2y^2(y+5)(y-3)=2y^2\underline{(y+5)(y-3)}=$

$=2y^2(y^2+2y-15)=2y^4+4y^3-30y^2$

Javob: (A)

$(y+5)(y-3)=y(y-3)+5(y-3)=$

$=y^2-3y+5y-15=y^2+2y-15$

1181. $a^2(a-1)(3-a)$ ko'phadlarni ko'paytiring.

A) $-a^4+4a^3+3a^2$ B) $-a^4+4a^3-3a^2$

C) $-a^4-4a^3-3a^2$ D) $-a^4+3a^3-4a^2$

1182. $-3b^2(b+2)(1-b)$ ko'phadlarni ko'paytiring.

A) $3b^4-3b^3+6b^2$ B) $3b^4+b^3-6b^2$

C) $3b^4-3b^3-6b^2$ D) $3b^4+3b^3-6b^2$

1183. $-0,5c^2(2c-3)(4-c^2)$ ko'phadlarni ko'paytiring.

A) $c^5-1,5c^4-4c^3+6c^2$ B) $c^5-1,5c^4+4c^3+6c^2$

C) $c^5+1,5c^4+4c^3+6c^2$ D) $c^5-1,5c^4-4c^3-6c^2$

✓ $(a+b)(a+2b)(a-3b)$ ko'phadlarni ko'paytiring.

A) $a^3-7ab^2-6b^3$ B) $a^3-7ab^2+6b^3$

C) $a^3+7ab^2-6b^3$ D) $-a^3-7ab^2-6b^3$

Yechimi:

$(a+b)(a+2b)(a-3b)=$

$(a+b)(a+2b)=a^2+2ab+ab+2b^2=a^2+3ab+2b^2$

$(a+b)(a+2b)(a-3b)=(a^2+3ab+2b^2)(a-3b)=$

$(a^2+3ab+2b^2)(a-3b)=$

$=a^2(a-3b)+3ab(a-3b)+2b^2(a-3b)=$

$=a^3-3a^2b+3a^2b-9ab^2+2ab^2-6b^3=$ **J: (A)**

$=a^3-\cancel{3a^2b}+\cancel{3a^2b}-9ab^2+2ab^2-6b^3=$

$=a^3-7ab^2-6b^3$

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz .o'xshash hadlar "+" va "–" bilan farq qilsa "0" bo'lib ketadi. $-\cancel{3a^2b}+\cancel{3a^2b}$

1184. $(a-b)(a+b)(a-3b)$ ko'phadlarni ko'paytiring.

A) $a^3-3a^2b+ab^2+3b^3$ B) $a^3-3a^2b-ab^2+3b^3$

C) $a^3-3a^2b-ab^2-3b^3$ D) $a^3+3a^2b+ab^2+3b^3$

1185. $(a-b)(a+b)(a+3b)$ ko'phadlarni ko'paytiring.

A) $a^3+3a^2b+ab^2+3b^3$ B) $a^3-3a^2b-ab^2+3b^3$

C) $a^3-3a^2b-ab^2-3b^3$ D) $a^3+3a^2b-ab^2-3b^3$

1186. $(x+3)(2x-1)(3x+2)$ ko'phadlarni ko'paytiring.

A) $6x^3+19x^2+x-6$ B) $6x^3+x^2+19x-6$

C) $6x^3-19x^2+x-6$ D) $6x^3-19x^2-x-6$

1187. $(x-2)(3x+1)(4x-3)$ ko'phadlarni ko'paytiring.

A) $12x^3-29x^2-7x+6$ B) $12x^3-29x^2+7x+6$

C) $12x^3-29x^2+7x-6$ D) $12x^3-29x^2-7x-6$

✓ $(a^2-7)(a+2)-(2a-1)(a-14)$ ni soddalashtiring.

A) $a^3+22a-28$ B) $a^3-22a-28$

C) $a^3+22a+28$ D) $a^3+2a-28$

Yechimi:

$(a^2-7)(a+2)-(2a-1)(a-14)=$

$=a^3+2a^2-7a-14-(2a^2-29a+14)=$

$=a^3+\cancel{2a^2}-7a-14-\cancel{2a^2}+29a-14=$

$=a^3+22a-28$

Izoh: Avval qavs ochib, so'ngra o'xshash hadlarni ixchamlaymiz

$(a^2-7)(a+2)=a^3+2a^2-7a-14$

Javob: (A)

$(2a-1)(a-14)=2a^2-28a-a+14=2a^2-29a+14$

1188. $2x^2-(x-2y)(2x+y)$ ko'phadlarni ko'paytiring.

A) $3xy-2y^2$ B) $3xy+2y^2$

C) $-3xy+2y^2$ D) $-3xy-2y^2$

1189. $(a-b)(a+2)-(a+b)(a-2)$ ni soddalashtiring.

A) $2ab-4a$ B) $2ab+4a$

C) $-2ab-4a$ D) $-2ab+4a$

1190. $x(x+3)-(2x-1)(3x+2)$ ni soddalashtiring.

A) $-5x^2+2x+2$ B) $5x^2+2x+2$

C) $-5x^2+2x-2$ D) $5x^2+2x-2$

1191. $(x+y)(x-y)-(x-1)(x-2)$ ni soddalashtiring.

A) x^2+3x-y^2-2 B) $3x-y^2-2$

C) $3x+y^2-2$ D) $-3x-y^2-2$

✓ $27048\cdot27044-27047\cdot27043$ ni hisoblang.

A) 59091 B) 58051 C) 54091 D) 60491

Yechimi:

Bu turdadi misollarni yechishda belgilash kiritish lozim, ya'ni eng kichik sonni belgilash lozim.

$27048\cdot27044-27047\cdot27043=\underbrace{27048}_{y+5}\cdot\underbrace{27044}_{y+1}-\underbrace{27047}_{y+4}\cdot\underbrace{27043}_{y}=$

$=(y+5)(y+1)-(y+4)y=y^2+5y+y+5-y^2-4y=2y+5$

$2y+5=2\cdot27043+5=54091$

Javob: (C)

1192. $2013\cdot2015-2010\cdot2014$ ni soddalashtiring.

A) 9055 B) 8055 C) 9040 D) 8040

1193. $568883\cdot568883-568885\cdot568881$ ni soddalashtiring.

A) 456498 B) 21564 C) 45982 D) 4

1194. $226645\cdot226643-226644\cdot226642$ ni soddalashtiring.

A) 453287 B) 453284

C) 435287 D) 453827

✓ $(3a+n)(a+n-2)-(a+n)(3a+n-5)-3n$ ni soddalashtiring.

A) $-a$ B) $-a-10n$ C) a D) $a+10n$

Yechimi: Bu turdadi misollarni yechishda belgilash kiritish lozim, ya'ni:

$\begin{pmatrix}3a+n\\x\end{pmatrix}\begin{pmatrix}a+n-2\\y\end{pmatrix}-\begin{pmatrix}a+n\\y\end{pmatrix}\begin{pmatrix}3a+n-5\\x\end{pmatrix}-3n=$

$=x(y-2)-y(x-5)-3n=$ **J: (A)**

$=\cancel{xy}-2x-\cancel{xy}+5y=-2x+5y-3n=-2(3a+n)+5(a+n)-3n=$

$=-6a-\cancel{2n}+5a+\cancel{5n}-\cancel{3n}=-a$

1195. $(a+b)(a-2b+1)-(a-2b)(a+b-1)-3b$ ni soddalashtiring.

A) $2a+4b$ B) $2a-4b$

C) $2a-b$ D) $2a+b$

1196. $(n-m)(n+2m+2)-(n+2m)(n-m+2)$ ni soddalashtiring.

A) $2m$ B) $-2m$ C) $6m$ D) $-6m$

1197. $(4c+2d)(c+d-1)-(c+d)(4c+2d-1)-3d$ ni soddalashtiring.

A) $-3c-4d$ B) $-3c-6d$

C) $-3c+4d$ D) $-3c-d$

✓ Agar bo'luvchi $a-4$ ga, bo'linma $a+1$ ga, qoldiq 5 ga teng bo'lsa, bo'linuvchini toping.

A) a^2-3a-4 B) a^2-3a+1

C) a^2+5a-4 D) a^2+3a-4

Yechimi:

Bo'linuvchi	Bo'luvchi	?	$a-4$
	Bo'linma		$a+1$
Qoldiq			5

$?=(a-4)(a+1)+5$

Javob: (B)

$?=a^2+a-4a-4+5=a^2-3a+1$

1198. Agar bo'luvchi $2b-1$ ga, bo'linma $b+2$ ga, qoldiq 11 ga teng bo'lsa, bo'linuvchini toping.

A) $2b^2+3b+14$ B) $2b^2+3b+9$

C) $2b^2+3b-9$ D) $2b^2+3b-1$

1199. Agar bo'luvchi $2-c$ ga, bo'linma $3c+2$ ga, qoldiq 1 ga teng bo'lsa, bo'linuvchini toping.

A) $-3c^2+4c+4$ B) $-3c^2+4c+5$

C) $-3c^2+4c-5$ D) $-3c^2-4c+5$

1200. Agar bo'luvchi $b-14$ ga, bo'linma $b+14$ ga, qoldiq 196 ga teng bo'lsa, bo'linuvchini toping.

A) b^2-196 B) $-b^2-196$

C) b^2 D) b^2+196

1201. Agar bo'luvchi $3y-1$ ga, bo'linma $y+2$ ga, qoldiq 2 ga teng bo'lsa, bo'linuvchini toping.

A) $3y^2+5y-4$ B) $3y^2+5y$

C) $3y^2+5y-2$ D) $3y^2-5y$

✓ $P(x)=2x^2+x-3;\ Q(x)=x^2-3x+1;$ bo'lsa, $P(x)+Q(x)$ ni toping.

A) $3x^2-2x+2$ B) $3x^2-2x-2$
C) $-3x^2-2x+2$ D) $3x^2+2x+2$

Yechimi: $\underbrace{2x^2+x-3+x^2-3x+1}_{P(x)+Q(x)}=3x^2-2x-2$ **J: (B)**

1202. $P(y)=y^2+3y+2;\ Q(y)=4y^2-3y+5;$ bo'lsa, $P(y)+Q(y)$ ni toping.

A) $5y^2+6y+7$ B) $5y^2-6y+7$
C) $5y^2-7$ D) $5y^2+7$

1203. $P(y)=y^2+3y+2;\ Q(y)=4y^2-3y+5;$ bo'lsa, $P(y)-Q(y)$ ni toping.

A) $-3y^2+6y+3$ B) $-3y^2-6y-3$
C) $3y^2-6y-3$ D) $-3y^2+6y-3$

1204. $P(a)=7a^2-2a;\ Q(a)=4a^2+11a+7;$ bo'lsa, $P(a)+Q(a)$ ni toping.

A) $11a^2-9a+7$ B) $3a^2+9a+7$
C) $11a^2+9a+7$ D) $11a^2+13a+7$

1205. $P(a)=7a^2-2a;\ Q(a)=4a^2+11a+7;$ bo'lsa, $P(a)-Q(a)$ ni toping.

A) $3a^2-13a-7$ B) $3a^2+9a-7$
C) $3a^2-9a-7$ D) $3a^2-13a+7$

1206. $P(y)=-2y^2+3y+2;\ Q(y)=4y^2-3y+5;\ N(y)=y^2-9$ bo'lsa, $P(y)+Q(y)+N(y)$ ni toping.

A) $3y^2+2$ B) $3y^2-2$
C) $3y^2-3$ D) $4y^2-3$

1207. $P(y)=-2y^2+3y+2;\ Q(y)=4y^2-3y+5;\ N(y)=y^2-9$ bo'lsa, $P(y)+Q(y)-N(y)$ ni toping.

A) y^2+16 B) $2y^2+16$
C) y^2+14 D) y^2-16

Bir o'zgaruvchili chiziqli tenglamalar

✓ $7x=35$ tenglamani ildizini toping.

A) 5 B) 7 C) 4 D) 30

Yechimi:

Formula:	*misol:*
$ax=b$	$7x=35$
$x=b:a$	$x=35:7$
	$x=5$

Javob: (A)

Izoh: e'tibor bering o'ng tomonni chap tomonga bo'lish $ax=b \Rightarrow x=b:a$ lozim. $7x=35 \Rightarrow x=35:7$

1208. $12x=36$ tenglamani yeching.
A) 5 B) 3 C) 24 D) 12

1209. $5x=60$ tenglamani yeching.
A) 5 B) 3 C) 24 D) 12

1210. $9x=243$ tenglamani yeching.
A) 81 B) 27 C) 24 D) 12

1211. $1{,}5x=6$ tenglamani yeching.
A) 5 B) 3 C) 24 D) 4

1212. $0{,}7x=4{,}2$ tenglamani yeching.
A) 5 B) 3 C) 6 D) 12

1213. $0{,}07x=4{,}9$ tenglamani yeching.
A) 0,7 B) 7 C) 70 D) 10

1214. $10x=63{,}5$ tenglamani yeching.
A) 0,635 B) 6,35 C) 63,5 D) 12

1215. $100x=246$ tenglamani yeching.
A) 24,6 B) 2,46 C) 246 D) 0,246

✓ $17x=-85$ tenglamani ildizini toping.

A) –5 B) –7 C) 4 D) 30

Yechimi:

Formula:	*misol:*
$ax=b$	$17x=-85$
$x=b:a$	$x=-85:17$
	$x=-5$

J:(A)

Izoh: e'tibor bering o'ng tomonni chap tomonga bo'lish $17x=-85$ lozim. $x=-85:17$

1216. $16x=-64$ tenglamani yeching.
A) 5 B) –4 C) –24 D) –12

1217. $-8x=56$ tenglamani yeching.
A) 5 B) 3 C) 24 D) –7

1218. $-9x=-27$ tenglamani yeching.
A) 3 B) –3 C) –4 D) 12

1219. $-1{,}5x=-9$ tenglamani yeching.
A) 5 B) 3 C) –6 D) 6

1220. $-0{,}3x=-1{,}8$ tenglamani yeching.
A) 5 B) 0,6 C) 6 D) 12

1221. $-0{,}002x=1$ tenglamani yeching.
A) 5000 B) –50 C) –500 D) –1000

1222. $-10x=2017$ tenglamani yeching.
A) 201,7 B) –201,7 C) –2,017 D) –20,17

1223. $100x=-201{,}8$ tenglamani yeching.
A) –20,18 B) –2,018 C) –201,8 D) 2,018

✓ $11507x=0$ tenglamani ildizini toping.

A) 5 B) 7 C) 4 D) 0

Yechimi:

Formula:	*misol:*
$ax=b$	$11507x=0$
$x=\frac{b}{a}$	$x=\frac{0}{11507}$
	$x=0$

Javob: (D)

Izoh: e'tibor bering o'ng tomonni chap tomonga bo'lish lozim. "0" ni har qanday songa bo'lsak "0" dir.

1224. $2018x=0$ tenglamani yeching.

A) 5 B) 0 C) -24 D) -12

1225. $-8895x=0$ tenglamani yeching.

A) 5 B) 3 C) 24 D) 0

1226. $-849x=0$ tenglamani yeching.

A) 0 B) 7 C) -4 D) 12

1227. $-74,5x=0$ tenglamani yeching.

A) 5 B) 3 C) -6 D) 0

1228. $-10,3x=0$ tenglamani yeching.

A) 5 B) 3 C) 0 D) 12

1229. $2x=0$ tenglamani yeching.

A) 5000 B) -50 C) 0 D) -1000

1230. $\frac{5}{7}x=0$ tenglamani yeching.

A) 201,7 B) 0 C) $-2,017$ D) 5

1231. $-\frac{100}{1001}x=0$ tenglamani yeching.

A) 1 B) 0 C) $-201,8$ D) 101

✓ $-35x=7$ tenglamani ildizini toping.

A) 5 B) 4 C) $\frac{1}{5}$ D) $-\frac{1}{5}$

Yechimi:

Formula:

$ax=b$

$x=\frac{b}{a}$

misol:

$-35x=7$

$x=\frac{7}{-35}$

$x=-\frac{1}{5}$

Javob: (D)

Izoh: e'tibor bering o'ng tomonni chap tomonga bo'lish lozim. ko'pchilik yo'l qo'yadigan xatolardan biri :
$-35x=7 \Rightarrow x=-35:7 \quad x=-5$

1232. $24x=16$ tenglamani yeching.

A) $\frac{2}{3}$ B) $\frac{3}{4}$ C) $-\frac{2}{3}$ D) $\frac{3}{2}$

1233. $125x=5$ tenglamani yeching.

A) $\frac{1}{5}$ B) $\frac{1}{25}$ C) 25 D) $\frac{1}{15}$

1234. $-243x=-9$ tenglamani yeching.

A) $\frac{1}{27}$ B) $-\frac{1}{27}$ C) $-\frac{1}{81}$ D) $\frac{1}{81}$

1235. $-2,8x=1,4$ tenglamani yeching.

A) 2 B) 3 C) $-\frac{1}{2}$ D) $\frac{1}{2}$

1236. $7,7x=-3,3$ tenglamani yeching.

A) $-\frac{3}{7}$ B) $-\frac{11}{7}$ C) $-\frac{3}{11}$ D) 12

1237. $-84x=-21$ tenglamani yeching.

A) $-\frac{1}{4}$ B) $\frac{1}{84}$ C) $\frac{1}{4}$ D) $\frac{21}{4}$

1238. $-6,6x=0,66$ tenglamani yeching.

A) 10 B) 0 C) $\frac{1}{10}$ D) $-\frac{1}{10}$

1239. $-0,25x=-0,1$ tenglamani yeching.

A) $-\frac{2}{5}$ B) $\frac{2}{5}$ C) $\frac{2}{15}$ D) $\frac{1}{25}$

✓ $-11x=-17$ tenglamani ildizini toping.

A) $\frac{6}{11}$ B) $-\frac{6}{11}$ C) $-1\frac{6}{11}$ D) $1\frac{6}{11}$

Yechimi:

Formula:

$ax=b$

$x=\frac{b}{a}$

misol:

$-11x=-17$

$x=\frac{-17}{-11}$

$x=1\frac{6}{11}$

Javob: (D)

1240. $7x=9$ tenglamani yeching.

A) $1\frac{2}{7}$ B) $\frac{7}{9}$ C) $-\frac{2}{3}$ D) $\frac{3}{2}$

1241. $12x=23$ tenglamani yeching.

A) $\frac{1}{5}$ B) $1\frac{11}{12}$ C) 25 D) $\frac{12}{23}$

1242. $-2x=-19$ tenglamani yeching.

A) $-9\frac{1}{2}$ B) $-\frac{2}{19}$ C) $\frac{1}{2}$ D) $9\frac{1}{2}$

✓ $\frac{1}{6}x=\frac{1}{3}$ tenglamani ildizini toping.

A) 5 B) 7 C) 4 D) 2

Yechimi:

Formula:

$ax=b$

$x=b:a$

misol:

$\frac{1}{6}x=\frac{1}{3}$

$x=\frac{1}{3}:\frac{1}{6}=\frac{1}{\cancel{3}}\cdot\frac{\cancel{6}}{1}=2$

$x=2$

Javob: (D)

Izoh: e'tibor bering o'ng tomonni chap tomonga bo'lish lozim. ko'pchilik yo'l qo'yadigan xatolardan biri.
$-35x=7 \Rightarrow x=-35:7 \quad x=-5$

1243. $\frac{1}{3}x=12$ tenglamani yeching.

A) 36 B) $\frac{3}{4}$ C) $\frac{1}{36}$ D) $\frac{3}{2}$

1244. $-4x=\frac{1}{7}$ tenglamani yeching.

A) $\frac{1}{5}$ B) $-\frac{1}{28}$ C) -28 D) $\frac{1}{15}$

1245. $-\frac{2}{3}x=-9$ tenglamani yeching.

A) $\frac{1}{27}$ B) $-\frac{1}{27}$ C) $-\frac{1}{81}$ D) $\frac{27}{2}$

1246. $5x=-\frac{5}{8}$ tenglamani yeching.

A) 2 B) 3 C) $-\frac{1}{8}$ D) $\frac{1}{8}$

1247. $\frac{2}{7}x=0$ tenglamani yeching.

A) 0 B) $-\frac{11}{7}$ C) $-\frac{3}{11}$ D) 12

1248. $9x=\frac{2}{5}$ tenglamani yeching.

A) $-\frac{1}{4}$ B) $\frac{5}{18}$ C) $\frac{2}{45}$ D) $\frac{21}{4}$

1249. $3x=2\frac{1}{7}$ tenglamani yeching.

A) 10 B) 0 C) $\frac{1}{10}$ D) $\frac{5}{7}$

1250. $\frac{1}{2}x=3$ tenglamani yeching.

A) $\frac{1}{6}$ B) 6 C) $\frac{2}{15}$ D) $\frac{1}{25}$

✓ $3x+5=10-x$ tenglamani ildizini toping.

A) 4 B) 7 C) $-1\frac{1}{4}$ D) $1\frac{1}{4}$

Yechimi:

$3x+5=10-x$ } "$-$" *o'tsa* "$+$" *bo'ladi*

$3x+x=10-5$

$4x=5$

$x=\frac{5}{4}$

$x=1\frac{1}{4}$

Javob: (D)

Izoh: noma'lumlarni (x ni)chap tomonga ma'lumlarni (sonlarni) o'ng tomonga to'plash lozim.

1251. $25x-1=9$ tenglamani yeching.

A) $\frac{2}{5}$ B) $\frac{3}{4}$ C) $\frac{5}{2}$ D) $\frac{3}{2}$

1252. $7x+8=11$ tenglamani yeching.

A) $\frac{1}{5}$ B) $\frac{3}{7}$ C) $\frac{7}{3}$ D) $\frac{1}{15}$

1253. $4x+4=x+5$ tenglamani yeching.

A) $\frac{1}{27}$ B) $-\frac{1}{7}$ C) $-\frac{1}{81}$ D) $\frac{1}{3}$

1254. $5x-150=0$ tenglamani yeching.

A) 2 B) 3 C) 30 D) $\frac{1}{8}$

1255. $12x-1=35$ tenglamani yeching.

A) 3 B) $-\frac{11}{7}$ C) $-\frac{3}{11}$ D) 12

1256. $7=6-0,2x$ tenglamani yeching.

A) $-\frac{1}{4}$ B) $\frac{5}{13}$ C) -5 D) 5

1257. $48-3x=0$ tenglamani yeching.

A) 10 B) 0 C) $\frac{1}{10}$ D) 16

1258. $1,2n+1=1-n$ tenglamani yeching.

A) $\frac{1}{6}$ B) 0 C) $\frac{2}{15}$ D) $\frac{1}{25}$

1259. $x=-x$ tenglamani yeching.

A) 10 B) 0 C) $\frac{1}{10}$ D) 16

✓ $100000-x=25609$ tenglamani ildizini toping.

A) 5 B) 74391 C) -74391 D) 1589

Yechimi:

$100000-x=25609$ } "$+$" *o'tsa* "$-$" *bo'ladi*

$100000-x=25609$

$-x=25609-100000$

$-x=-74391$

$x=-74391:(-1)$

$x=74391$

Izoh: $(-):(-)=+$ ekanini e'tiborga oling.

1260. $x-9987768=25609$ tenglamani yeching.

A) 10012377 B) 10012277
C) 10013377 D) 10013477

1261. $x-786957=446789$ tenglamani yeching.

A) 1234746 B) 1233746
C) 1233756 D) 1233846

1262. $15036-x=7204$ tenglamani yeching.

A) -7842 B) -7832
C) 7842 D) 7832

✓ $14,2-(x+3,4)=10,8$ tenglamani ildizini toping.

A) 5 B) 7 C) 0 D) $1\frac{1}{4}$

Yechimi:

$14,2-(x+3,4)=10,8$ } "$+$" *o'tsa* "$-$" *bo'ladi*

$14,2-x-3,4=10,8$

$-x=10,8-14,2+3,4$

$-x=10,8-10,8$

$-x=0$

$x=0:(-1)$

$x=0$

1263. $8x-(7x-8)=9$ tenglamani yeching.

A) 1 B) 17 C) 2 D) –1

1264. $(x-7756)-1200=4896$ tenglamani yeching.

A) 24552 B) 24652
C) –24552 D) –24652

1265. $74883-(31200+x)=999$ tenglamani yeching.

A) –42584 B) 42584
C) –42684 D) 42684

1266. $4284-(x-378)=1000$ tenglamani yeching.

A) –3652 B) –3662 C) –3663 D) 3662

✓ $2(x+3)-3(x+2)=5-4(x+1)$ tenglamani ildizini toping.

A) 5 B) 7 C) $\frac{1}{3}$ D) $1\frac{1}{4}$

Yechimi:

$2(x+3)-3(x+2)=5-4(x+1)$

$2x+6-3x-6=5-4x-4$

$2x-3x+4x=5-4+\not6-\not6$ **Javob: (C)**

$3x=1$

$x=\frac{1}{3}$

1267. $3(x-1)-2(x+2)=4x+8$ tenglamani yeching.

A) –5 B) 5 C) 2 D) –1

1268. $4(x+1,5)+3(1-x)=10$ tenglamani yeching.

A) – 3 B) 1 C) –1 D) –2

1269. $4(3x+2)-7(x+1)=3(x-1)$ tenglamani yeching.

A) –4 B) 2 C) 4 D) –2

1270. $2,5(2x+3)-2(x+2,5)=3,5+2x$ tenglamani yeching.

A) –3 B) –1 C) 2 D) 1

✓ $28-20x=2x+25-16x-12-6x$ tenglamani ildizini toping.

A) 5 B) Ø C) $\frac{1}{3}$ D) $1\frac{1}{4}$

Yechimi:

$28-20x=2x+25-16x-12-6x$

$28-20x=\overline{\overline{2x}}+25-\overline{\overline{16x}}-12-\overline{\overline{6x}}$

$-20x-2x+16x+6x=25-12-28$ **Javob: (B)**

$0=-15$

$\not0$ – *yechimi yo'q*

Izoh: Noma'lumlar nol bo'lib ketsa: " yechimi yo'q" yoki Ø

1271. $25x-17=4x-5-13x+14+34x$ tenglamani yeching.

A) Ø B) 5 C) 2 D) –1

1272. $5(x+1,5)+8x=13(1+x)$ tenglamani yeching.

A) –3 B) Ø C) 1 D) –2

1273. $5(2y-4)=2(5y-4)+50$ tenglamani yeching.

A) –4 B) 2 C) 4 D) Ø

1274. $8(5z-1)-7(4z+1)-3(4z-1)=4$ tenglamani yeching.

A) –3 B) –1 C) 2 D) Ø

✓ $10-4x+3=9x-2-6x+9-7x+6$ tenglamani ildizini toping.

A) 5 B) Ø C) $x\in R$ D) $1\frac{1}{4}$

Yechimi:

$10-4x+3=9x-2-6x+9-7x+6$

$10-4x+3=\overline{\overline{9x}}-2-\overline{\overline{6x}}+9-\overline{\overline{7x}}+6$

$-4x-9x+6x+7x=-2+9+6-3-10$ **Javob: (C)**

$0=0$

$x\in R$

Izoh: Agar 2ta tomon nol bo'lib ketsa, **javob "cheksiz ko'p" yoki "x ning istalgan qiymatida"** $x\in R$ yechimga ega.

1275. $9x+4-5x=8+7x-9-3x+5$ tenglamani yeching.

A) $x\in R$ B) 5 C) 2 D) Ø

1276. $6(2x-5)=2(6x-15)$ tenglamani yeching.

A) –3 B) *cheksiz ko' p* C) 1 D) Ø

1277. $7(1,2x-0,5)=8,4x-3,5$ tenglamani yeching.

A) –4 B) *x istalgan son* C) 4 D) Ø

1278. $8(1,3x+0,25)-6,6x=3,8x+2$ tenglamani yeching.

A) $x\in R$ B) –1 C) 2 D) Ø

✓ $\frac{x}{4}+\frac{x}{3}=14$ tenglamani ildizini toping.

A) 5 B) 7 C) 24 D) $1\frac{1}{4}$

Yechimi:

$\frac{x}{4}+\frac{x}{3}=14\ (\cdot 12)$

$\frac{x}{4}\cdot 12+\frac{x}{3}\cdot 12=14\cdot 12$

$\frac{x}{\not4}\cdot \not12^{3}+\frac{x}{\not3}\cdot \not12^{4}=14\cdot 12$

$3x+4x=168$ **Javob: (C)**

$7x=168$

$x=\frac{168}{7}$

$x=24$

1279. $\frac{a}{2}-\frac{a}{8}=5$ tenglamani yeching.

A) $\frac{40}{3}$ B) $-\frac{40}{3}$ C) 2 D) –1

1280. $\frac{y}{4}=y-1$ tenglamani yeching.

A) $\frac{4}{3}$ B) $-\frac{4}{3}$ C) 1 D) –2

1281. $2z+3=\frac{2z}{5}$ tenglamani yeching.

A) $\frac{15}{8}$ B) $-\frac{15}{8}$ C) 4 D) –2

1282. $\frac{2c}{3}-\frac{4c}{3}=7$ tenglamani yeching.

A) $\frac{21}{2}$ B) –1 C) $-\frac{21}{2}$ D) 10

✓ $\frac{5x}{2}-\frac{x-3}{3}=1+\frac{x-5}{6}$ tenglamani ildizini toping.

A) 5 B) 7 C) $\frac{5}{12}$ D) $1\frac{1}{4}$

Yechimi:

$\frac{5x}{2}-\frac{x-3}{3}=1+\frac{x-5}{6}\ (\cdot 6)$

$\frac{5x}{2}\cdot 6-\frac{x-3}{3}\cdot 6=1\cdot 6+\frac{x-5}{6}\cdot 6$

$\frac{5x}{\cancel{2}}\cdot\cancel{6}^{3}-\frac{x-3}{\cancel{3}}\cdot\cancel{6}^{2}=1\cdot 6+\frac{x-5}{\cancel{6}}\cdot\cancel{6}$

$15x-2(x-3)=6+1(x-5)$

$15x-2x+6=6+x-5$

$15x-2x+6=6+x-5$ **Javob: (C)**

$15x-2x-x=-5$

$-12x=-5$

$x=\frac{5}{12}$

1283. $\frac{6x-5}{7}=\frac{2x-2}{3}+2$ tenglamani yeching.

A) $\frac{43}{4}$ B) $-\frac{43}{4}$ C) 2 D) –1

1284. $\frac{y}{4}-\frac{3-2y}{5}=0$ tenglamani yeching.

A) $\frac{12}{13}$ B) $-\frac{12}{13}$ C) 1 D) –2

1285. $\frac{3x+5}{5}-\frac{x+1}{3}=1$ tenglamani yeching.

A) –4 B) $\frac{5}{4}$ C) $-\frac{5}{4}$ D) –2

1286. $\frac{6y+7}{4}+\frac{8-5y}{3}=5$ tenglamani yeching.

A) –3 B) $-\frac{2}{7}$ C) –3,5 D) 1

1287. $\frac{12-x}{4}-\frac{2-x}{3}=\frac{x}{6}$ tenglamani yeching.

A) –3 B) –1 C) 28 D) –28

1288. $1-\frac{x-3}{2}=\frac{2-x}{3}+4$ tenglamani yeching.

A) –4 B) 13 C) –13 D) –2

1289. $\frac{2m+1}{4}+3=\frac{m}{6}-\frac{6-m}{12}$ tenglamani yeching.

A) –3 B) 30 C) 45 D) –15

✓ $x(2x-6)(x+7)(4x-8)=0$ tenglamani ildizini toping.

A) 5;0;3;–7;2 B) 3;–7;2

C) 0;3;7 D) 0;3;–7;2

Yechimi:

$x(2x-6)(x+7)(4x-8)=0$

$x=0$ $2x-6=0$ $x+7=0$ $4x-8=0$

$2x=6$ $x=-7$ $4x=8$

$x=3$ $x=2$

Javob: (D)

Izoh: Barobar "0" bo'lsa, qavs ochilmasin. har bir qavsni "0" tenglab yechish lozim.

1290. $(x-1)(x-7)=0$ tenglamani yeching.

A) 1;7 B) 5 C) 2 D) –1

1291. $(y+2)(y-9)=0$ tenglamani yeching.

A) –3 B) –2;9 C) 1 D) –2

1292. $z(z+3)(z-15)=0$ tenglamani yeching.

A) –4 B) 3;15 C) 4;15 D) 0;–3;15

1293. $(x+1)(x-1)(x-5)=0$ tenglamani yeching.

A) –3;1;5 B) –1 C) 2 D) –1;1;5

1294. $(3x+1)(4x-20)(5x-5)=0$ tenglamani yeching.

A) –3;1;5 B) –1 C) $\frac{1}{3}$;5;1 D) $-\frac{1}{3}$;5;1

✓ $x(x-11)(11x+22)(3x-33)=0$ tenglamani ildizlari yig'indisini toping.

A) 20 B) 0;11;–2 C) 0;3;7 D) –20

Yechimi:

$x(x-11)(11x+22)(3x-33)=0$

$x=0$ $x-11=0$ $11x-22=0$ $3x-33=0$

$x=11$ $11x=-22$ $3x=33$

$x=-2$ $x=11$

$0+11+(-2)+11=20$

Izoh: Yig'indisi degani "+" ni tushunish lozim.
Agar ko'paytmasini toping desa, "•" ni tushunish lozim.
$0\cdot 11\cdot(-2)\cdot 11=0$

1295. $(x-3)(x-2)=0$ tenglamani ildizlari yig'indisini toping.
A) 5 B) 2;3 C) 2 D) 6

1296. $(x-3)(x-2)=0$ tenglamani ildizlari ko'paytmasini toping.
A) 5 B) 2;3 C) 2 D) 6

1297. $(2y+2)(y-24)=0$ tenglamani ildizlari yig'indisini toping.
A) 25 B) $-1;24$ C) 23 D) -24

1298. $(2y+2)(y-24)=0$ tenglamani ildizlari ko'paytmasini toping.
A) 25 B) $-1;24$ C) 23 D) -24

1299. $z(3z+12)(z-16)=0$ tenglamani ildizlari yig'indisini toping.
A) 20 B) 12 C) 0 D) $0;-4;16$

1300. $z(3z+12)(z-16)=0$ tenglamani ildizlari ko'paytmasini toping.
A) 20 B) 12 C) 0 D) $0;-4;16$

1301. $(x+10)(x-7)(9x-27)=0$ tenglamani ildizlari yig'indisini toping.
A) $-10;7;3$ B) -210 C) 0 D) -20

1302. $(x+10)(x-7)(9x-27)=0$ tenglamani ildizlari ko'paytmasini toping.
A) $-10;7;3$ B) -210 C) 0 D) -20

Proporsiya

✓ $x:18=68:17$ tenglamani ildizini toping.
A) 72 B) 18 C) 16 D) 20

Yechimi:

Qoida: 2 nisbatning tengligi proporsiya diyiladi.

$\frac{a}{b}=\frac{c}{d}$ *yoki* $a:b=c:d$ – *proporsiya*

a,d – *chetki hadlari*

b,c – *o'rta hadlari*

Qoida: chekka hadlar ko'paytmasi o'rta hadlar ko'paytmasiga teng.

$\underbrace{\frac{a}{b}=\frac{c}{d}}_{a\cdot d=b\cdot c}$ *yoki* $a:b=c:d$

$x:18=68:17$

$17x=18\cdot 68$

$x=\frac{18\cdot 68}{17}=\frac{18\cdot \cancel{68}^{4}}{\cancel{17}}=18\cdot 4=72$ **Javob: (A)**

$x=72$

1303. $x:2=60:15$ tenglamani yeching.
A) 8 B) 4 C) 2 D) -1

1304. $y:9=35:15$ proporsiyani noma'lum hadini toping.
A) -3 B) 21 C) 1 D) -21

1305. $18:5=72:z$ tenglamani yeching.
A) -4 B) 15 C) 4 D) 20

1306. $7:9=28:x$ proporsiyani yeching.
A) 27 B) 45 C) 2 D) 36

✓ $28:x=7:9$ tenglamani ildizini toping.
A) 72 B) 18 C) 36 D) 20

Yechimi:

$28:x=7:9$

$7x=28\cdot 9$

$x=\frac{28\cdot 9}{7}=\frac{\cancel{28}^{4}\cdot 9}{\cancel{7}}=4\cdot 9=36$ **Javob: (C)**

$x=36$

Izoh: Noma'lumni chap tomonga yozgan ma'qul (o'rta hadni) ya'ni $28\cdot 9=7x$ *ni* $7x=28\cdot 9$

1307. $55:x=5:3$ tenglamani yeching.
A) 33 B) 11 C) 2 D) -1

1308. $9:y=27:4$ proporsiyani noma'lum hadini toping.
A) -3 B) $\frac{4}{3}$ C) 1 D) -21

1309. $38:z=19:6$ tenglamani yeching.
A) -4 B) 15 C) 4 D) 12

1310. $18:4=x:12$ proporsiyani yeching.
A) 44 B) 45 C) 2 D) 54

✓ $\frac{7}{24}=\frac{2}{x-1}$ tenglamani ildizini toping.
A) 72 B) 18 C) 16 D) $\frac{55}{7}$

Yechimi:

$\frac{7}{24}=\frac{2}{x-1}$ $\quad\frac{a}{b}=\frac{c}{d}$

$7(x-1)=24\cdot 2$ $\quad a\cdot d=b\cdot c$

$7x-7=48$

$7x=48+7$ **Javob: (D)**

$7x=55$

$x=\frac{55}{7}$

1311. $\frac{5+x}{3}=\frac{7}{2}$ tenglamani yeching.
A) 5,5 B) 6,5 C) 2 D) -1

1312. $\frac{x+1}{25}=\frac{4}{5}$ proporsiyani noma'lum hadini toping.
A) -3 B) $\frac{4}{3}$ C) 1 D) 19

1313. $\frac{22}{34}=\frac{11}{x+3}$ tenglamani yeching.
A) 14 B) 15 C) 4 D) 12

1314. $\frac{3x+4}{28}=\frac{1}{4}$ proporsiyani yeching.
A) 27 B) 1 C) 2 D) 54

✓ $\frac{3,8}{1,9}=\frac{x-1}{5}$ tenglamani ildizini toping.

A) 72 B) 11 C) 16 D) 55

Yechimi:

$\frac{3,8}{1,9}=\frac{x-1}{5} \Rightarrow \frac{38}{19}=\frac{x-1}{5} \Rightarrow \frac{\cancel{38}}{\cancel{19}}=\frac{x-1}{5}$

$\frac{2}{1}=\frac{x-1}{5}$

$2\cdot 5=x-1$

$10=x-1$

$-x=-1-10$ **Javob: (B)**

$-x=-11$

$x=(-11):(-1) \Rightarrow x=11$

1315. $\frac{3}{4}=\frac{x-4}{8}$ tenglamani yeching.

A) 10 B) 20 C) 2 D) –1

1316. $\frac{12}{7x}=\frac{2}{35}$ proporsiyani noma'lum hadini toping.

A) –3 B) 30 C) 1 D) –21

1317. $\frac{7}{x-2}=\frac{14}{28}$ tenglamani yeching.

A) –4 B) 15 C) 4 D) 16

1318. $\frac{3}{4}=\frac{x-1}{20}$ proporsiyani yeching.

A) 27 B) 45 C) 60 D) 16

✓ $x:2\frac{1}{7}=7$ tenglamani ildizini toping.

A) 72 B) 15 C) 16 D) $\frac{55}{7}$

Yechimi:

$x:2\frac{1}{7}=7$ ni proporsiyaga to'ldiriladi:

$x:2\frac{1}{7}=7:1$ *(4ta had bo'ldi)*

$x\cdot 1=2\frac{1}{7}\cdot 7$ **Javob: (B)**

$x=\frac{15}{7}\cdot 7 \Rightarrow x=15$

Izoh: proporsiyada 3 ta hadni har doim ":1" qilib 4 ta had qilishni eslab qoling.

1319. $x:0,2=20$ tenglamani yeching.

A) 10 B) 20 C) 40 D) 4

1320. $0,9:x=3$ proporsiyani noma'lum hadini toping.

A) 0,3 B) 30 C) 1 D) –21

1321. $20:x=0,2$ tenglamani yeching.

A) –4 B) 15 C) 100 D) 16

1322. $x:11\frac{3}{7}=1\frac{1}{20}$ tenglamani yeching.

A) 10 B) 20 C) 2 D) 12

1323. $10\frac{2}{3}:x=1\frac{7}{26}$ proporsiyani noma'lum hadini toping.

A) –3 B) 30 C) 1 D) 8

1324. $9\frac{2}{7}:x=1\frac{6}{7}$ tenglamani yeching.

A) 5 B) 15 C) 4 D) 16

✓ $\left(3\frac{19}{22}+x\right):4\frac{1}{5}=5$ tenglamani ildizini toping.

A) 72 B) 15 C) $17\frac{3}{22}$ D) $\frac{55}{7}$

Yechimi:

$\left(3\frac{19}{22}+x\right):4\frac{1}{5}=5 \quad \left(3\frac{19}{22}+x\right):4\frac{1}{5}=5:1$

$\left(3\frac{19}{22}+x\right)\cdot 1=4\frac{1}{5}\cdot 5 \quad 3\frac{19}{22}+x=\frac{21}{\cancel{5}}\cdot\cancel{5}$

$3\frac{19}{22}+x=21$

$x=21-3\frac{19}{22}=20\frac{22}{22}-3\frac{19}{22}=17\frac{3}{22}$ **Javob: (C)**

$x=17\frac{3}{22}$

1325. $\left(6\frac{1}{23}+x\right):2\frac{1}{11}=11$ tenglamani yeching.

A) 10 B) 20 C) $17\frac{1}{23}$ D) $16\frac{22}{23}$

1326. $\left(x+9\frac{4}{17}\right):3\frac{7}{8}=8$ proporsiyani noma'lum hadini toping.

A) $21\frac{13}{17}$ B) 30 C) 1 D) $22\frac{4}{17}$

1327. $\left(x-9\frac{1}{13}\right):9\frac{1}{7}=7$ nisbatning noma'lum hadini toping.

A) $55\frac{1}{13}$ B) 15 C) $73\frac{1}{13}$ D) $54\frac{12}{13}$

✓ $\frac{5x-3}{8}=\frac{x}{2}+3+\frac{11-3x}{4}$ tenglamani ildizini x_0 bo'lsa, x_0^2+1 ni son qiymatini toping.

A) 50 B) 7 C) 14 D) 49

Yechimi:

$\frac{5x-3}{8}=\frac{x}{2}+3+\frac{11-3x}{4} \quad (\cdot 8)$

$\frac{5x-3}{8}\cdot 8=\frac{x}{2}\cdot 8+3\cdot 8+\frac{11-3x}{4}\cdot 8$

$5x-3=4x+24+2(11-3x)$

$5x-3=4x+24+22-6x$

$5x-4x+6x=24+22+3$

$7x = 49$

$x = 7$ **Javob: (A)**

$x_0 = 7 \quad x_0^2 + 1 = 7^2 + 1 = 49 + 1 = 50$

1328. $\frac{2x+1}{3} + 2 = \frac{3x-2}{2} + \frac{x+1}{3}$ tenglamani ildizini x_0 bo'lsa, $18 : x_0$ ni son qiymatini toping.

A) 6 B)–7 C) 7 D) $46\frac{2}{7}$

1329. $(x+3):(x-2) = 5:3$ tenglamani ildizini x_0 bo'lsa, $2x_0 + 61$ ni son qiymatini toping.

A) 6 B) 80 C) 70 D) $\frac{19}{2}$

1330. $4:(2x+5) = 2:(3x-2)$ tenglamani ildizini x_0 bo'lsa, $4x_0 + 11$ ni son qiymatini toping.

A) 6 B) 30 C) 20 D) $\frac{9}{4}$

Mahsus tipdagi testlar

✓ Quyidagi mulohazalarning qaysi biri natural sonlarga nisbatan noto'g'ri?

A) Berilgan sonlarga bo'linadigan sonlarning eng kichigi bu sonlarning eng kichik karralisi bo'ladi.

B) 3 hamda 4 ga bo'lingan son 12 ga ham bo'linadi.

C) Oxirgi raqami 6 yoki 9 bo'lgan son 3 ga bo'linadi.

D) Oxirgi raqami 0 yoki 5 bo'lgan son 5 ga bo'linadi.

Yechimi:

A) Berilgan sonlarga bo'linadigan sonlarning eng kichigi bu sonlarning eng kichik karralisi bo'ladi. **8 va 624, 48,72...= 24 to'g'ri**

B) 3 hamda 4 ga bo'lingan son 12 ga ham bo'linadi. **24, 96,...2*12=24; 12*8=96**

C) Oxirgi raqami 6 yoki 9 bo'lgan son 3 ga bo'linadi. **16, 29, 3 ga bo'linmaydi**

D) Oxirgi raqami 0 yoki 5 bo'lgan son 5 ga **10, 15, 20, 25...**

1331. Natural sonlar uchun quyida keltirilgan mulohazalardan qaysi biri noto'g'ri?

A) Agar ikki qo'shiluvchidan biri 11 ga bo'linib, ikkinchisi 11 ga bo'linmasa, ularning yig'indisi 11 ga bo'linmaydi.

B) 3 ga bo'lingan son 6 ga ham bo'linadi.

C) 3 va 5 ga bo'linadigan son 15 ga bo'linadi..

D) Oxirgi raqami 0 yoki 5 bo'lgan son 5 ga bo'linadi.

1332. Natural sonlar uchun quyida keltirilgan mulohazalardan qaysi biri noto'g'ri?

A) Agar qo'shiluvchilarning har biri 13 ga bo'linsa, u holda ularning yig'indisi ham 13 ga bo'linadi.

B) Oxirgi raqmi 4 ga bo'lingan son 4 ga bo'linadi.

C) 3 va 2 ga bo'linadigan son 6 ga ham bo'linadi.

D) Oxirgi raqami 0 yoki 5 bo'lgan son 5 ga bo'linadi.

1333. Natural sonlar uchun quyida keltirilgan mulohazalardan qaysi biri to'g'ri?

A) har bir qo'shiluvchi 37 ga bo'linsa, yig'indisi ham 37 ga bo'linadi.

B) Oxirgi raqmi 4 ga bo'lingan son 4 ga bo'linadi.

C) qo'shiluvchilardan kamida 1 tasi 37 ga bo'linsa, yeg'indi ham 37 ga bo'linadi.

D) yeg'indi 37 ga bo'linsa, har bir qo'shiluvchi 37 ga bo'linadi.

1334. Natural sonlar uchun quyida keltirilgan mulohazalardan qaysi biri noto'g'ri?

A) Oxirgi raqami 0 yoki 4 bo'lgan son 4 ga bo'linadi.

B) Oxirgi 2 ta raqmi 4 ga bo'lingan son 4 ga bo'linadi.

C) 3 va 5 ga bo'linadigan son 15 ga ham bo'linadi.

D) Oxirgi raqami 0 yoki 5 bo'lgan son 5 ga bo'linadi.

✓ Agar kamayuvchini 26 ta va ayriluvchini 12 ta ortirilsa, ayirma qanday o'zgaradi?

A) 4 ta kamayadi B) 14 ta ortadi

C) 28 ta kamayadi D) 4 ta ortadi

Yechimi:

$a - b = c \Rightarrow$ *kamayuvchi – ayiriluvchi = ayirma*

$a + 26 - (b + 12) = a + 26 - b - 12 = a - b + 14 = c + 14$

Javob: 14 *ta ortadi*

1335. Agar kamayuvchini 27 ta va ayriluvchini 33 ta ortirilsa, ayirma qanday o'zgaradi?

A) 6 ta kamayadi B) 60 ta ortadi

C) 10 ta kamayadi D) 6 ta ortadi

1336. Agar kamayuvchini 30 ta va ayriluvchini 12 ta ortirilsa, ayirma qanday o'zgaradi?

A) 18 ta kamayadi B) 42 ta ortadi

C) 22 ta kamayadi D) 18 ta ortadi

1337. Agar kamayuvchini 66 ta va ayriluvchini 22 ta ortirilsa, ayirma qanday o'zgaradi?

A) 44 ta kamayadi B) 44 ta ortadi

C) 11 ta kamayadi D) 88 ta ortadi

1338. Agar kamayuvchini 2018 ta va ayriluvchini 2018 ta ortirilsa, ayirma qanday o'zgaradi?

A) 6 ta kamayadi B) 6 ta ortadi

C) O'zgarmaydi D) 6 ta ortadi

✓ Agar kamayuvchini 30 ta va ayriluvchini 12 ta kamaytirilsa, ayirma qanday o'zgaradi?

A) 18 ta kamayadi B) 24 ta ortadi

C) 12 ta kamayadi D) 12 ta ortadi

Yechimi:

$a - b = c \Rightarrow$ *kamayuvchi – ayiriluvchi = ayirma*

$a - 30 - (b - 12) = a - 30 - b + 12 = a - b - 18 = c - 18$

Javob: 18 *ta kamayadi*

1339. Agar kamayuvchini 17 ta va ayriluvchini 17 ta kamaytirilsa, ayirma qanday o'zgaradi?

A) o'zgarmaydi B) 60 ta ortadi

C) 34 ta kamayadi D) 6 ta ortadi

1340. Agar kamayuvchini 27 ta va ayriluvchini 33 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 6 ta kamayadi B) 60 ta ortadi
C) 10 ta kamayadi D) 6 ta ortadi

1341. Agar kamayuvchini 50 ta va ayriluvchini 16 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 34 ta kamayadi B) 14 ta ortadi
C) 24 ta kamayadi D) 34 ta ortadi

1342. Agar kamayuvchini 37 ta va ayriluvchini 23 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 14 ta kamayadi B) 60 ta ortadi
C) 10 ta kamayadi D) 14 ta ortadi

✓ Agar kamayuvchini 38 ta ortirib va ayriluvchini 9 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 47 ta kamayadi B) 24 ta ortadi
C) 12 ta kamayadi D) 47 ta ortadi

Yechimi:

$a-b=c \Rightarrow$ *kamayuvchi − ayiriluvchi = ayirma*

$a+38-(b-9)=a+38-b+9=a-b+47=c+47$

Javob: 47 *ta ortadi*

1343. Agar kamayuvchini 15 ta ortirib va ayriluvchini 15 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) o'zgarmaydi B) 30 ta ortadi
C) 10 ta kamayadi D) 6 ta ortadi

1344. Agar kamayuvchini 34 ta ortirilsa va ayriluvchini 24 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 54 ta kamayadi B) 58 ta ortadi
C) 10 ta kamayadi D) 54 ta ortadi

1345. Agar kamayuvchini 40 ta ortirilsa va ayriluvchini 16 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 4 ta kamayadi B) 56 ta ortadi
C) 56 ta kamayadi D) 64 ta ortadi

1346. Agar kamayuvchini 17 ta ortirilsa va ayriluvchini 23 ta kamaytirilsa, ayirma qanday o'zgaradi?
A) 6 ta kamayadi B) 40 ta ortadi
C) 40 ta kamayadi D) 16 ta ortadi

✓ $\frac{3}{7},\frac{4}{17},\frac{21}{23}$ sonlariga bo'lganda butun son chiqadigan eng kichik natural sonni toping.

A) 5 B) 7 C) $\frac{5}{12}$ D) 84

Yechimi:

$\frac{3}{7},\frac{4}{17},\frac{21}{23}$ $\quad n:\frac{3}{7}=n\cdot\frac{7}{3};\ \cancel{n}\cdot\frac{7}{\cancel{3}}\Rightarrow n=3$

$n:\frac{4}{17}=n\cdot\frac{17}{4};\ \cancel{n}\cdot\frac{17}{\cancel{4}}\Rightarrow n=4$

$n:\frac{21}{23}=n\cdot\frac{23}{21};\ \cancel{n}\cdot\frac{23}{\cancel{21}}\Rightarrow n=21$

$EKUK(3;4;21)=84$

$EKUK(3;4)=\frac{3\cdot4}{1}=12$

$EKUK(12;21)=\frac{12\cdot21}{3}=84$

Izoh: eslab qolishni oson yo'li suratiga umumiy mahraj toping. $\frac{3}{7},\frac{4}{17},\frac{21}{23}$ $\Rightarrow EKUK(3;4;21)=84$ **J: (D)**

1347. $\frac{5}{9},\frac{4}{11},\frac{2}{13}$ sonlariga bo'lganda butun son chiqadigan eng kichik natural sonni toping.
A) 5 B) 40 C) 20 D) 84

1348. $\frac{8}{31},\frac{6}{29},\frac{}{3}$ sonlariga bo'lganda butun son chiqadigan eng kichik natural sonni toping.
A) 24 B) 40 C) 20 D) 84

1349. $\frac{10}{97},\frac{40}{111},\frac{60}{133}$ sonlariga bo'lganda butun son chiqadigan eng kichik natural sonni toping.
A) 5 B) 40 C) 20 D) 120

1350. $\frac{2}{7},\frac{4}{11},\frac{6}{13}$ sonlariga bo'lganda butun son chiqadigan eng kichik natural sonni toping.
A) 24 B) 40 C) 20 D) 12

✓ Agar $\frac{3}{5}+\frac{7}{15}+\frac{21}{25}=a$ bo'lsa, $\frac{2}{5}+\frac{8}{15}+\frac{4}{25}$ quyidagilardan qaysi biriga teng?
A) $3-a$ B) $4-a$
C) $5-a$ D) $a-3$

Yechimi:

$\frac{3}{5}+\frac{7}{15}+\frac{21}{25}=a$ bo'lsa, $\frac{2}{5}+\frac{8}{15}+\frac{4}{25}=x$

$$\left.\begin{array}{l}\frac{3}{5}+\frac{7}{15}+\frac{21}{25}=a\\ \frac{2}{5}+\frac{8}{15}+\frac{4}{25}=x\end{array}\right\}+$$

$$\frac{3}{5}+\frac{2}{5}+\underbrace{\frac{7}{15}+\frac{8}{15}}_{1}+\underbrace{\frac{21}{25}+\frac{4}{25}}_{1}=x+a$$

$1+1+1=a+x$

$3=a+x$

$3-a=x$

Demak, $x=3-a$ *Javob*: (A)

1351. Agar $\frac{5}{14}+\frac{7}{22}+\frac{12}{37}=a$ bo'lsa, $\frac{9}{14}+\frac{15}{22}+\frac{25}{37}$ quyidagilardan qaysi biriga teng?
A) $4-a$ B) $5-a$
C) $3-a$ D) $6-a$

1352. Agar $\frac{29}{31}+\frac{38}{41}+\frac{47}{51}+\frac{56}{61}=m$ bo'lsa,

$\frac{2}{31}+\frac{3}{41}+\frac{4}{51}+\frac{5}{61}$ quyidagilardan qaysi biriga teng?

A) $4-m$ B) $5-m$

C) $3-m$ D) $6-m$

1353. Agar $\frac{3}{10}+\frac{5}{20}+\frac{7}{30}+\frac{9}{40}=n$ bo'lsa,

$\frac{2}{10}+\frac{5}{20}+\frac{8}{30}+\frac{11}{40}$ quyidagilardan qaysi biriga teng?

A) $4-n$ B) $5-n$

C) $3-n$ D) $2-n$

1354. Agar $\frac{3}{18}+\frac{5}{24}+\frac{11}{36}+\frac{9}{44}=a$ bo'lsa,

$\frac{6}{18}+\frac{7}{24}+\frac{7}{36}+\frac{13}{44}$ quyidagilardan qaysi biriga teng?

A) $4-a$ B) $5-a$

C) $3-a$ D) $2-a$

✓ x raqamining qanday eng katta qiymatida $471+\overline{2x3}$ soni 3 ga qoldiqsiz bo'linadi?

A) 7 B) 0 C) 1 D) 9

Yechimi:

Qoida: Raqamlar yig'indisi 3 ga bo'linadigan sonlar 3 ga bo'linadi.

1–usul

$471+\overline{2x3}\Rightarrow+\begin{cases}471\\ \overline{2x3}\end{cases}$

$\overline{6(7+x)4}$

$\overline{6(7+x)4}\Rightarrow 6+7+x+4=17+x$

$17+x=\begin{cases}17+1=18\\ 17+4=21\\ 17+7=24\end{cases}$

eng katta degani uchun "7"

2 – *usul*

$471+\overline{2x3}\Rightarrow 4+7+1+2+x+3=17+x$

$17+x=\begin{cases}17+1=18\\ 17+4=21\\ 17+7=24\end{cases}$

eng katta degani uchun "7"

Javob: (A)

Izoh: Tepasiga chizilgani $\overline{2x3}$ 3 xonali son deganidir.

1355. x raqamining qanday eng katta qiymatida $741+\overline{2x4}$ soni 3 ga qoldiqsiz bo'linadi?

A) 9 B) 8 C) 1 D) 7

1356. x raqamining qanday eng katta qiymatida $121+\overline{1x5}$ soni 3 ga qoldiqsiz bo'linadi?

A) 7 B) 8 C) 1 D) 9

1357. x raqamining qanday eng katta qiymatida $876+\overline{x11}$ soni 3 ga qoldiqsiz bo'linadi?

A) 7 B) 8 C) 1 D) 9

1358. x raqamining qanday eng katta qiymatida $111+\overline{x22}$ soni 3 ga qoldiqsiz bo'linadi?

A) 7 B) 8 C) 1 D) 9

✓ x raqamining qanday eng kichik qiymatida $221+\overline{x13}$ soni 3 ga qoldiqsiz bo'linadi?

A) 7 B) 0 C) 1 D) 9

Yechimi:

Raqamlar yig'indisi 3 ga bo'linadigan sonlar 3 ga bo'linadi.

1–usul

$221+\overline{x13}\Rightarrow+\begin{cases}221\\ \overline{x13}\end{cases}$

$\overline{(2+x)34}$

$\overline{(2+x)34}\Rightarrow 2+x+3+4=9+x$

$9+x=\begin{cases}9+0=9\\ 9+3=12\\ 9+6=15\\ 9+9=18\end{cases}$

eng kichik degani uchun "0"

2 – *usul*

$221+\overline{x13}\Rightarrow 2+2+1+x+1+3=9+x$

$9+x=\begin{cases}9+0=9\\ 9+3=12\\ 9+6=15\\ 9+9=18\end{cases}$

eng kichik degani uchun "0"

Javob: (B)

Izoh: Tepasiga chizilgani $\overline{x13}$ –3 xonali son deganidir.

1359. x raqamining qanday eng kichik qiymatida $741+\overline{2x4}$ soni 3 ga qoldiqsiz bo'linadi?

A) 0 B) 8 C) 1 D) 9

1360. x raqamining qanday eng kichik qiymatida $121+\overline{1x5}$ soni 3 ga qoldiqsiz bo'linadi?

A) 8 B) 2 C) 1 D) 9

1361. x raqamining qanday eng kichik qiymatida $876+\overline{x11}$ soni 3 ga qoldiqsiz bo'linadi?

A) 1 B) 8 C) 4 D) 9

1362. x raqamining qanday eng kichik qiymatida $111+\overline{x22}$ soni 3 ga qoldiqsiz bo'linadi?

A) 8 B) 2 C) 1 D) 9

✓ 624 ni qanday songa bo'lganda, bo'linma 41 ga, qoldiq esa 9 ga teng bo'ladi?

A) 7 B) 15 C) 1 D) 9

Yechimi:

$\begin{array}{|c|l}624 & x\\ \hline 9 & 41\end{array}\Rightarrow 41x+9=624$

$41x+9=624$

$41x=624-9$

$41x=615$

$x=615:41$

$x=15$

Javob: (B)

1363. 487 ni qanday songa bo'lganda, bo'linma 17 ga, qoldiq esa 11 ga teng bo'ladi?

A) 28 B) 24 C) 18 D) 9

1364. 999 ni qanday songa bo'lganda, bo'linma 29 ga, qoldiq esa 13 ga teng bo'ladi?

A) 7 B) 34 C) 14 D) 24

1365. 704 ni qanday songa bo'lganda, bo'linma 31 ga, qoldiq esa 22 ga teng bo'ladi?

A) 12 B) 15 C) 22 D) 9

✓ 215 ni 19 ga bo'lganda, qoldiq 6 bo'ladi. Bo'linma nechiga teng?

A) 7 B) 15 C) 11 D) 9

Yechimi:

Bo'linuvchi | *Bo'luvchi* 215 | 19 ⎫
Bo'linma x ⎬ ⇒ $19x+6=215$
Qoldiq 6 ⎭

$19x+6=215$

$19x=215-6$

$19x=209$ **Javob: (C)**

$x=209:19$

$x=11$

1366. 654 ni 23 ga bo'lganda, qoldiq 10 bo'ladi. Bo'linma nechiga teng?
A) 28 B) 24 C) 18 D) 9

1367. 489 ni 14 ga bo'lganda, qoldiq 13 bo'ladi. Bo'linma nechiga teng?
A) 7 B) 34 C) 14 D) 24

1368. 434 ni 19 ga bo'lganda, qoldiq 16 bo'ladi. Bo'linma nechiga teng?
A) 12 B) 15 C) 22 D) 9

✓ 3680 va 5060 sonlarini ayni bir songa bo'lganda, birinchisida bo'linma 32 ga teng bo'lsa, ikkinchisida nechiga teng?
A) 44 B) 48 C) 38 D) 52
Yechimi:

$\frac{3680}{x}=32$ $\frac{5060}{x}=?$

$\frac{3680}{x}=32$ *proporsiyaga to'ldiramiz*

$\frac{3680}{x}=\frac{32}{1}$

$32x=3680$

$x=3680:32$

$x=115$

$\frac{5060}{x}=?$ $x=115 \Rightarrow \frac{5060}{115}=44$ **Javob: (A)**

1369. 1026 va 900 sonlarini ayni bir songa bo'lganda, birinchisida bo'linma 114 ga teng bo'lsa, ikkinchisida nechiga teng?
A) 150 B) 240 C) 100 D) 90

1370. 776 va 1358 sonlarini ayni bir songa bo'lganda, birinchisida bo'linma 8 ga teng bo'lsa, ikkinchisida nechiga teng?
A) 15 B) 24 C) 14 D) 9

1371. 1339 va 1854 sonlarini ayni bir songa bo'lganda, birinchisida bo'linma 13 ga teng bo'lsa, ikkinchisida nechiga teng?
A) 15 B) 24 C) 18 D) 9

✓ 3 ni 26 ga bo'lganda qoldiqni toping.
A) 0 B) 3 C) aniqlab bo'lmaydi D) 23
Yechimi:

$3 \mid 26$ $3 \mid 26$
$0 \Rightarrow$ $-\underline{0}\ 9$ **Javob: (B)**
3 (*qoldiq*)

Izoh: Kichik sonni katta songa bo'lganda qoldiq kichik son bo'ladi.

1372. 7 ni 41 ga bo'lganda qoldiqni toping.
A) 0 B) 34 C) aniqlab bo'lmaydi D) 7

1373. 4 ni 17 ga bo'lganda qoldiqni toping.
A) 4 B) 0 C) aniqlab bo'lmaydi D) 13

1374. 44 ni 107 ga bo'lganda qoldiqni toping.
A) 44 B) 0 C) aniqlab bo'lmaydi D) 13

✓ Qandaydir sonni 1995 ga bo'lganda qoldiq 1994 ga teng bo'lsa, shu sonni 5 ga bo'lgandagi qoldiqni toping.
A) 0 B) 3 C) 4 D) 23
Yechimi:

$x \mid 1995$ $x \mid 1995$ 1994 | 1995
$-\underline{\quad}\ y$ $-\underline{\quad}\ y$ *tekshirish* $-\underline{\quad}\ 0$
1994 (*qoldiq*) 1994 (*qoldiq*) $\Rightarrow x=1994$ 1994 (*qoldiq*)

$x \mid 5$ 1994 | 5
$-\underline{\quad}$ $-\underline{\quad}$ 398 **J: 4**
?? (*qoldiq*) $\Rightarrow$ 4 (*qoldiq*)

Izoh: "5" ni bo'linish qoidasini qo'llash lozim.

1375. Qandaydir sonni 2019 ga bo'lganda qoldiq 2017 ga teng bo'lsa, shu sonni 5 ga bo'lgandagi qoldiqni toping.
A) 0 B) 2 C) 3 D) 7

1376. Qandaydir sonni 2125 ga bo'lganda qoldiq 2121 ga teng bo'lsa, shu sonni 5 ga bo'lgandagi qoldiqni toping.
A) 0 B) 4 C) 2 D) 1

1377. Qandaydir sonni 9615 ga bo'lganda qoldiq 6418 ga teng bo'lsa, shu sonni 5 ga bo'lgandagi qoldiqni toping.
A) 0 B) 3 C) 2 D) 7

✓ "n" sonini 7 ga bo'lganda, qoldiq 5 ga "m" sonini 7 ga bo'lganda, qoldiq 6 ga teng. "n•m" ko'paytmani 7 ga bo'lgandagi qoldiqni toping.
A) 0 B) 3 C) 4 D) 2
Yechimi:

$n \cdot m = 5 \cdot 6 = 30$
$30 \mid 7$
$n \mid 7$ $m \mid 7$ 4
$-\underline{\quad}\ x$ $-\underline{\quad}\ y$ $\underline{28}$
5 (*qoldiq*) $n=5$ 6 (*qoldiq*) $m=6$ 2 (*qoldiq*)

J: 2

1378. **n** sonini 7 ga bo'lganda, qoldiq 2 ga **m** sonini 7 ga bo'lganda, qoldiq 4 ga teng. **n•m** ko'paytmani 7 ga bo'lgandagi qoldiqni toping.
A) 1 B) 2 C) 3 D) 6

1379. a sonini 7 ga bo'lganda, qoldiq 3 ga b sonini 7 ga bo'lganda, qoldiq 3 ga teng. $a \cdot b$ ko'paytmani 7 ga bo'lgandagi qoldiqni toping.

A) 1 B) 2 C) 3 D) 4

1380. k sonini 7 ga bo'lganda, qoldiq 2 ga c sonini 7 ga bo'lganda, qoldiq 5 ga teng. $k \cdot c$ ko'paytmani 7 ga bo'lgandagi qoldiqni toping.

A) 1 B) 2 C) 3 D) 6

✓ 2 ta natural sonni 5 ga bo'lganda mos ravishda 1 va 3 qoldiq hosil bo'ladi. bu sonlarning kvadratlarining yig'indisini 5 ga bo'lganda, qoldiq nechiga teng bo'ladi?

A) 0 B) 3 C) 4 D) 2

Yechimi:

$x \mid 5$ $\quad$ $a \mid 5$

y $\quad$ b

$1\ (qoldiq) \Rightarrow x=1$ $\quad$ $3\ (qoldiq) \Rightarrow a=3$

$x^2+a^2=1^2+3^2=1+9=10$

$10 \mid 5$

2

10

$0(qoldiq)$ $\quad$ *Javob*: 0

1381. 2 ta natural sonni 5 ga bo'lganda mos ravishda 2 va 3 qoldiq hosil bo'ladi. bu sonlarning kvadratlarining yig'indisini 5 ga bo'lganda, qoldiq nechiga teng bo'ladi?

A) 1 B) 2 C) 3 D) 6

1382. 2 ta natural sonni 5 ga bo'lganda mos ravishda 2 va 4 qoldiq hosil bo'ladi. bu sonlarning kvadratlarining yig'indisini 5 ga bo'lganda, qoldiq nechiga teng bo'ladi?

A) 0 B) 2 C) 3 D) 6

1383. 2 ta natural sonni 5 ga bo'lganda mos ravishda 4 va 1 qoldiq hosil bo'ladi. bu sonlarning kvadratlarining yig'indisini 5 ga bo'lganda, qoldiq nechiga teng bo'ladi?

A) 1 B) 2 C) 3 D) 6

✓ Agar a toq son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+27 B) $5(a+13)$ C) a^8 D) $\frac{a(a+3)}{2}$

Yechimi:

toq son degani uchun a=1 ni qo'yib hisoblash lozim.

A) $a^2+27 \Rightarrow 1^2+27=28$

B) $5(a+13) \Rightarrow 5(1+13)=5 \cdot 14=70$

(C) $a^8 \Rightarrow 1^8=1$

D) $\frac{a(a+3)}{2} \Rightarrow \frac{1(1+3)}{2}=2$

Izoh: Bu turdagi misollarni yechishning oson yo'li shartida aytilgan sonni qo'yishdir.

1384. Agar a toq son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2 B) $5(a+1)$ C) a^8+3 D) $\frac{a(a+3)}{2}$

1385. Agar a toq son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+31 B) $3(a^8+1)$ C) a^8+3 D) a^4

1386. Agar a toq son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+4 B) $5(a+1)$ C) a^8+3 D) $a+1$

✓ Agar a juft son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+2 B) $5a+13$ C) a^8+12 D) $\frac{a(a+3)}{2}$

Yechimi:

Bu turdagi misollarni yechishning oson yo'li shartida aytilgan sonni qo'yishdir.

juft son degani uchun a=2 ni qo'yib hisoblash lozim.

A) $a^2+2 \Rightarrow 2^2+2=4+2=6$

B) $5a+13 \Rightarrow 5 \cdot 2+13=10+13=26$

(C) $a^8+12 \Rightarrow 2^8+12=256+12=268$

D) $\frac{a(a+3)}{2} \Rightarrow \frac{1(1+3)}{2}=2$

1387. Agar a juft son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+8 B) $5(a+1)$

C) a^8+4 D) $\frac{8a(a+3)}{2}$

1388. Agar a juft son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) $2a^2+30$ B) a^4+1

C) a^4+a^2 D) a^4+8

1389. Agar a juft son bo'lsa, quyidagi sonlardan qaysi biri albatta toq son bo'ladi?

A) a^2+4 B) $5(a+1)$ C) a^8 D) a^3

✓ Agar x, y, z va t ketma-ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?

A) $\frac{x+y+z}{3}$ B) $\frac{xyzt}{24}$ C) $\frac{xyz}{6}$ D) $\frac{yzt}{3}$

Yechimi:

shartida aytganidek "ketma-ket keladigan natural sonlar" degani uchun 1, 2, 3, 4 ni x, y, z va t deb qo'yib hisoblash lozim.

A) $\frac{x+y+z}{3}=\frac{1+2+3}{3}=\frac{6}{3}=2$ *Ammo*

$\frac{x+y+z}{3}=\frac{2+3+4}{3}=\frac{9}{3}=3$

B) $\frac{x \cdot y \cdot z \cdot t}{24}=\frac{1 \cdot 2 \cdot 3 \cdot 4}{24}=\frac{24}{24}=1$

C) $\frac{xyz}{6}=\frac{1 \cdot 2 \cdot 3}{6}=\frac{6}{6}=1$ $\quad$ *(D)* $\frac{yzt}{3}=\frac{2 \cdot 3 \cdot 4}{3}=8$

Javob: $\frac{yzt}{3}$

Izoh: Bu turdagi misollarni yechishning oson yo'li shartida aytilgan sonni qo'yishdir.

1390. Agar x va y ketma–ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?

A) $x+y$ B) $x\cdot y$ C) $\frac{x\cdot y}{4}$ D) $\frac{x\cdot y}{2}$

1391. Agar x, y va z ketma–ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?

A) $\frac{x+y+z}{2}$ B) $\left(\frac{x\cdot y\cdot z}{2}\right)\cdot 4$

C) $\frac{x\cdot y\cdot z}{4}$ D) $\frac{x\cdot y\cdot z}{24}$

1392. Agar x,y,z va t ketma–ket keladigan natural sonlar bo'lsa, quyidagilarning qaysi biri albatta juft son bo'ladi?

A) $\frac{x+y+z}{24}$ B) $\frac{x\cdot y\cdot z\cdot t}{24}$

C) $\frac{x\cdot y\cdot z}{8}$ D) $\frac{x\cdot y\cdot z\cdot t}{2}$

✓ Ushbu ifodalardan qaysi biri $81346{,}28$ ga teng?

A) $8134{,}628\cdot 10^3$ B) $813462{,}8\cdot 10^3$

C) $81{,}34628\cdot 10^3$ D) $813{,}4628\cdot 10^3$

Yechimi:

$81346{,}28=8134{,}628\cdot 10^1=$

$=813{,}4628\cdot 10^2=81{,}34628\cdot 10^3$

Izoh: vergulni chapga surilgani 10 ning darajasi oshishidir.

1393. Ushbu ifodalardan qaysi biri $15847{,}14$ ga teng?

A) $158471{,}4\cdot 10^3$ B) $15{,}84714\cdot 10^3$

C) $1584{,}714\cdot 10^3$ D) $15847{,}14\cdot 10^3$

1394. Ushbu ifodalardan qaysi biri $2597{,}6413$ ga teng?

A) $2{,}5976413\cdot 10^3$ B) $25{,}976413\cdot 10^3$

C) $2597641{,}3\cdot 10^3$ D) $25{,}976413\cdot 10^3$

1395. Ushbu ifodalardan qaysi biri $77896554{,}23$ ga teng?

A) $77896{,}55423\cdot 10^4$ B) $7789{,}655423\cdot 10^3$

C) $778{,}9655423\cdot 10^5$ D) $778965542{,}3\cdot 10^1$

✓ Ushbu ifodalardan qaysi biri $813{,}4628$ ga teng?

A) $8134{,}628\cdot 10^{-3}$ B) $813462{,}8\cdot 10^{-3}$

C) $81{,}34628\cdot 10^{-3}$ D) $813{,}4628\cdot 10^{-3}$

Yechimi:

$813{,}4628=8134{,}628\cdot 10^{-1}=$

$81346{,}28\cdot 10^{-2}=813462{,}8\cdot 10^{-3}$

Izoh: Vergulni o'nga surilgani 10 ning darajasi kamayishidir.

1396. Ushbu ifodalardan qaysi biri $15{,}84714$ ga teng?

A) $158471{,}4\cdot 10^{-3}$ B) $158{,}4714\cdot 10^{-3}$

C) $15847{,}14\cdot 10^{-3}$ D) $15{,}84714\cdot 10^{-3}$

1397. Ushbu ifodalardan qaysi biri $2597{,}6413$ ga teng?

A) $2{,}5976413\cdot 10^{-3}$ B) $25{,}976413\cdot 10^{-3}$

C) $2597641{,}3\cdot 10^{-3}$ D) $25{,}976413\cdot 10^{-3}$

1398. Ushbu ifodalardan qaysi biri $77896554{,}23$ ga teng?

A) $77896{,}55423\cdot 10^{-4}$ B) $7789{,}655423\cdot 10^{-3}$

C) $778{,}9655423\cdot 10^{-5}$ D) $778965542{,}3\cdot 10^{-1}$

✓ Ushbu ifodalardan qaysi biri $3{,}701\cdot 10^{-3}$ ga teng?

A) $3{,}701\cdot 10^{-3}$ B) $0{,}03701\cdot 10^{-1}$

C) $3{,}4751\cdot 10^{-3}$ D) $4{,}0315\cdot 10^{-3}$

Yechimi:

$3{,}701\cdot 10^{-3}=0{,}\overline{3}701\cdot 10^{-2}=0{,}0\overline{3}701\cdot 10^{-1}=0{,}00\overline{3}701$

Izoh: "–" ni yo'q qilish uchun chapga siljitish lozim.

1399. Ushbu ifodalardan qaysi biri $3{,}305\cdot 10^{-4}$ ga ten?

A) $0{,}03305\cdot 10^{-1}$ B) $0{,}03305\cdot 10^{-3}$

C) $0{,}003305\cdot 10^{-1}$ D) $0{,}3305\cdot 10^{-2}$

1400. Ushbu ifodalardan qaysi biri $1{,}015\cdot 10^{-5}$ ga teng?

A) $10{,}15\cdot 10^{-1}$ B) $0{,}01015\cdot 10^{-2}$

C) $0{,}01015\cdot 10^{-3}$ D) $101{,}5\cdot 10^{-4}$

1401. Ushbu ifodalardan qaysi biri $4{,}24\cdot 10^{-4}$ ga teng?

A) $42{,}4\cdot 10^{-3}$ B) $0{,}424\cdot 10^{-2}$

C) $0{,}0424\cdot 10^{-1}$ D) $0{,}00424\cdot 10^{-1}$

✓ $3{,}701\cdot 10^{-3}+3{,}305\cdot 10^{-4}$ yig'indi quyidagi sonlarning qaysi biriga teng?

A) $5{,}906\cdot 10^{-7}$ B) $4{,}0215\cdot 10^{-3}$

C) $3{,}4751\cdot 10^{-3}$ D) $4{,}0315\cdot 10^{-3}$

Yechimi:

$3{,}701\cdot 10^{-3}+3{,}305\cdot 10^{-4}=10^{-3}\cdot\left(3{,}701+3{,}305\cdot 10^{-1}\right)=$

$=10^{-3}\cdot\left(3{,}701+0{,}305\right)=4{,}0315\cdot 10^{-3}$ $J:D$

Izoh: Qavsni oldida turgan songa e'tibor bering. kichik darajaga nisbatan qarash lozim.

1402. $1{,}015\cdot 10^{-5}+4{,}24\cdot 10^{-4}$ yig'indi quyidagi sonlarning qaysi biriga teng?

A) $3{,}2415\cdot 10^{-4}$ B) $4{,}2415\cdot 10^{-4}$

C) $4{,}155\cdot 10^{-9}$ D) $4{,}3415\cdot 10^{-4}$

1403. $3{,}104\cdot 10^{-3}+2{,}81\cdot 10^{-2}$ yig'indi quyidagi sonlarning qaysi biriga teng?

A) $3{,}1204\cdot 10^{-2}$ B) $3{,}285\cdot 10^{-2}$

C) $2{,}1204\cdot 10^{-2}$ D) $4{,}914\cdot 10^{-3}$

1404. $1{,}011\cdot 10^{-4}+3{,}1\cdot 10^{-3}$ yig'indi quyidagi sonlarning qaysi biriga teng?

A) $3{,}2011\cdot 10^{-3}$ B) $2{,}2011\cdot 10^{-3}$

C) $1{,}221\cdot 10^{-3}$ D) $3{,}111\cdot 10^{-4}$

✓ Ushbu ifodalardan qaysi biri $0,0079$ ga teng emas?

A) $79\cdot10^{-4}$ B) $0,79\cdot10^{-2}$

C) $7,9\cdot10^{-3}$ D) $0,079\cdot10^{-3}$

Yechimi:

$0,0079=0,079\cdot10^{-1}=0,79\cdot10^{-2}=7,9\cdot10^{-3}=$

$=79\cdot10^{-4}=790\cdot10^{-5}=...$

Izoh: Vergul siljigan sari 10 ning darajasiga e'tibor bering.

1405. Ushbu ifodalardan qaysi biri $0,000028$ ga teng emas?

A) $0,00028\cdot10^{-1}$ B) $0,028\cdot10^{-3}$

C) $0,028\cdot10^{-1}$ D) $0,0028\cdot10^{-2}$

1406. Ushbu ifodalardan qaysi biri $0,0000059$ ga teng emas?

A) $0,000059\cdot10^{-1}$ B) $0,059\cdot10^{-2}$

C) $0,0059\cdot10^{-3}$ D) $0,059\cdot10^{-4}$

1407. Ushbu ifodalardan qaysi biri $0,0016$ ga teng emas?

A) $1,6\cdot10^{-3}$ B) $0,16\cdot10^{-2}$

C) $0,016\cdot10^{-1}$ D) $16\cdot10^{-1}$

✓ $0,0015\cdot0,016$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $24\cdot10^{-6}$ B) $2,4\cdot10^{-5}$

C) $0,0024\cdot10^{-3}$ D) $240\cdot10^{-7}$

Yechimi:

$0,0015\cdot0,016=15\cdot10^{-4}\cdot16\cdot10^{-3}=15\cdot16\cdot10^{-4}\cdot10^{-3}=240\cdot10^{-7}$

1408. $0,0025\cdot0,07$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $17,5\cdot10^{-5}$ B) $1,75\cdot10^{-4}$

C) $175\cdot10^{-7}$ D) $0,175\cdot10^{-3}$

1409. $0,0026\cdot0,025$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $65\cdot10^{-6}$ B) $0,65\cdot10^{-5}$

C) $650\cdot10^{-6}$ D) $0,0065\cdot10^{-3}$

1410. $0,26\cdot0,00015$ ko'paytma quyidagi sonlardan qaysi biriga teng emas?

A) $3,9\cdot10^{-5}$ B) $0,0039\cdot10^{-2}$

C) $0,39\cdot10^{-3}$ D) $39\cdot10^{-6}$

✓ $3602,1$ ni standart shaklda yozing.

A) $3,602\cdot10^{3}$ B) $3,6021\cdot10^{3}$

C) $0,36\cdot10^{4}$ D) $3,6\cdot10^{3}$

Yechimi:

$a\cdot10^{n}$, $(1\le a<10)$ $\Big\}$ $3602,1=3,6021\cdot10^{n}$

1411. 8700000 ni standart shaklda yozing.

A) $8,7\cdot10^{5}$ B) $8,7\cdot10^{4}$

C) $8,7\cdot10^{7}$ D) $8,7\cdot10^{6}$

1412. $18934,68$ ni standart shaklda yozing.

A) $1,893468\cdot10^{5}$ B) $1,9\cdot10^{4}$

C) $1,893468\cdot10^{6}$ D) $1,893468\cdot10^{4}$

1413. $467,335$ ni standart shaklda yozing.

A) $4,67335\cdot10^{5}$ B) $4,67335\cdot10^{4}$

C) $4,67335\cdot10^{7}$ D) $4,67335\cdot10^{2}$

✓ $0,00064$ ni standart shaklda yozing.

A) $6,4\cdot10^{-4}$ B) $6,4\cdot10^{-3}$

C) $6,4\cdot10^{4}$ D) $4,6\cdot10^{3}$

Yechimi:

$a\cdot10^{n}$, $(1\le a<10)$ $\Big\}$ $0,00064=6,4\cdot10^{-4}$

1414. $0,000087$ ni standart shaklda yozing.

A) $8,7\cdot10^{-5}$ B) $8,7\cdot10^{-4}$

C) $8,7\cdot10^{-7}$ D) $8,7\cdot10^{-6}$

1415. $0,0069$ ni standart shaklda yozing.

A) $6,9\cdot10^{-5}$ B) $6,9\cdot10^{-3}$

C) $6,9\cdot10^{-6}$ D) $6,9\cdot10^{-4}$

1416. $0,0006$ ni standart shaklda yozing.

A) $6\cdot10^{-5}$ B) $6\cdot10^{-4}$

C) $6\cdot10^{-7}$ D) $6\cdot10^{-2}$

✓ $\dfrac{0,26}{0,00026}+\dfrac{0,24}{0,0015}-\dfrac{0,7}{0,0014}$ ni hisoblang.

A) 540 B) 340 C) 660 D) 1340

Yechimi:

$$\frac{0,26}{0,00026}+\frac{0,24}{0,0015}-\frac{0,7}{0,0014}=\frac{26000}{26}+\frac{2400}{15}-\frac{7000}{14}=$$

$$=1000+160-500=660$$

Izoh: Surat va mahrajni teng vergul siljitish lozim.

1417. $\dfrac{0,28}{0,84}+\dfrac{0,23}{0,03}-\dfrac{0,9}{0,05}$ ni hisoblang.

A) 25 B) -10 C) 10 D) $\dfrac{32}{3}$

1418. $\dfrac{3,2}{0,64}+\dfrac{0,27}{0,09}-\dfrac{0,005}{0,0025}$ ni hisoblang.

A) 5 B) 4 C) 6 D) 7

1419. $\dfrac{6,8}{0,17}-\dfrac{3,3}{1,65}-\dfrac{0,16}{0,04}$ ni hisoblang.

A) 30 B) 34 C) 32 D) 24

✓ 97; 6,7; 4,2; 8,1 sonlarning o'rta arifmetigini toping.

A) 9 B) 29 C) 66 D) 134

Yechimi:

2ta sonning o'rta arifmetigi $\boxed{A=\dfrac{a+b}{2}}$

3ta sonning o'rta arifmetigi $\boxed{A=\dfrac{a+b+c}{3}}$

4ta sonning o'rta

arifmetigi $\boxed{A=\frac{a+b+c+d}{4}}$

$$A=\frac{97+6,7+4,2+8,1}{4}=\frac{116}{4}=29$$

Izoh: O'rta arifmetik nechta bo'lsa, qo'shib ular soniga bo'lish lozim.

1420. 10; –12; 20; sonlarning o'rta arifmetigini toping.

A) 8 B) –10 C) 6 D) –6

1421. 5,2; –2; 1,6 sonlarning o'rta arifmetigini toping.

A) 5 B) 4,8 C) 1,6 D) 7

1422. –7; 16; 18; 9 ni hisoblang.

A) 4 B) 9 C) 36 D) 24

✓ 5,2; y; –2 sonlarining o'rta arifmetigi 1,5 ga teng, y ni toping.

A) 1,2 B) –0,8 C) 0,4 D) 1,3

Yechimi:

$\boxed{A=\frac{a+b+c}{3}}$ ⇐ *3 ta sonning o'rta arifmetigi*

$\frac{5,2+y-2}{3}=1,5$ *(proporsiyani qo'llab)*

$3,2+y=1,5\cdot 3$

$3,2+y=4,5$

$y=4,5-3,2 \Rightarrow y=1,3$

Izoh: O'rta arifmetik nechta bo'lsa, qo'shib ular soniga bo'lish lozim. **Javob: (D)**

1423. x; –2,1; 3,3 sonlarining o'rta arifmetigi 0,7 ga teng. x ni toping.

A) 0,8 B) –0,3 C) 0,9 D) –0,6

1424. 3; y; 2,1; 2,1 sonlarining o'rta arifmetigi 2,5 ga teng. y ni toping.

A) 2 B) 2,6 C) 2,8 D) 3,4

1425. a; 4,2; 3,1; 1,1 sonlarining o'rta arifmetigi 2,95 ga teng. a ni toping.

A) –2,6 B) 3,4 C) 2,1 D) 2

Qisqa ko'paytirish formulalari

✓ $(x+y)^2$ ni ko'phad ko'rinishini toping.

A) x^2+2x+y^2 B) $x^2+2xy+y$

C) $x^2+2xy+y^2$ D) x^2+xy+y^2

Yechimi:

qisqa ko'paytirishni formulasi

$(a+b)^2=a^2+2ab+b^2$ *ga ko'ra* $(x+y)^2=x^2+2xy+y^2$

Javob: (C)

1426. $(n+m)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+2mn+m^2$ B) n^2+mn+m^2

C) $n^2+2mn+m$ D) $n^2+2mn-m^2$

1427. $(c+d)^2$ ni ko'phad ko'rinishini toping.

A) $c^2+2cd+d$ B) c^2+cd+d^2

C) $c^2+2cd+d^2$ D) c^2+2d+d^2

1428. $(k+l)^2$ ni ko'phad ko'rinishini toping.

A) $k^2+2kl+l$ B) k^2+2l+l^2

C) $k^2-2kl+l^2$ D) $k^2+2kl+l^2$

✓ $(x+9)^2$ ni ko'phad ko'rinishini toping.

A) $x^2+18x+81$ B) $x^2+9x+81$

C) $x^2+18x+8$ D) $x^2+18x+18$

Yechimi: qisqa ko'paytirishni formulasi

$(a+b)^2=a^2+2ab+b^2$ *ga ko'ra*

$(x+9)^2=x^2+2x9+9^2=x^2+18x+81$

Javob: (A)

1429. $(c+5)^2$ ni ko'phad ko'rinishini toping.

A) $c^2+10c+10$ B) $c^2+25c+25$

C) $c^2+10c+25$ D) $c^2+10c+16$

1430. $(n+0,2)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+0,2n+0,4$ B) $n^2+0,4n+0,04$

C) $n^2+0,04n+0,4$ D) $n^2+0,4n+0,2$

1431. $(k+8)^2$ ni ko'phad ko'rinishini toping.

A) $k^2+8k+64$ B) $k^2+64k+64$

C) $k^2+16k+16$ D) $k^2+16k+64$

✓ $(x-y)^2$ ni ko'phad ko'rinishini toping.

A) x^2-2x+y^2 B) $x^2+2xy+y$

C) $x^2-2xy+y^2$ D) x^2+xy+y^2

Yechimi: qisqa ko'paytirishni formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra* $(x-y)^2=x^2-2xy+y^2$

1432. $(n-m)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+2mn+m^2$ B) n^2+mn+m^2

C) $n^2-2mn+m$ D) $n^2-2mn+m^2$

1433. $(c-d)^2$ ni ko'phad ko'rinishini toping.

A) $c^2+2cd+d$ B) $c^2-2cd+d^2$

C) $c^2+2cd+d^2$ D) c^2-2d+d^2

1434. $(k-l)^2$ ni ko'phad ko'rinishini toping.

A) $k^2-2kl+l$ B) k^2+2l+l^2

C) $k^2-2kl+l^2$ D) $k^2+2kl+l^2$

✓ $(x-0,7)^2$ ni ko'phad ko'rinishini toping.

A) $x^2+18x+81$ B) $x^2-1,4x+0,49$

C) $x^2+1,4x+0,49$ D) $x^2+18x+18$

Yechimi: qisqa ko'paytirishni formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$(x-0,7)^2=x^2-2x0,7+0,7^2=x^2-1,4x+0,49$

Javob: (C)

1435. $(2-n)^2$ ni ko'phad ko'rinishini toping.

A) $4+4n+n^2$ B) $4-4n+n^2$

C) $4-2n+n^2$ D) $4+4n-n^2$

1436. $(3-c)^2$ ni ko'phad ko'rinishini toping.

A) $9-5c+c^2$ B) $9-6c+c^2$

C) $9+6c+c^2$ D) $9-6c-c^2$

1437. $(k-1)^2$ ni ko'phad ko'rinishini toping.

A) k^2+2k+1 B) k^2+k+1

C) k^2-2k+1 D) k^2-k+1

✓ $(p+2q)^2$ ni ko'phad ko'rinishini toping.

A) $p^2-2pq+4q^2$ B) $p^2+2pq+4q^2$

C) $p^2-4pq+4q^2$ D) $p^2+4pq+4q^2$

Yechimi: qisqa ko'paytirishni formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$(p-2q)^2=p^2-2p2q+2^2q^2=p^2-4pq+4q^2$

1438. $(5z-t)^2$ ni ko'phad ko'rinishini toping.

A) $25z^2-10zt-t^2$ B) $25z^2+10zt+t^2$

C) $25z^2-10zt+t^2$ D) $25z^2+2zt+t^2$

1439. $(3x+2y)^2$ ni ko'phad ko'rinishini toping.

A) $9x^2+12xy+4y^2$ B) $9x^2-6xy+4y^2$

C) $9x^2+12xy-4y^2$ D) $9x^2+6xy+4y^2$

1440. $(6a-4b)^2$ ni ko'phad ko'rinishini toping.

A) $36a^2-24ab+16b^2$ B) $36a^2-48ab+16b^2$

C) $36a^2+48ab+16b^2$ D) $36a^2+24ab+16b^2$

✓ $(3x^2+2n^2)^2$ ni ko'phad ko'rinishini toping.

A) $9x^4+12x^2n^2+4n^4$ B) $9x^4+24x^2n^2+4n^4$

C) $9x^4-24x^2n^2+4n^4$ D) $9x^4-12x^2n^2+4n^4$

Yechimi:

Qisqa ko'paytirishni 1–formulasi

$(3x^2+2n^2)^2=(3x^2)^2+2\cdot3x^2\cdot2n^2+(2n^2)^2$

$(3x^2+2n^2)^2=9x^4+12x^2n^2+4n^4$

1441. $(3a^2+1)^2$ ni ko'phad ko'rinishini toping.

A) $9a^4-6a^2+1$ B) $9a^4+6a^2+1$

C) $9a^4+2a^2+1$ D) $9a^4-2a^2+1$

1442. $(a^2-1)^2$ ni ko'phad ko'rinishini toping.

A) a^4-2a+1 B) a^4-2a^2+1

C) a^4+2a+1 D) a^4-2a-1

1443. $(x^2+y^2)^2$ ni ko'phad ko'rinishini toping.

A) $x^4+x^2y^2+y^4$ B) $x^4-2x^2y^2+y^4$

C) $x^4+2x^2y^2+y^4$ D) $x^4-x^2y^2+y^4$

✓ $\left(a+\frac{1}{3}\right)^2$ ni ko'phad ko'rinishini toping.

A) $a^2+\frac{4a}{3}+\frac{1}{9}$ B) $a^2+\frac{a}{3}+\frac{1}{9}$

C) $a^2-\frac{2a}{3}+\frac{1}{9}$ D) $a^2+\frac{2a}{3}+\frac{1}{9}$

Yechimi:

Qisqa ko'paytirishni 1–formulasi

$(a+b)^2=a^2+2ab+b^2$ *ga ko'ra*

$(a+\frac{1}{3})^2=a^2+2\cdot a\cdot\frac{1}{3}+(\frac{1}{3})^2=a^2+\frac{2}{3}a+\frac{1}{9}=a^2+\frac{2a}{3}+\frac{1}{9}$ **Javob: (D)**

1444. $\left(\frac{1}{5}-n\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{25}+\frac{2n}{5}+n^2$ B) $\frac{1}{25}-\frac{2}{5}n+n^2$

C) $\frac{1}{25}-\frac{1}{5}n+n^2$ D) $\frac{1}{10}-\frac{2n}{5}+n^2$

1445. $\left(\frac{3}{4}-c\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{9}{16}+\frac{3c}{2}+c^2$ B) $\frac{9}{16}-\frac{3c}{2}+c^2$

C) $\frac{9}{16}+\frac{3c}{2}-c^2$ D) $\frac{9}{16}-\frac{3c}{2}-c^2$

1446. $\left(k+\frac{1}{2}\right)^2$ ni ko'phad ko'rinishini toping.

A) k^2+2k+1 B) k^2+k+2

C) $k^2+k+\frac{1}{4}$ D) $k^2-k+\frac{1}{4}$

✓ $\left(\frac{1}{4}a^3-\frac{4}{5}\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{16}a^6-\frac{2}{5}a^3+\frac{16}{25}$ B) $\frac{1}{16}a^6+\frac{2}{5}a^3+\frac{16}{25}$

C) $\frac{1}{16}a^6-\frac{1}{5}a^3+\frac{16}{25}$ D) $\frac{1}{16}a^6+\frac{4}{5}a^3+\frac{16}{25}$

Yechimi:

Qisqa ko'paytirishni 2–formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$\left(\frac{1}{4}a^3-\frac{4}{5}\right)^2=\left(\frac{1}{4}a^3\right)^2\frac{1}{16}+2\cdot\frac{1}{4}a^3\cdot\frac{4}{5}+\left(\frac{4}{5}\right)^2=\frac{1}{16}a^6+\frac{2}{5}a+\frac{16}{25}$

1447. $\left(\frac{1}{2}x^2+\frac{2}{3}n\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{4}x^4-\frac{2}{3}x^2n+\frac{4}{9}n^2$ B) $\frac{1}{4}x^4+\frac{2}{3}x^2n+\frac{4}{9}n^2$

C) $\frac{1}{4}x^4+\frac{1}{3}xn+\frac{4}{9}n^2$ D) $\frac{1}{4}x^4-\frac{4}{3}x^2n+\frac{4}{9}n^2$

1448. $\left(\frac{1}{3}c^2-\frac{4}{5}y\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{9}c^4+\frac{8}{15}c^2y+\frac{16}{25}y^2$ B) $\frac{1}{9}c^4-\frac{8}{15}c^2y+\frac{16}{25}y^2$

C) $\frac{1}{9}c^4-\frac{8}{15}c^4y+\frac{16}{25}y^2$ D) $\frac{1}{9}c^4-2c^2y+\frac{16}{25}y^2$

1449. $\left(\frac{1}{7}+\frac{1}{2}k^4\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{49}-\frac{1}{7}k^4+\frac{1}{4}k^8$ B) $\frac{1}{49}+2k^4+\frac{1}{4}k^8$

C) $\frac{1}{49}+\frac{1}{7}k^4+\frac{1}{4}k^8$ D) $\frac{1}{49}+\frac{2}{7}k^4+\frac{1}{4}k^8$

✓ $\left(4a^3-11a^2\right)^2$ ni ko'phad ko'rinishini toping.

A) $16a^6+88a^5+121a^4$ B) $16a^6+88a^5+121a^4$

C) $16a^6-88a^5-121a^4$ D) $16a^6-44a^5+121a^4$

Yechimi: **Javob: (B)**

Qisqa ko'paytirishni 2–formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$\left(4a^3-11a^2\right)^2=\left(4a^3\right)^2-4a^3\cdot2a^2\cdot11+\left(11a^2\right)^2=16a^6-88a^5+121a^4$

1450. $\left(15x+x^3\right)^2$ ni ko'phad ko'rinishini toping.

A) $225x^2+2x^4+x^6$ B) $225x^2+30x^4+x^6$

C) $225x^2-30x^4+x^6$ D) $225x^2+30x^4-x^6$

1451. $\left(7a^6-12a\right)^2$ ni ko'phad ko'rinishini toping.

A) $49a^{12}-168a^7+144a^2$ B) $49a^{12}+168a^7+144a^2$

C) $49a^{12}-2a^7+144a^2$ D) $49a^{12}-84a^7+144a^2$

1452. $\left(3y+8y^5\right)^2$ ni ko'phad ko'rinishini toping.

A) $9y^2-48y^6+64y^{10}$ B) $9y^2+2y^6+64y^{10}$

C) $9y^2+48y^6+64y^{10}$ D) $9y^2+24y^6+64y^{10}$

✓ $\left(-4ab-5a^2\right)^2$ ni ko'phad ko'rinishini toping.

A) $16a^2b^2+20a^3b+25a^4$ B) $16a^2b^2-40a^3b+25a^4$

C) $16a^2b^2+40a^3b+25a^4$ D) $16a^2b^2-20a^3b+25a^4$

Yechimi: Qisqa ko'paytirishni 1–formulasi

$(a+b)^2=a^2+2ab+b^2$ *ga ko'ra*

$(-a-b)^2=(a+b)^2 \Rightarrow \left(-4ab-5a^2\right)^2=\left(4ab+5a^2\right)^2$

$\left(4ab+5a^2\right)^2=(4ab)^2+2\cdot4ab\cdot5a^2+\left(5a^2\right)^2=16a^2b^2+40a^3b+25a^4$

1453. $(-11x-7y)^2$ ni ko'phad ko'rinishini toping.

A) $121x^2+2xy+49y^2$ B) $121x^2+154xy+49y^2$

C) $121x^2-154xy+49y^2$ D) $121x^2+77xy+49y^2$

1454. $(-0,8x-0,5b)^2$ ni ko'phad ko'rinishini toping.

A) $0,64x^2+0,8xb+0,25b^2$

B) $0,64x^2+0,4xb+0,25b^2$

C) $0,64x^2-0,8xb+0,25b^2$

D) $0,64x^2-0,4xb+0,25b^2$

1455. $(-6m-n)^2$ ni ko'phad ko'rinishini toping.

A) $36m^2-2mn+n^2$ B) $36m^2+6mn+n^2$

C) $36m^2+12mn+n^2$ D) $36m^2-12mn+n^2$

✓ $\left(-a^2+5a\right)^2$ ni ko'phad ko'rinishini toping.

A) $a^4+10a^3-25a^2$ B) $a^4-10a^3+25a^2$

C) $a^4-10a^3-25a^2$ D) $-a^4+10a^3+25a^2$

Yechimi: Qisqa ko'paytirishni 2–formulasi

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$(-a+b)^2=(a-b)^2 \Rightarrow \left(-a^2+5a\right)^2=\left(a^2-5a\right)^2$

$\left(a^2-5a\right)^2=\left(a^2\right)^2-2\cdot a^2\cdot5a+(5a)^2=a^4-10a^3+25a^2$

1456. $\left(-9a+4b\right)^2$ ni ko'phad ko'rinishini toping.

A) $-81a^2-72ab+16b^2$ B) $81a^2-72ab+16b^2$

C) $81a^2+72ab+16b^2$ D) $81a^2-72ab-16b^2$

1457. $(-x+5)^2$ ni ko'phad ko'rinishini toping.

A) $x^2-10x+25$ B) $x^2+10x+25$

C) $x^2-10x-25$ D) $x^2-2x+25$

1458. $(-n+4)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+8n+16$ B) $-n^2-8n+16$

C) $n^2-8n+16$ D) $n^2-4n+16$

✓ $(2a+b)^2-(2a-b)^2$ ni soddalashtiring.

A) $8ab$ B) $4ab$ C) $8a$ D) $-4ab$

Yechimi:

$\underbrace{(2a+b)^2}_{4a^2+4ab+b^2}-\underbrace{(2a-b)^2}_{4a^2-4ab+b^2}=$

$=4a^2+4ab+b^2-(4a^2-4ab+b^2)=4a^2+4ab+b^2-4a^2+4ab-b^2=$

$=\cancel{4a^2}+4ab+\cancel{b^2}-\cancel{4a^2}+4ab-\cancel{b^2}=8ab$

1459. $(x-y)^2+(x+y)^2$ ni soddalashtiring.

A) $2x^2+y^2$ B) $2xy$ C) $4xy$ D) $2x^2+2y^2$

1460. $(x+y)^2-(x-y)^2$ ni soddalashtiring.

A) $2x+y$ B) $2xy$ C) $4xy$ D) $2x^2+2y^2$

1461. $(2a+b)^2-(2a-b)^2$ ni soddalashtiring.

A) $8ab$ B) $4ab$ C) $8a^2+2b^2$ D) $-4ab$

✓ $(3a-1)^2-6(1+4a)^2$ ni soddalashtiring.

A) $8ab$ B) $4ab$

C) $-8ab$ D) $-87a^2-54a-5$

Yechimi:

$\underbrace{(3a-1)^2}_{9a^2-6a+1} - 6\underbrace{(1+4a)^2}_{1+8a+16a^2} =$

$9a^2-6a+1-6(1+8a+16a^2)=9a^2-6a+1-6-48a-96a^2=$

$=\underline{9a^2}-\overline{6a}+1-6-\overline{48a}-\underline{96a^2}=-87a^2-54a-5$

1462. $(x-1)^2-(x+1)^2$ ni soddalashtiring.

A) $-4x$ B) $2x$ C) $4x$ D) $2x^2+2$

1463. $-(x+3)^2+5(1-x)^2$ ni soddalashtiring.

A) $4x^2+16x-4$ B) $6x^2-4x+14$

C) $4x^2-16x-4$ D) $6x^2$

1464. $3(2-a)^2+4(a-5)^2$ ni ko'phad ko'rinishini toping.

A) $7a^2$ B) $-52a+112$

C) $7a^2-52a+112$ D) $-4ab$

✓ $-5x(x-3)+5(x-1)^2=-20$ tenglamani yeching.

A) 5 B) 4 C) −8 D) −5

Yechimi:

$-5x(x-3)+5(x-1)^2=-20$

$-5x^2+15x+5(x^2-2x+1)=-20$

$-5x^2+15x+5x^2-10x+5=-20$

$\cancel{-5x^2}+15x+\cancel{5x^2}-10x+5=-20$

$5x=-20-5$

$5x=-25$

$x=-5$

J: (D)

1465. $16x^2-(4x-5)^2=15$ tenglamani yeching.

A) $-\frac{1}{2}$ B) 1 C) 2 D) 4

1466. $64x^2-(3-8x)^2=87$ tenglamani yeching.

A) $-\frac{1}{2}$ B) 1 C) 2 D) 4

1467. $(2x-3)^2-(2x+3)^2=12$ tenglamani yeching.

A) $-\frac{1}{2}$ B) 1 C) 2 D) 4

✓ $n^2+2nm+m^2$ ni kvadrat ko'phad shaklini toping.

A) $(n-m)^2$ B) $(n+m)^2$

C) $(-n+m)^2$ D) $(n-2)^2$

Yechimi: $(a+b)^2=a^2+2ab+b^2$ *ga ko'ra*

$n^2+2nm+m^2=(n+m)^2$

Izoh: Agar $2nm$ ning oldida "–" bo'lsa, ya'ni $n^2-2nm+m^2=(n-m)^2$ ga teng.

1468. $x^2+2xy+y^2$ ni kvadrat ko'phad shaklini toping.

A) $(x-y)^2$ B) $(x+y)^2$

C) $(-x+y)^2$ D) $(x-2)^2$

1469. $x^2-2xy+y^2$ ni kvadrat ko'phad shaklini toping.

A) $(x-y)^2$ B) $(x+y)^2$

C) $(-x-y)^2$ D) $(x-2)^2$

1470. $c^2+2ck+k^2$ ni kvadrat ko'phad shaklini toping.

A) $(c-k)^2$ B) $(-c+k)^2$

C) $(c+k)^2$ D) $(c+2k)^2$

1471. $c^2-2ck+k^2$ ni kvadrat ko'phad shaklini toping.

A) $(c-k)^2$ B) $(-c-k)^2$

C) $(c+k)^2$ D) $(c+2k)^2$

✓ $a^2-10ab+25b^2$ ni kvadrat ko'phad shaklini toping.

A) $(-a-5b)^2$ B) $(a-5b)^2$

C) $(a+25b)^2$ D) $(a+5b)^2$

Yechimi:

$(a-b)^2=a^2-2ab+b^2$ *ga ko'ra*

$\overline{\overline{a^2}}-10ab+\overline{\overline{25b^2}}=(\overline{a}-\overline{5b})^2$

$a^2-2\cdot 5ab+(5b)^2=(a-5b)^2$

J : (B)

1472. $36x^2+12xy+y^2$ ni kvadrat ko'phad shaklini toping.

A) $(6x-y)^2$ B) $(x+y)^2$

C) $(-x+y)^2$ D) $(6x+y)^2$

1473. $x^2-14xy+49y^2$ ni kvadrat ko'phad shaklini toping.

A) $(x-y)^2$ B) $(x+7y)^2$

C) $(x-7y)^2$ D) $(x-2)^2$

1474. $c^2+4ck+4k^2$ ni kvadrat ko'phad shaklini toping.

A) $(c-k)^2$ B) $(-c+k)^2$

C) $(c+k)^2$ D) $(c+2k)^2$

1475. $81c^2-18ck+k^2$ ni kvadrat ko'phad shaklini toping.

A) $(9c-k)^2$ B) $(-c-k)^2$

C) $(9c+k)^2$ D) $(c+2k)^2$

✓ $81a^2+b^2-18$ ni kvadrat ko'phad shaklini toping.

A) $(-a-5b)^2$ B) $(9a-b)^2$

C) $(9a+b)^2$ D) $(a+5b)^2$

Yechimi:

$81a^2+b^2-18ab=81a^2-18ab+b^2=(9a-b)^2$

Izoh: misolni berilishida boshi bilan oxiriga kvadratlilarni yozib olish lozim.

$81a^2+b^2-18ab=\underline{\underline{81a^2}}-18ab+\underline{\underline{b^2}}$

1476. $8xy+y^2+16x^2$ ni kvadrat ko'phad shaklini toping.

A) $(6x-y)^2$ B) $(x+4y)^2$

C) $(y+4x)^2$ D) $(2x+y)^2$

1477. $100x^2+y^2+20xy$ ni kvadrat ko'phad shaklini toping.

A) $(x+10y)^2$ B) $(x+7y)^2$

C) $(x-7y)^2$ D) $(10x+y)^2$

1478. $1+c^2+2c$ ni kvadrat ko'phad shaklini toping.

A) $(c-1)^2$ B) $(-c+k)^2$

C) $(c+1)^2$ D) $(-c+k)^2$

1479. $-28ck+49c^2+4k^2$ ni kvadrat ko'phad shaklini toping.

A) $(7c-2k)^2$ B) $(-c-k)^2$

C) $(7c+2k)^2$ D) $(7c+k)^2$

✓ $101^2-2\cdot101\cdot81+81^2$ ni hisoblang.

A) 40 B) 900 C) 400 D) 500

Yechimi:

$101^2-2\cdot101\cdot81+81^2=$

$a^2-2ab+b^2=(a-b)^2$ *ga ko'ra*

$\underline{101^2}-2\cdot101\cdot81+\underline{81^2}=(101-81)^2$

$=(20)^2=400$ **J : (C)**

Izoh: Sonlarni hisoblashdan oldin formulaga tushganiga etibor bering.

1480. $37^2+2\cdot63\cdot37+63^2$ ni hisoblang.

A) 1000 B) 100 C) 100000 D) 10000

1481. $48^2-2\cdot48\cdot18+18^2$ ni hisoblang.

A) 900 B) 9000 C) 90 D) 600

1482. $85^2-2\cdot85\cdot17+17^2$ ni hisoblang.

A) 3624 B) 3364 C) 4624 D) 4824

1483. $17,98^2+2\cdot17,98\cdot32,02+32,02^2$ ni hisoblang.

A) 250 B) 2500 C) 25000 D) 25

✓ $0,4^2+2\cdot0,04+0,1^2$ ni hisoblang.

A) 0,025 B) 0,25 C) 900 D) 0,0025

Yechimi:

$0,4^2+2\cdot0,04+0,1^2=$

$=0,4^2+2\cdot0,4\cdot0,1+0,1^2=(0,4+0,1)^2=$

$=0,5^2=0,25$

Izoh: Sonlarni hisoblashdan oldin formulaga tushganiga e'tibor bering.

1484. $0,2^2-2\cdot0,06+0,3^2$ ni hisoblang.

A) -0,01 B) 0,001 C) 0,1 D) 0,01

1485. $1,1^2-2,2\cdot1,3+1,3^2$ ni hisoblang.

A) 0,04 B) 0,004 C) -0,04 D) 0,4

1486. $0,85^2+0,3\cdot0,85+0,15^2$ ni hisoblang.

A) 100 B) 10 C) 1 D) 0,01

✓ ? ni shunday birhadga almashtiringki, natijada $?+56a+49$ da ikkihadning kvadrati hosil bo'lsin.

A) $16a^2$ B) $8a^2$ C) $8a$ D) $64a^2$

Yechimi:

$\underbrace{?+56a+49}_{a^2+2ab+b^2}=?+2\cdot4a\cdot7+7^2$ *demak,*

$?=(4a)^2=16a^2 \Rightarrow 16a^2+56a+49=(4a+7)^2$

1487. ? ni shunday birhadga almashtiringki, natijada $a^2-6ab+?$ da ikkihadning kvadrati hosil bo'lsin.

A) $36a^2$ B) $9a^2$ C) $4b^2$ D) $9b^2$

1488. ? ni shunday birhadga almashtiringki, natijada $?+10m+25$ da ikkihadning kvadrati hosil bo'lsin.

A) m^2 B) $100m^2$ C) $4m^2$ D) $36m^2$

1489. ? ni shunday birhadga almashtiringki, natijada $16x^2+24xy+?$ da ikkihadning kvadrati hosil bo'lsin.

A) $9x^2$ B) $36y^2$ C) $9y^2$ D) $25x^2$

✓ ? ni shunday birhadga almashtiringki, natijada $36a^4-?+81c^2$ da ikkihadning kvadrati hosil bo'lsin.

A) $108a^2$ B) $2a^2c$ C) $54a^2c$ D) $108a^2c$

Yechimi:

$\underbrace{36a^4-?+81c^2}_{a^2+2ab+b^2}=36a^4-?+81c^2=$

$=(6a^2)^2+2\cdot6a^2\cdot9c+(9c)^2$ *demak,*

$?=2\cdot6a^2\cdot9c=108a^2c \Rightarrow 36a^4-108a^2c+81c^2$

1490. ? ni shunday birhadga almashtiringki, natijada $9p^2-?+49q^2$ da ikkihadning kvadrati hosil bo'lsin.

A) $2pq$ B) $21pq$ C) $36pq$ D) $42pq$

1491. ? ni shunday birhadga almashtiringki, natijada $0,01b^2+?+100c^4$ da ikkihadning kvadrati hosil bo'lsin.

A) $2bc^2$ B) cb^2 C) $20bc^2$ D) $2cb^2$

1492. ? ni shunday birhadga almashtiringki, natijada $0,25x^2+?+144y^6$ da ikkihadning kvadrati hosil bo'lsin.

A) $24xy^3$ B) $12yx^3$ C) $12xy^3$ D) $2xy^3$

✓ $(x+y)^3$ ni ko'phad ko'rinishini toping.

A) $x^3-3x^2y+3xy^2-y^3$ B) x^3+y^3

C) $x^2+2xy+y^2$ D) $x^3+3x^2y+3xy^2+y^3$

Yechimi:

Qisqa ko'paytirish formulalaridan biri

$(a+b)^3=a^3+3a^2b+3ab^2+b^3$ *ga ko'ra*

$(x+y)^3=x^3+3x^2y+3xy^2+y^3$

Javob: (D)

1493. $(n+m)^3$ ni ko'phad ko'rinishini toping.

A) $n^3+3n^2m+3nm^2+m^3$ B) n^3+m^3

C) $3n^2m+3nm^2$ D) $n^3-3n^2m+3nm^2-m^3$

1494. $(c+d)^3$ ni ko'phad ko'rinishini toping.

A) c^3+d^3 B) $c^2+2cd+d^2$

C) $c^3+3c^2d+3cd^2+d^3$ D) $c^3-3c^2d+3cd^2-d^3$

1495. $(k+l)^3$ ni ko'phad ko'rinishini toping.

A) $k^2+2kl+l^2$ B) $k^3-3k^2l+3kl^2-l^3$

C) k^3+l^3 D) $k^3+3k^2l+3kl^2+l^3$

✓ $(x+4)^3$ ni ko'phad ko'rinishini toping.

A) $x^2+16x+64$ B) x^3+81

C) $x^3-12x^2+48x-64$ D) $x^3+12x^2+48x+64$

Yechimi:

Qisqa ko'paytirish formulalaridan biri

$(a+b)^3=a^3+3a^2b+3ab^2+b^3$ *ga ko'ra*

$(x+4)^3=x^3+3\cdot x^2\cdot 4+3\cdot x\cdot 4^2+4^3$ **Javob: (D)**

$(x+4)^3=x^3+12x^2+48x+64$

1496. $(c+5)^3$ ni ko'phad ko'rinishini toping.

A) $c^2+10c+25$ B) $c^3-15c^2+75c-125$

C) $c^3+15c^2+75c+125$ D) c^3+125

1497. $(n+0,6)^3$ ni ko'phad ko'rinishini toping.

A) $n^3+0,216$

B) $n^3+1,8n^2+1,08n+0,216$

C) $n^3-1,8n^2+1,08n-0,216$

D) $n^2+0,4n+0,216$

1498. $(k+1)^3$ ni ko'phad ko'rinishini toping.

A) k^2+2k+1 B) k^3-3k^2+3k-1

C) k^3+1 D) k^3+3k^2+3k+1

✓ $(x-y)^3$ ni ko'phad ko'rinishini toping.

A) $x^3-3x^2y+3xy^2-y^3$ B) x^3+y^3

C) $x^2+2xy+y^2$ D) $x^3+3x^2y+3xy^2+y^3$

Yechimi:

Qisqa ko'paytirish formulalaridan biri

$(a-b)^3=a^3-3a^2b+3ab^2-b^3$ *ga ko'ra*

$(x-y)^3=x^3-3x^2y+3xy^2-y^3$

1499. $(n-m)^3$ ni ko'phad ko'rinishini toping.

A) $n^3+3n^2m+3nm^2+m^3$ B) n^3+m^3

C) $3n^2m+3nm^2$ D) $n^3-3n^2m+3nm^2-m^3$

1500. $(c-d)^3$ ni ko'phad ko'rinishini toping.

A) c^3+d^3 B) $c^2+2cd+d^2$

C) $c^3+3c^2d+3cd^2+d^3$ D) $c^3-3c^2d+3cd^2-d^3$

1501. $(k-l)^3$ ni ko'phad ko'rinishini toping.

A) $k^2+2kl+l^2$ B) $k^3-3k^2l+3kl^2-l^3$

C) k^3+l^3 D) $k^3+3k^2l+3kl^2+l^3$

✓ $(2z-3)^3$ ni ko'phad ko'rinishini toping.

A) $8z^3-36z^2+54z-27$ B) $8z^3+36z+54z^2+27$

C) $8z^3+27$ D) $8z^3+36z^2+54z+27$

Yechimi: **Javob: (A)**

Qisqa ko'paytirish formulalaridan biri

$(a-b)^3=a^3-3a^2b+3$ *ga ko'ra*

$(2z-3)^3=(2z)^3-3\cdot(2z)^2\cdot 3+3\cdot 2z\cdot 3^2-3^3=8z^3-36z^2+54z-27$

1502. $(2c-1)^3$ ni ko'phad ko'rinishini toping.

A) $8c^3+12c^2+6c+1$ B) $8c^3-12c^2+6c-1$

C) $c^3+15c^2+75c+125$ D) $8c^3-6c^2+12c-1$

1503. $(10n-3b)^3$ ni ko'phad ko'rinishini toping.

A) $1000n^3-270n^2b+900nb^2-27b^3$

B) $1000n^3+900n^2b+270nb^2+27b^3$

C) $1000n^3-900n^2b+270nb^2-27b^3$

D) $100n^2+6nb+9b^2$

1504. $(3k-5)^3$ ni ko'phad ko'rinishini toping.

A) $27k^3-135k^2+225k^2-125$

B) $27k^3-135k^2+225k-125$

C) k^3-125

D) $27k^3+135k^2+225k+125$

✓ $(\frac{1}{3}ab^2+a^2)^3$ ni ko'phad ko'rinishini toping.

A) $\frac{1}{27}a^3b^6+\frac{1}{3}a^4b^4+a^5b^2+a^6$

B) $\frac{1}{27}a^3b^6-\frac{1}{3}a^4b^4+a^5b^2-a^6$

C) $\frac{1}{27}a^3b^6+\frac{1}{3}a^4b^4+a^5b+a^6$

D) $\frac{1}{27}a^3b^6+\frac{1}{3}a^4b+a^5b^2+a^6$

Yechimi:

Qisqa ko'paytirish formulalaridan biri

$(a+b)^3 = a^3 + 3a^2b + 3ab^2 + b^3$ ga ko'ra

$(\frac{1}{3}ab^2+a^2)^3=(\frac{1}{3}ab^2)^3+3\cdot(\frac{1}{3}ab^2)^2\cdot a^2+3\cdot\frac{1}{3}ab^2\cdot(a^2)^2+(a^2)^3=$

$=\frac{1}{27}a^3b^6+\frac{1}{3}a^4b^4+a^5b^2+a^6$

1505. $(\frac{2}{3}bc^2+b^3)^3$ ni ko'phad ko'rinishini toping.

A) $\frac{8}{27}b^3c^6+\frac{4}{3}b^5c^2+2b^7c^2+b^9$

B) $\frac{8}{27}b^3c^6+\frac{4}{3}b^5c^4+2b^7c^2+b^9$

C) $\frac{8}{27}b^3c^6+\frac{4}{3}b^5c^4+2b^7c^4+b^9$

D) $\frac{8}{27}b^3c^5+\frac{4}{3}b^5c^4+2b^7c^2+b^9$

1506. $(a^2-\frac{4}{3}ab^4)^3$ ni ko'phad ko'rinishini toping.

A) $a^6+4a^5b^4+\frac{16}{3}a^4b^8+\frac{64}{27}a^3b^{12}$

B) $a^6-4a^5b^2+\frac{16}{3}a^4b^8-\frac{64}{27}a^3b^{12}$

C) $a^6-4a^5b^4+\frac{16}{3}a^4b^8-\frac{64}{27}a^3b^{12}$

D) $a^6-4a^5b^4+\frac{16}{3}a^3b^8-\frac{64}{27}a^3b^{12}$

1507. $(0,3m^3+1,5m^4)^3$ ni ko'phad ko'rinishini toping.

A) $0,027m^9+0,405m^{10}+2,025m^{11}-3,375m^{12}$

B) $0,027m^9+0,405m^{10}+2,025m^{11}+3,375m^{12}$

C) $0,027m^9+2,025m^{10}+0,405m^{11}+3,375m^{12}$

D) $0,027m^9+2,025m^{10}-0,405m^{11}-3,375m^{12}$

✓ $\left(5a^{2n}-\frac{5}{6}a^n\right)^2$ ni ko'phad ko'rinishini toping.

A) $25a^{4n}-\frac{25}{3}a^{3n}+\frac{25}{36}a^{2n}$ B) $25a^{4n}-32a^{3n}+\frac{25}{36}a^{2n}$

C) $25a^{4n}-\frac{25}{3}a^{2n^2}+\frac{25}{36}a^{2n}$ D) $25a^{4n}+\frac{25}{3}a^{3n}+\frac{25}{36}a^{2n}$

Yechimi: Qisqa ko'paytirish formulalaridan biri

$(a-b)^2 = a^2 - 2ab + b^2$ ga ko'ra

$(5a^{2n}-\frac{5}{6}a^n)^2=\left(5a^{2n}\right)^2-\underbrace{2\cdot5a^{2n}\frac{5}{6}a^n}_{a^{2n}\cdot a^n=a^{3n}}+\left(\frac{5}{6}a^n\right)^2=$ **J: (A)**

$=25a^{4n}-\frac{25}{3}a^{3n}+\frac{25}{36}a^{2n}$

1508. $(a^m-b^n)^2$ ni ko'phad ko'rinishini toping.

A) $a^2-2a^nb^n+b^2$ B) $a^{2n}+2a^nb^n+b^{2m}$

C) $a^{2m}-2a^mb^n+b^{2n}$ D) $a^{2n}-2ab+b^{2m}$

1509. $(2x^m+3y^n)^2$ ni ko'phad ko'rinishini toping.

A) $4x^{2m}+12xy+9y^{2n}$ B) $4x^{2m}+12x^my^n+9y^{2n}$

C) $4x^2+12x^my^n+9y^2$ D) $4x^{2m}-12x^my^n+9y^{2n}$

1510. $\left(\frac{2}{3}x^{n-2}-x^{2n-1}\right)^2$ ni ko'phad ko'rinishini toping.

A) $\frac{4}{9}x^{2n-4}+x^{3n-3}+\frac{9}{16}x^{4n-2}$ B) $\frac{4}{9}x^{2n-4}-x^{3n-3}+\frac{9}{16}x^{6n-2}$

C) $\frac{4}{9}x^{2n-4}-x^{4n-3}+\frac{9}{16}x^{4n-2}$ D) $\frac{4}{9}x^{2n-4}-\frac{4}{3}x^{3n-3}+x^{4n-2}$

✓ $(0,2x^m-0,3y^n)^3$ ni ko'phad ko'rinishini toping.

A) $0,08x^{3m}-0,036x^{2m}y^n+0,054x^my^{2n}-0,027y^{3n}$

B) $08x^{3m}+0,036x^{2m}y^n+0,054x^my^{2n}+0,027y^{3n}$

C) $0,08x^3-0,036x^{2m}y^n+0,054x^my^{2n}-0,027y^3$

D) $0,08x^{3m}-0,036x^{2m}y^n+0,054x^ny^{2n}-0,027y^{3n}$

Yechimi: Qisqa ko'paytirish formulalaridan biri:

$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$ ga ko'ra

$=\left(0,2x^m-0,3y^n\right)^3=$

$=\left(0,2x^m\right)^3-3\left(0,2x^m\right)^2\cdot0,3y^n+3\cdot0,2x^m\left(0,3y^n\right)^2-\left(0,3y^n\right)^3=$

$=0,008x^{3m}-0,036x^{2m}y^n+0,054x^my^{2n}-0,027y^{3n}$

1511. $(a^m-b^n)^3$ ni ko'phad ko'rinishini toping.

A) $a^{3n}+3a^{2m}b^n+3a^mb^n+b^{3m}$

B) $a^{3n}-3a^{2m}b^n+3a^mb^n-b^{3m}$

C) $a^{3m}-3a^{2m}b^n+3a^mb^{2n}-b^{3n}$

D) $a^{3n}-3a^mb^n+3a^mb^n-b^{3m}$

1512. $(2x^m+3y^n)^3$ ni ko'phad ko'rinishini toping.

A) $8x^{3m}+36x^my^n+54x^my^n+27y^{3n}$

B) $8x^{3m}+36x^{2m}y^n+54x^my^{2n}+27y^{3n}$

C) $8x^{3m}+36x^{2m}y^n+54x^my^n+27y^{3n}$

D) $8x^{3m}+36x^{2m}y^n+54x^ny^{2n}+81y^{3n}$

1513. $(x^{n-m}-y^{n+m})^3$ ni ko'phad ko'rinishini toping.

A) $x^{3n-3m}-3x^{2n-m}y^{n+m}+3x^{n-m}y^{2n+m}-y^{3n-3m}$

B) $x^{3n-3m}+3x^{2n-m}y^{n+m}+3x^{n-m}y^{2n+m}+y^{3n-3m}$

C) $x^{3n-3m}-3x^{2n-2m}y^{n+m}+3x^{n-m}y^{2n+m}+y^{3n-3m}$

D) $x^{3n-3m}-3x^{2n-2m}y^{n+m}+3x^{n-m}y^{2n+2m}-y^{3n+3m}$

✓ $x^3-3x^2y+3xy^2-y^3$ niko'phadning kubi shaklini toping.

A) $(-x-y)^3$ B) $(x-y)^2$ C) $(x+y)^3$ D) $(x-y)^3$

Yechimi: Qisqa ko'paytirish formulalaridan biri

$(a-b)^3 = a^3 - 3a^2b + 3ab^2 - b^3$ ga ko'ra **J: (D)**

$x^3-3x^2y+3xy^2-y^3=(x-y)^3$

1514. $n^3+3n^2m+3nm^2+m^3$ ni ko'phadning kubi shaklini toping.

A) $(n+m)^3$ B) $(n+m)^2$ C) $(-n-m)^3$ D) $(n-m)^3$

1515. $c^3+3c^2d+3cd^2+d^3$ ni ko'phadning kubi shaklini toping.

A) $(c-d)^3$ B) $(-c+d)^3$ C) $(c+d)^3$ D) $(-c-d)^3$

1516. $k^3+3k^2l+3kl^2+l^3$ ni ko'phadning kubi shaklini toping.

A) $(k-l)^3$ B) $(-k-l)^3$ C) $(k+l)^3$ D) $(k+2l)^3$

✓ $x^6-15x^4+75x-125$ niko'phadning kubi shaklini toping.

A) $(x^2+5)^3$ B) $(x^2-5)^3$ C) $(x^5-5)^3$ D) $(x^2-5)^2$

Yechimi: Qisqa ko'paytirish formulalaridan biri:

$(a-b)^3=a^3-3a^2b+3ab^2-b^3$ *ga ko'ra*

$x^6-15x^4+75x-125=(x^2)^3-3\cdot(x^2)^2\cdot5+3\cdot x\cdot5^2-5^3=(x^2-5)^3$

Javob: (B)

1517. $1000+300a+30a^2+a^3$ ni ko'phadning kubi shaklini toping.

A) $(10+a)^3$ B) $(10-a)^3$ C) $(100+a)^3$ D) $(-10+a)^3$

1518. $x^3+6x^2y^4+12xy^8+8y^{12}$ ni ko'phadning kubi shaklini toping.

A) $(x-2y^4)^3$ B) $(2x-y^4)^3$

C) $(x+2y^4)^3$ D) $(y^4-2x)^3$

1519. x^3-3x^2+3x-1 ni ko'phadning kubi shaklini toping.

A) $(x-1)^3$ B) $(-x-1)^3$ C) $(x+1)^3$ D) $(2x-1)^3$

✓ $79^3-3\cdot79^2\cdot70+3\cdot79\cdot70^2-70^3$ ni hisoblang.

A) 729 B) 64 C) 512 D) 81

Yechimi:

$(a-b)^3=a^3-3a^2b+3ab^2-b^3$ *ga ko'ra*

$79^3-3\cdot79^2\cdot70+3\cdot79\cdot70^2-70^3=(79-70)^3=9^3=729$

Javob: (A)

Izoh: hisoblashdan oldin formulaga tushishiga e'tibor bering.

1520. $5^3+3\cdot5^2\cdot3+3\cdot5\cdot3^2+3^3$ ni hisoblang.

A) 729 B) 64 C) 512 D) 81

1521. $15^3-3\cdot15^2\cdot13+3\cdot15\cdot13^2-13^3$ ni hisoblang.

A) 729 B) 64 C) 512 D) 8

1522. $25^3-3\cdot25^2\cdot15+3\cdot25\cdot15^2-15^3$ ni hisoblang.

A) 729 B) 1000 C) 512 D) 81

1523. $512-3\cdot8^2\cdot5+3\cdot8\cdot5^2-125$ ni hisoblang.

A) 729 B) 27 C) 512 D) 81

1524. $55^3-3\cdot55^2\cdot50+3\cdot55\cdot50^2-50^3$ ni hisoblang.

A) 729 B) 125 C) 512 D) 81

✓ $x^3+3xy(x+y)+y^3$ niko'phadning kubi shaklini toping.

A) $(x-y)^3$ B) $(x+y)^3$ C) $(-x-y)^3$ D) $(x^2-5)^3$

Yechimi:

$(a+b)^3=a^3+3a^2b+3ab^2+b^3$ *ga ko'ra*

$x^3+3xy(x+y)+y^3=(x+y)^3$

Izoh: Agar qavsni ochilsa formula hosil bo'ladi, ya'ni

$(a+b)^3=a^3+3ab(a+b)+b^3=a^3+3a^2b+3ab^2+b^3$

1525. $n^3+3nm(n+m)+m^3$ ni ko'phadning kubi shaklini toping.

A) $(n+m)^3$ B) $(n-m)^3$ C) $(-n-m)^3$ D) $(-n+m)^3$

1526. $k^3+3kl(k+l)+l^3$ ni ko'phadning kubi shaklini toping.

A) $(k+l)^3$ B) $(k-l)^3$ C) $(-k-l)^3$ D) $(-k+l)^3$

1527. $c^3+3cd(c+d)+d^3$ ni ko'phadning kubi shaklini toping.

A) $(c-d)^3$ B) $(c+d)^3$ C) $(-c-d)^3$ D) $(-c+d)^3$

✓ $n^3-3nz(n-z)-z^3$ ni ko'phadning kubi shaklini toping.

A) $(n-z)^3$ B) $(-n-z)^3$ C) $(-n+z)^3$ D) $(n+z)^3$

Yechimi:

$(a-b)^3=a^3-3ab(a-b)-b^3$ *ga ko'ra*

$n^3-3nz(n-z)-z^3=(n-z)^3$

Javob: (A)

1528. $n^3-3nm(n-m)-m^3$ ni ko'phadning kubi shaklini toping.

A) $(n+m)^3$ B) $(n-m)^3$ C) $(-n-m)^3$ D) $(-n+m)^3$

1529. $k^3-3kl(k-l)-l^3$ ni ko'phadning kubi shaklini toping.

A) $(k+l)^3$ B) $(k-l)^3$ C) $(-k-l)^3$ D) $(-k+l)^3$

1530. $c^3-3cd(c-d)-d^3$ ni ko'phadning kubi shaklini toping.

A) $(c-d)^3$ B) $(c+d)^3$ C) $(-c-d)^3$ D) $(-c+d)^3$

✓ $889^3+3000\cdot889\cdot111+111^3+889+111$ ni hisoblang.

A) 10000001000 B) 1000001000

C) 1000000100 D) 10000100

Yechimi:

$(a+b)^3=a^3+3ab(a+b)+b^3$ *ga ko'ra*

$889^3+3000\cdot889\cdot111+111^3+1000=889^3+3\cdot1000\cdot889\cdot111+111^3+1000=$

$\underbrace{889^3+3\cdot889\cdot111(889+111)+111^3}_{(889+111)^3}+889+111=$

$=1000^3+1000=1000000000+1000=10000001000$

Javob: (A)

izoh: hisoblashdan oldin formulaga tushishiga e'tibor bering. Agar "–" bo'lsa, $(a-b)^3=a^3-3ab(a-b)-b^3$ ni e'tiborga oling.

1531. $64+3\cdot4\cdot5\cdot9+125$ ni hisoblang.
A) 729 B) 64 C) 512 D) 81

1532. $125-3\cdot5\cdot3\cdot2-27$ ni hisoblang.
A) 729 B) 64 C) 512 D) 8

1533. $19^3-3\cdot19\cdot9\cdot10-729$ ni hisoblang.
A) 729 B) 1000 C) 512 D) 81

1534. $156^3-3\cdot156\cdot144\cdot12-144^3$ ni hisoblang.
A) 729 B) 1718 C) 1728 D) 81

1535. $29^3+300\cdot29\cdot71+71^3+29+71$ ni hisoblang.
A) 729 B) 1000100 C) 100010 D) 81

1536. $779^3+3000\cdot779\cdot221+221^3+10$ ni hisoblang.
A) 100010 B) 1000000010
C) 100000010 D) 10000010

✓ $(x-y)(x+y)$ ni ko'paytiring.
A) x^2-y^2 B) x^2+y^2
C) $-x^2-y^2$ D) x^2-y^3
Yechimi:
Formula: $(a-b)(a+b)=a^2-b^2$ *misol:* $(x-y)(x+y)=x^2-y^2$
izoh: Qavs ochmasdan formulaga qo'yib javobni toping.

1537. $(n-m)(n+m)$ ni ko'paytiring.
A) n^2+m^2 B) n^2-m^2 C) $-n^2-m^2$ D) m^2-n^2

1538. $(c-d)(c+d)$ ni ko'paytiring.
A) d^2+c^2 B) d^2-c^2 C) $-c^2-d^2$ D) c^2-d^2

1539. $(b-a)(b+a)$ ni ko'paytiring.
A) b^2-a^2 B) a^2-b^2 C) $-a^2-b^2$ D) a^2+b^2

✓ $(x-3)(x+3)$ ni ko'paytiring.
A) x^2-9 B) x^2+9 C) $-x^2-9$ D) x^2-27
Yechimi:
Formula: $(a-b)(a+b)=a^2-b^2$ *misol:* $(x-3)(x+3)=x^2-3^2=x^2-9$
izoh: qavs ochmasdan formulaga qo'yib javobni toping. sonning kvadratini $x^2-\underline{3^2}=x^2-\underline{9}$ hisoblash lozim.

1540. $(1-m)(1+m)$ ni ko'paytiring.
A) $1+m^2$ B) $2-m^2$ C) $1-m^2$ D) m^2-1

1541. $(c-11)(c+11)$ ni ko'paytiring.
A) $121+c^2$ B) $121-c^2$
C) $-c^2-121$ D) c^2-121

1542. $(19-a)(19+a)$ ni ko'paytiring.
A) $361-a^2$ B) a^2-361
C) $-361-a^2$ D) $361+a^2$

✓ $(4x-7c)(4x+7c)$ ni ko'paytiring.
A) $-16x^2-49c^2$ B) $16x^2-49$
C) $-x^2-49$ D) $16x^2-49c^2$
Yechimi:
Formula: $(a-b)(a+b)=a^2-b^2$ *misol:* $(4x-7)(4x+7)=(4x)^2-7^2=16x^2-49$

1543. $(8c-9d)(8c+9d)$ ni ko'paytiring.
A) $64c-81d$ B) $64c^2-81d^2$
C) $64c^2-18d^2$ D) $16c^2-81d^2$

1544. $(10y-6x)(10y+6x)$ ni ko'paytiring.
A) $36y^2-100x^2$ B) $100y^2-36x^2$
C) $100x^2-36y^2$ D) $100y^2+36x^2$

1545. $(18k-16a)(18k+16a)$ ni ko'paytiring.
A) $324a^2-256k^2$ B) $324k^2+256a^2$
C) $324k^2-256a^2$ D) $256k^2-324a^2$

✓ $(x+y)(x-y)$ ni ko'paytiring.
A) x^2-y^2 B) x^2+y^2 C) $-x^2-y^2$ D) x^2-y^3
Yechimi:
Formula: $(a-b)(a+b)=a^2-b^2$ *misol:* $(x+y)(x-y)=x^2-y^2$
izoh: Qavsda berilgan ifodalarni o'rni almashganda, ayirmasiga $(x+y)(x-y)=x^2-y^2$ qarash lozim.

1546. $(n+k)(n-k)$ ni ko'paytiring.
A) n^2+k^2 B) n^2-k^2 C) $-n^2-k^2$ D) k^2-n^2

1547. $(c+m)(c-m)$ ni ko'paytiring.
A) c^2+m^2 B) m^2-c^2 C) $-m^2-c^2$ D) c^2-m^2

1548. $(p+q)(p-q)$ ni ko'paytiring.
A) p^2-q^2 B) q^2-p^2 C) $-q^2-p^2$ D) p^2+q^2

✓ $(5x^4+3y^3)(5x^4-3y^3)$ ni ko'paytiring.
A) $-25x^8-9y^6$ B) x^2+y^2
C) $25x^8-9y^6$ D) $25x^8+9y^6$
Yechimi:
$(a-b)(a+b)=a^2-b^2$ *ga ko'ra*
$(5x^4+3y^3)(5x^4-3y^3)=(5x^4)^2-(3y^3)^2=25x^8-9y^6$
izoh: Qavsda berilgan ifodalarni o'rni almashganda, ayirmasiga $(5x^4+3y^3)(\underline{5x^4-3y^3})=25x^8-9y^6$ qarash lozim.

1549. $(n^2+5)(n^2-5)$ ni ko'paytiring.
A) n^4-10 B) n^4-25
C) $-n^4-25$ D) n^2-25

1550. $(0,7c^3+m)(0,7c^3-m)$ ni ko'paytiring.
A) $0,49c^2-m^2$ B) $0,49c^6+m^2$
C) $49c^6-m^2$ D) $0,49c^6-m^2$

1551. $(p+12q^5)(p-12q^5)$ ni ko'paytiring.

A) p^2-144q^{10} B) $-p^2-144q^{10}$

C) p^2-144q^2 D) p^2+144q^{10}

✓ $(y+x)(x-y)$ ni ko'paytiring.

A) x^2-y^2 B) x^2+y^2

C) $-x^2-y^2$ D) x^2-y^3

Yechimi:

$(a-b)(a+b)=a^2-b^2$ *ga ko'ra*

$(y+x)(x-y)=x^2-y^2$

izoh: Qavsda berilgan ifodalarni o'rni almashganda, ayirmasiga $(y+x)(x-y)=x^2-y^2$ qarash lozim.

1552. $(k+a)(a-k)$ ni ko'paytiring.

A) a^2+k^2 B) a^2-k^2

C) $-a^2-k^2$ D) k^2-a^2

1553. $(m+b)(b-m)$ ni ko'paytiring.

A) b^2+m^2 B) m^2-b^2

C) $-m^2-b^2$ D) b^2-m^2

1554. $(a+y)(y-a)$ ni ko'paytiring.

A) y^2-a^2 B) a^2-y^2

C) $-y^2-a^2$ D) y^2+a^2

✓ $(c^4+d^2)(d^2-c^4)$ ni ko'paytiring.

A) d^4-c^8 B) c^4-d^8

C) $-d^4-c^8$ D) d^4+c^8

Yechimi:

$(a-b)(a+b)=a^2-b^2$ *ga ko'ra*

$(c^4+d^2)(d^2-c^4)=(d^2)^2-(c^4)^2=d^4-c^8$

izoh: qavsda berilgan ifodalarni o'rni almashganda, ayirmasiga $(c^4+d^2)(d^2-c^4)=d^4-c^8$ qarash lozim.

1555. $(4b^3+9a^2)(9a^2-4b^3)$ ni ko'paytiring.

A) $81a^4+16b^6$ B) $-81a^4-16b^6$

C) $81a^4-16b^6$ D) $81b^4-16a^6$

1556. $(2m^4+5b^2)(5b^2-2m^4)$ ni ko'paytiring.

A) $4b^8+25m^2$ B) $25m^2-16b^2$

C) $25b^4-4m^8$ D) $4b^4-25m^8$

1557. $(0,2t^3+0,5p^4)(0,5p^4-0,2t^3)$ ni ko'paytiring.

A) $25p^8-4t^6$ B) $0,25t^8-0,04p^9$

C) $0,25p^8-0,04t^6$ D) $0,04t^9-0,25p^8$

✓ $(\frac{2}{3}c+\frac{3}{4}d)(\frac{3}{4}d-\frac{2}{3}c)$ ni ko'paytiring.

A) $\frac{9}{16}d^2+\frac{4}{9}c^2$ B) $\frac{9}{16}d^2-\frac{4}{9}c^2$

C) $-\frac{9}{16}d^2-\frac{4}{9}c^2$ D) $\frac{9}{16}c^2-\frac{4}{9}d^2$

Yechimi:

$(a-b)(a+b)=a^2-b^2$ *ga ko'ra*

$(\frac{2}{3}c+\frac{3}{4}d)(\frac{3}{4}d-\frac{2}{3}c)=(\frac{3}{4}d)^2-(\frac{2}{3}c)^2=\frac{9}{16}d^2-\frac{4}{9}c^2$

Javob: (B)

1558. $\left(4d-\frac{1}{2}\right)\left(\frac{1}{2}+4d\right)$ ni ko'paytiring.

A) $16d^2-\frac{1}{4}$ B) $\frac{1}{4}-16d^2$

C) $-16d^4-\frac{1}{4}$ D) $16d^4+\frac{1}{4}$

1559. $\left(\frac{5}{6}a-b\right)\left(b+\frac{5}{6}a\right)$ ni ko'paytiring.

A) $\frac{25}{36}a^2-b^2$ B) $b^2-\frac{25}{36}a^2$

C) $\frac{25}{36}a^2+b^2$ D) $-\frac{25}{36}a^2-b^2$

1560. $\left(\frac{1}{2}y-\frac{1}{3}x\right)\left(\frac{1}{2}y+\frac{1}{3}x\right)$ ni ko'paytiring.

A) $\frac{1}{4}y^2-\frac{1}{9}x^2$ B) $\frac{1}{4}x^2-\frac{1}{9}y^2$

C) $-\frac{1}{4}y^2-\frac{1}{9}x^2$ D) $\frac{1}{4}y^2+\frac{1}{9}x^2$

✓ $(3x^2y-4xy^2)(3x^2y+4xy^2)$ ni ko'paytiring.

A) $9x^4y^2-16x^2y^4$ B) $9x^4y^2+16x^2y^4$

C) $-9x^4y^2-16x^2y^4$ D) $16x^4y^2-9x^2y^4$

Yechimi:

$(a-b)(a+b)=a^2-b^2$ *ga ko'ra*

$(3x^2y-4xy^2)(3x^2y+4xy^2)=(3x^2y)^2-(4xy^2)^2$ **J: (A)**

$(3x^2y-4xy^2)(3x^2y+4xy^2)=9x^4y^2-16x^2y^4$

1561. $(5ab^2+2a^2b)(5ab^2-2a^2b)$ ni ko'paytiring.

A) $4a^2b^4-25a^4b^2$ B) $25a^2b^4-4a^4b^2$

C) $25a^2b^4+4a^4b^2$ D) $25a^4b^2-4a^2b^4$

1562. $(7ab-x^2y^3)(7ab-x^2y^3)$ ni ko'paytiring.

A) $49a^2b^2+x^4y^6$ B) $49a^2b^2-x^4y^6$

C) $a^2b^2-49x^4y^6$ D) $-49a^2b^2-x^4y^6$

1563. $(ab^3-4xy)(ab^3+4xy)$ ni ko'paytiring.

A) $-a^2b^6-16x^2y^2$ B) $a^2b^6+16x^2y^2$

C) $a^2b^6-16x^2y^2$ D) $16a^2b^6-x^2y^2$

✓ $(b-2)^2(b+2)^2$ ni ko'paytiring.

A) b^4-16 B) $-b^4-16$

C) b^4+16 D) b^4-8b^2+16

Yechimi:

$(a-b)(a+b)=a^2-b^2$ ga ko'ra

$(b-2)^2(b+2)^2=\underbrace{((b-2)(b+2))}_{b^2-4}{}^2=(b^2-4)^2=b^4-8b^2+16$ **J: (D)**

1564. $(1-a)^2(1+a)^2$ ni ko'paytiring.

A) a^4-1 B) $1-2a^2+a^4$

C) $-1-a^4$ D) $1+a^4$

1565. $(4-a^2)^2(4+a^2)^2$ ni ko'paytiring.

A) a^8-256 B) $256-32a^4+a^8$

C) $-256-a^8$ D) $256+a^8$

1566. $\left(\frac{1}{3}n-m^3\right)^2\left(\frac{1}{3}n+m^3\right)^2$ ni ko'paytiring.

A) $\frac{1}{81}n^4+m^{12}$ B) $\frac{1}{81}n^2-m^8$

C) $\frac{1}{84}n^4-\frac{2}{9}n^2m^6+m^{12}$ D) $\frac{1}{84}n^4+\frac{2}{9}n^2m^6+m^{12}$

✓ $(b-2)(b+2)(b^2+4)$ ni ko'paytiring.

A) b^4-16 B) $-b^4-16$

C) b^4+16 D) $16-b^4$

Yechimi:

$(a-b)(a+b)=a^2-b^2$ ga ko'ra

$\underbrace{(b-2)(b+2)}_{b^2-4}(b^2+4)=(b^2-4)(b^2+4)=$ **J: (A)**

$=b^4-16$

1567. $(1-a)(1+a)(a^2+1)$ ni ko'paytiring.

A) a^4-1 B) $1-a^4$

C) $-1-a^4$ D) a^4+1

1568. $(4-a^2)(4+a^2)(a^4+16)$ ni ko'paytiring.

A) a^8-256 B) $256-a^8$

C) $-256-a^8$ D) $256+a^8$

1569. $(\frac{7}{9}n-m^3)(\frac{7}{9}n+m^3)(m^6+\frac{49}{81}n^2)$ ni ko'paytiring.

A) $m^{12}-\frac{2401}{6561}n^2$ B) $\frac{2401}{6561}n^2-m^8$

C) $\frac{2401}{6561}n^4-m^{12}$ D) $\frac{2301}{6561}n^2-m^{12}$

✓ $(1-\frac{1}{3})(1+\frac{1}{3})(1+\frac{1}{3^2})(1+\frac{1}{3^4})(1+\frac{1}{3^8})$ ni ko'paytiring.

A) $1-\frac{1}{3^{16}}$ B) $1+\frac{1}{3^{16}}$

C) $1-\frac{1}{3^8}$ D) $-1-\frac{1}{3^{16}}$

Yechimi:

$(a-b)(a+b)=a^2-b^2$ ga ko'ra

$\underbrace{(1-\frac{1}{3})(1+\frac{1}{3})}_{(1-\frac{1}{3^2})}(1+\frac{1}{3^2})(1+\frac{1}{3^4})(1+\frac{1}{3^8})=\underbrace{(1-\frac{1}{3^2})(1+\frac{1}{3^2})}_{(1-\frac{1}{3^4})}(1+\frac{1}{3^4})(1+\frac{1}{3^8})=$

$=(1-\frac{1}{3^4})(1+\frac{1}{3^4})(1+\frac{1}{3^8})=(1-\frac{1}{3^8})(1+\frac{1}{3^8})=1-\frac{1}{3^{16}}$ J: (A)

1570. $\left(2-\frac{1}{5}\right)\left(2+\frac{1}{5}\right)\left(2^2+\frac{1}{5^2}\right)\left(2^4+\frac{1}{5^4}\right)\left(2^8+\frac{1}{5^8}\right)$ ni ko'paytiring.

A) $2^{10}-\frac{1}{5^{10}}$ B) $2^8-\frac{1}{5^8}$

C) $2^8-\frac{1}{5^4}$ D) $2^{16}-\frac{1}{5^{16}}$

1571. $\left(\frac{1}{7}-8\right)\left(\frac{1}{7}+8\right)\left(\frac{1}{7^2}+8^2\right)\left(\frac{1}{7^4}+8^4\right)\left(\frac{1}{7^8}+8^8\right)$ ni ko'paytiring.

A) $8^{16}-\frac{1}{7^{16}}$ B) $8^{10}-\frac{1}{7^{10}}$

C) $\frac{1}{7^{10}}-8^{10}$ D) $\frac{1}{7^{16}}-8^{16}$

1572. $(\frac{3}{4}-5)(\frac{3}{4}+5)(\frac{3^2}{4^2}+5^2)(\frac{3^4}{4^4}+5^4)(\frac{3^8}{4^8}+5^8)$ ni ko'paytiring.

A) $5^{16}-\frac{3^{16}}{4^{16}}$ B) $5^{10}-\frac{3^{10}}{4^{10}}$

C) $5^{16}-\frac{3^{16}}{4^{10}}$ D) $\frac{3^{16}}{4^{16}}-5^{16}$

✓ $0{,}8\cdot(0{,}2+1)\cdot(0{,}2^2+1)\cdot(0{,}2^4+1)\cdot(0{,}2^8+1)+(5^{-2})^8$ ni ko'paytiring.

A) 1 B) 2 C) $0{,}2^{16}$ D) 3

Yechimi:

$0{,}8\cdot(0{,}2+1)\cdot(0{,}2^2+1)\cdot(0{,}2^4+1)\cdot(0{,}2^8+1)+(5^{-2})^8=$

$=\overbrace{(1-0{,}2)}^{0{,}8}(0{,}2+1)(0{,}2^2+1)(0{,}2^4+1)(0{,}2^8+1)+(5^{-2})^8=$

$\overbrace{(1-0{,}2)(0{,}2+1)}^{(1-0{,}2^2)}(0{,}2^2+1)(0{,}2^4+1)\times(0{,}2^8+1)+(5^{-2})^8=$

$=(1-0{,}2^8)(0{,}2^8+1)+(5^{-2})^8=(1-0{,}2^{16})+(5^{-2})^8=$

$=1-0{,}2^{16}+5^{-16}=1-(\frac{2}{10})^{16}+\frac{1}{5^{16}}=1-(\frac{1}{5})^{16}+\frac{1}{5^{16}}=1$ J: (A)

1573. $0{,}6\cdot(0{,}4+1)\cdot(0{,}4^2+1)\cdot(0{,}4^4+1)\cdot(0{,}4^8+1)+(2{,}5^{-2})^8$ ni ko'paytiring.

A) 2 B) $0{,}6^{16}$ C) 3 D) 1

1574. $0{,}2\cdot(0{,}8+1)\cdot(0{,}8^2+1)\cdot(0{,}8^4+1)\cdot(0{,}8^8+1)+(1{,}25^{-2})^8$ ni ko'paytiring.

A) 1 B) $0{,}8^{16}$ C) 3 D) 2

1575. $0,9\cdot(0,1+1)\cdot(0,1^2+1)\cdot(0,1^4+1)\cdot(0,1^8+1)+\left(10^{-2}\right)^8$ ni ko'paytiring.

A) 1 B) $0,9^{16}$ C) 3 D) 2

✓ $(c-3)^2-(c+3)(3-c)$ nisoddalashtiring.

A) $2c^2-6c$ B) $2c^2$ C) $2c^2+6c$ D) $-6c$

Yechimi:

$(c-3)^2-(c+3)(3-c)=c^2-6c+9-(3^2-c^2)=$

$=c^2-6c+\cancel{9}-\cancel{9}+c^2=2c^2-6c$ **Javob:** (A)

izoh: avval formulalarga ko'ra qavs ochib, so'ngra ixchamlandi.

1576. $(a+2)^2-(a+2)(2-a)$ ni soddalashtiring.

A) $2a^2+4a$ B) $2a^2-4a$ C) $2a^2$ D) $4a$

1577. $(2x+3y)(2x-3y)+(2x-3y)^2$ ni soddalashtiring.

A) $8x^2-12xy$ B) $8x^2+12xy$

C) $8x^2$ D) $-12xy$

1578. $(a+b)(b-a)+a^2+b^2$ ni soddalashtiring.

A) $-3b^2-a^2$ B) $2b^2$ C) $3b^2-a^2$ D) $-a^2$

1579. $(a+b)(b-a)-2b^2$ ni soddalashtiring.

A) $-3b^2-a^2$ B) $-b^2-a^2$ C) $3b^2-a^2$ D) $-a^2$

✓ Agar $k=-\frac{1}{2}$ bo'lsa, $2(k-7)(k+5)-(k-5)^2-(k-7)(7+k)$ ni qiymatini toping.

A) –49 B) –43 C) 49 D) 43

Yechimi:

$2(k-7)(k+5)-(k-5)^2-(k-7)(7+k)=$

$=2(k^2+5k-7k-35)-(k^2-10k+25)-(k^2-49)=$

$\cancel{2k^2}-4k-70-\cancel{k^2}+10k-25-\cancel{k^2}+49=6k-46$

$6k-46=6\cdot(-\frac{1}{2})-46=-3-46=-49$

Javob: (A)

Izoh: Avval formulalarga ko'ra qavs ochib, ixchamlandi va so'ngra berilgan sonni $k=-\frac{1}{2}$ qo'yiladi.

1580. Agar $m=-2,4$ bo'lsa, $4m-(m+3)^2+(m-3)(3+m)$ ni qiymatini toping.

A) –13,2 B) 13,2 C) –23,8 D) 4,8

1581. Agar $x=-0,1$ bo'lsa, $(3x+4)^2-24x-(x-4)(4+x)$ ni qiymatini toping.

A) –22,8 B) 32,08 C) –32,08 D) 4,8

1582. Agar $a=-\frac{1}{5}$ bo'lsa, $(a+3)^2+(a-3)(3+a)-2(a+2)(a-4)$ ni qiymatini toping.

A) –14 B) 18 C) –23 D) 14

✓ $(2x+3)^2-4(x-1)(x+1)=49$ tenglamani yeching.

A) –9 B) –4 C) 4 D) 3

Yechimi:

$(2x+3)^2-4(x-1)(x+1)=49$

$4x^2+12x+9-4(x^2-1)=49$

$\cancel{4x^2}+12x+9-\cancel{4x^2}+4=49$

$12x=49-9-4$ **Javob: (D)**

$12x=36$

$x=36:12$

$x=3$

Izoh: Avval formulalarga ko'ra qavs ochib, ixchamlandi. so'ngra oddiy tenglamani yechganday yechiladi.

1583. $(3x+4)^2-(3x-1)(1+3x)=49$ tenglamani yeching.

A) $\frac{4}{3}$ B) $\frac{3}{4}$ C) 4 D) 48

1584. $(3x+2)(3x-2)-(3x-4)^2=28$ tenglamani yeching.

A) 2 B) $\frac{3}{4}$ C) 4 D) 48

1585. $(3x-1)^2-(3x-2)(2+3x)=17$ tenglamani yeching.

A) 2 B) –2 C) 4 D) 48

✓ $(x-y)(x^2+xy+y^2)$ ni ko'paytiring.

A) x^3-y^3 B) x^3+y^3 C) $-x^2-y^2$ D) x^2-y^3

Yechimi:

Formula:	*misol*
$(a-b)(a^2+ab+b^2)=a^3-b^3$	$(x-y)(x^2+xy+y^2)=x^3-y^3$

Javob: (A)

izoh: qavs ochmasdan formulaga qo'yib javobni toping.

1586. $(n-m)(n^2+nm+m^2)$ ni ko'paytiring.

A) n^2+m^2 B) n^3-m^3 C) $-n^2-m^2$ D) m^3-n^3

1587. $(c-d)(c^2+cd+d^2)$ ni ko'paytiring.

A) d^2+c^2 B) d^3-c^3 C) $-c^2-d^2$ D) c^3-d^3

1588. $(b-a)(b^2+ba+a^2)$ ni ko'paytiring.

A) b^3-a^3 B) a^3-b^3 C) $-a^2-b^2$ D) a^2+b^2

✓ $(x-3)(x^2+3x+9)$ ni ko'paytiring.

A) x^2-9 B) x^2+9 C) $-x^2-9$ D) x^3-27

Yechimi:

Formula:	*misol*
$(a-b)(a^2+ab+b^2)=a^3-b^3$	$(x-3)(x^2+3x+9)=x^3-3^3=x^3-27$

izoh: qavs ochmasdan formulaga qo'yib javobni toping. sonning kvadratini $x^3-\underline{3^3}=x^3-\underline{27}$ hisoblash lozim.

1589. $(1-m)(1+m+m^2)$ ni ko'paytiring.

A) $1+m^3$ B) $2-m^3$ C) $1-m^3$ D) m^3-1

1590. $(c-5)(c^2+5c+25)$ ni ko'paytiring.

A) $125+c^5$ B) $125-c^3$

C) $-c^2-125$ D) c^3-125

1591. $(0,2-a)(0,04+0,2a+a^2)$ ni ko'paytiring.

A) $0,008-a^3$ B) $0,08+a^3$

C) $-0,008-a^3$ D) $0,08-a^3$

✓ $(x+y)(x^2-xy+y^2)$ ni ko'paytiring.

A) x^3-y^3 B) x^3+y^3 C) $-x^2-y^2$ D) x^2-y^3

Yechimi:

Formula: $(a+b)(a^2-ab+b^2)=a^3+b^3$

misol $(x+y)(x^2-xy+y^2)=x^3+y^3$

Javob: (B)

Izoh: qavs ochmasdan formulaga qo'yib javobni toping.

1592. $(n+k)(n^2-nk+k^2)$ ni ko'paytiring.

A) n^2+k^2 B) n^3+k^3 C) $-n^2+k^2$ D) m^3-k^3

1593. $(m+d)(m^2-md+d^2)$ ni ko'paytiring.

A) d^2-m^2 B) d^3-m^3 C) $-c^2-d^2$ D) m^3+d^3

1594. $(p+q)(p^2-pq+q^2)$ ni ko'paytiring.

A) p^3-q^3 B) q^3-p^3 C) $-p^2-q^2$ D) q^3+p^3

✓ $(3x^3+4)(9x^6-12x^3+16)$ ni ko'paytiring.

A) $27x^9-64$ B) $27x^9+64$

C) $-x^2-y^2$ D) x^2-y^3

Yechimi: **J: (B)**

Formula: $(a+b)(a^2-ab+b^2)=a^3+b^3$

misol $(3x^3+4)(9x^6-12x^3+16)=(3x^3)^3+4^3=27x^9+64$

izoh: qavs ochmasdan formulaga qo'yib javobni toping.

1595. $(1+m^2)(1-m^2+m^4)$ ni ko'paytiring.

A) $1+m^{12}$ B) $1+m^8$ C) $1+m^6$ D) $1-m^6$

1596. $(y+2)(y^2-2y+4)$ ni ko'paytiring.

A) y^3-8 B) y^3-27 C) y^3+8 D) y^3+6

1597. $(2x+3y)(4x^2-6xy+9y^2)$ ni ko'paytiring.

A) $8y^3+27x^3$ B) $8x^3-27y^3$

C) $8x^3+27y^3$ D) $27x^3+8y^3$

1598. $(z+5)(z^2-5z+25)$ ni ko'paytiring.

A) z^3+25 B) z^3+125

C) z^3-25 D) z^3-125

1599. $(4c-5d)(16c^2+20cd+25d^2)$ ni ko'paytiring.

A) $64d^3-125c^3$ B) $64c^3+125d^3$

C) $64c^3-125d^3$ D) $16c^3-25d^3$

1600. $(10a^2-1)(100a^4+10a^2+1)$ ni ko'paytiring.

A) $10a^6-1$ B) $1000a^6-1$

C) $100a^6-1$ D) $1000a^6+1$

1601. $(\frac{1}{5}m-n)(\frac{1}{25}m^2+\frac{1}{5}mn+n^2)$ ni ko'paytiring.

A) $\frac{1}{125}n^3-m^3$ B) $\frac{1}{125}m^3-n^3$

C) $\frac{1}{125}m^3+n^3$ D) $\frac{1}{125}n^3+m^3$

1602. $\left(\frac{1}{2}x-\frac{1}{3}y\right)(\frac{1}{4}x^2+\frac{1}{6}xy+\frac{1}{9}y^2)$ ni ko'paytiring.

A) $\frac{1}{8}x^3-\frac{1}{27}y^3$ B) $\frac{1}{8}y^3-\frac{1}{27}x^3$

C) $\frac{1}{8}y^3+\frac{1}{27}x^3$ D) $\frac{1}{8}x^3+\frac{1}{27}y^3$

1603. $(a^2b^2-5a)(a^4b^4+5a^3b^2+25a^2)$ ni ko'paytiring.

A) $a^6b^6+125a^3$ B) $a^3b^3-125a^3$

C) $a^4b^4-125a^3$ D) $a^6b^6-125a^3$

✓ Agar $x=2$ bo'lsa, $(x+2)(x^2-2x+4)-x(x-3)(x+3)$ ni qiymatini toping.

A) -49 B) -43 C) -26 D) 26

Yechimi:

$$\underbrace{(x+2)(x^2-2x+4)}_{x^3+8}-x\underbrace{(x-3)(x+3)}_{x^2-9}=x^3+8-x(x^2-9)=$$

$$=x^3+8-x^3+9x=8+9x=8+9\cdot 2=8+18=26$$

Javob: (D)

Izoh: Avval formulalarga ko'ra qavs ochib, ixchamlandi, so'ngra berilgan sonni $x=2$ qo'yiladi.

1604. Agar $x=0,5$ bo'lsa, $(2x-1)(4x^2+2x+1)-4x(2x^2-3)$ ni qiymatini toping.

A) 5 B) 7 C) 2,5 D) 4

1605. Agar $x=\frac{1}{5}$ bo'lsa, $(4x+1)(16x^2-4x+1)-16x(4x^2-5)$ ni qiymatini toping.

A) 15 B) 17 C) 18 D) 14

1606. Agar $x=\frac{1}{4}$ bo'lsa, $x(x+2)(x-2)+(x-3)(x^2+3x+9)$ ni qiymatini toping.

A) $-28\frac{1}{32}$ B) $-28\frac{31}{32}$ C) $28\frac{31}{32}$ D) $-27\frac{31}{32}$

✓ $(2x-1)(4x^2+2x+1)-4x(2x^2-3)=26$ tenglamani yeching.

A) $\frac{4}{9}$ B) 2,25 C) 4 D) 3

Yechimi:

$\underbrace{(2x-1)(4x^2+2x+1)}_{8x^3-1} - 4x(2x^2-3) = 26$

$8x^3-1-8x^3+12x=26$

$\cancel{8x^3}-1-\cancel{8x^3}+12x=26$ **Javob: (B)**

$12x=26+1$

$12x=27$

$x=\frac{\cancel{27}}{\cancel{12}}=\frac{9}{4}$ $x=2,25$

Izoh: Avval formulalarga ko'ra qavs ochib, ixchamlandi, so'ngra oddiy tenglamani yechganday yechiladi.

1607. $(x+2)(x^2-2x+4)-x(x-3)(x+3)=26$ tenglamani yeching.

A) 2 B) $\frac{3}{4}$ C) 4 D) 3

1608. $(x-3)(x^2+3x+9)-x(x+4)(x-4)=21$ tenglamani yeching.

A) 3 B) $\frac{3}{4}$ C) 4 D) 48

1609. $(4x+1)(16x^2-4x+1)-16x(4x^2-5)=17$ tenglamani yeching.

A) $-0,2$ B) 0,2 C) 0,1 D) 0,4

✓ $(y^3-1)^2+(y^2+1)(y^4-y^2+1)$ ni soddalashtirgandan keyin nachta haddan iborat bo'ladi?

A) 1 B) 2 C) 4 D) 3

Yechimi:

$\underbrace{a^2-2ab+b^2}_{(y^3-1)^2} \quad \underbrace{a^3+b^3}_{+(y^2+1)(y^4-y^2+1)} = y^6-2y^3+1+y^6+1=$

$=2y^6-2y^3+2$

$2y^6\to 1 \quad -2y^3\to 2 \quad 2\to 3$ *jami→3ta hadi bor*

Javob: (D)

1610. $(2x^4-3y^4)(2x^4+3y^4)-(2x^4+3y^4)^2$ ni soddalashtirgandan keyin nachta haddan iborat bo'ladi?

A) 2 B) 1 C) 4 D) 3

1611. $(0,5a^3+2y^2)(0,5a^3-2y^2)-(0,5a^3-2y^2)^2$ ni soddalashtirgandan keyin nachta haddan iborat bo'ladi?

A) 2 B) 5 C) 4 D) 3

1612. $(7x^2+2)(49x^4-14x^2+4)-(7x^2+2)^2$ ni soddalashtirgandan keyin nachta haddan iborat bo'ladi?

A) 2 B) 1 C) 4 D) 3

1613. $-(3a^3-4)^2+(3a^3-4)(9a^6+12a^3+16)$ ni soddalashtirgandan keyin nachta haddan iborat bo'ladi?

A) 2 B) 5 C) 4 D) 3

✓ $(x-2)^{200}(2-x)+(4-x)^{99}(x-1)^{20}+3$ ni soddalashtirilgandan keyin koefitsiyentlari yig'indisini toping.

A) 11564 B) 2 C) 4 D) 3

Yechimi:

$(x-2)^{200}(2-x)+(4-x)^{99}(x-1)^{20}+3$

x=1 ni qo'yib hisoblang:

$(1-2)^{200}(2-1)+(4-1)^{99}\underbrace{(1-1)^{20}}_{0}+3=(-1)^{200}1+0+3=4$

Javob: (C)

Izoh: berilgan ifodada qanday harf bo'lsa, shu harflarni o'rniga "1" ni qo'yib hisoblang.

1614. $(x-1)(x-2)^{20}+(4-4x)^{18}(x+3)^2+17$ ni soddalashtirilgandan keyin koefitsiyentlari yig'indisini toping.

A) 17 B) 81 C) 18 D) 23

1615. $(3x-2)^{2000}(2x-1)^{199}+(8x+1)^2+2$ ni soddalashtirilgandan keyin koefitsiyentlari yig'indisini toping.

A) 84 B) 2012 C) 448142 D) 85

1616. $(4x-1)^{1999}(x-1)^{2000}+(8x-1)^2(4x-1)$ ni soddalashtirilgandan keyin koefitsiyentlari yig'indisini toping.

A) 14651 B) 147 C) -1 D) 49

✓ $(y^3+2y^2-1)^2-3y^2$ ni soddalashtirilgandan keyin y ning juft darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 11564 B) 2 C) -1 D) 1

Yechimi: Bu turdagi misollarni yechishning 2 ta formulasi bor:

Formula:	*Formula:*
JUFT	*TOQ*
$\frac{p(1)+p(-1)}{2}$	$\frac{p(1)-p(-1)}{2}$

$p(1)\to y=1$ ni qo'yib hisoblang;

$p(-1)\to y=-1$ ni qo'yib hisoblang:

$\underbrace{\left(1^3+2\cdot1^2-1\right)^2-3\cdot1^2}_{p(1)}=1 \quad \underbrace{\left((-1)^3+2\cdot(-1)^2-1\right)^2-3\cdot(-1)^2}_{p(-1)}=-3$

$\frac{p(1)+p(-1)}{2}=\frac{1+(-3)}{2}=\frac{1-3}{2}=-1$ **J:(C)**

1617. $(2z+1)^6$ ni soddalashtirilgandan keyin z ning juft darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 365 B) -365 C) -729 D) 364

1618. $(2n-1)^6+(n^2-1)^9+n^4$ ni soddalashtirilgandan keyin n ning juft darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 366 B) 2012 C) 4886491 D) -366

1619. $\left(b^2-2b^3+1\right)^3-4b^7$ ni soddalashtirilgandan keyin b ning juft darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 14651 B) 37 C) 32 D) 64

✓ $\left(y^3+2y^2-1\right)^2-3y^2$ ni soddalashtirilgandan keyin y ning toq darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 11564 B) 2 C) 4 D) 1

Yechimi: Bu turdagi misollarni yechishning 2 ta formulasi bor:

Formula:	*Formula:*
JUFT	*TOQ*
$\frac{p(1)+p(-1)}{2}$	$\frac{p(1)-p(-1)}{2}$

$p(1)\to y=1$ ni qo'yib hisoblang:

$p(-1)\to y=-1$ ni qo'yib hisoblang:

$$\overbrace{\left(1^3+2\cdot1^2-1\right)^2-3\cdot1^2}^{p(1)}=1 \qquad \overbrace{\left((-1)^3+2\cdot(-1)^2-1\right)^2-3\cdot(-1)^2}^{p(-1)}=-3$$

$$\frac{p(1)-p(-1)}{2}=\frac{1-(-3)}{2}=\frac{1+3}{2}=2$$

J: (B)

1620. $\left(m^3-1\right)^3(m-2)^2$ ni soddalashtirilgandan keyin m ning toq darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) –36 B) 36 C) 16 D) –72

1621. $(n^3-n+2)^7$ ni soddalashtirilgandan keyin n ning toq darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 128 B) 256 C) 0 D) 1

1622. $(2x-1)^5+(x-2)^5$ ni soddalashtirilgandan keyin x ning toq darajalari oldidagi koefitsiyentlari yig'indisini toping.

A) 14651 B) 486 C) –243 D) 243

✓ $(x+y)^5$ ni ko'phad ko'rinishini toping.

A) $x^5+5x^4y+10x^3y^2+10x^2y^3+5xy^4+y^5$

B) $x^5+5x^4y+10x^3y^2+9x^2y^3+5xy^4+y^5$

C) $x^5+5x^4y+10x^3y^2+10x^2y^3+xy^4+y^5$

D) $x^5+5x^4y+10x^3y^2+10x^2y^3+5xy^4-y^5$

Yechimi:

Biz bu misolni yechishdan avval 3-darajagacha bilishimizni eslab olamiz ya'ni

$(a+b)^2=a^2+2ab+b^2$

$(a+b)^3=a^3+3a^2b+3ab^2+b^3$

$(x+y)^5=?$

0 1

1 1 1

2 1 2 1

3 1 3 3 1 *Paskal uchburchagi*

4 1 4 6 4 1

5 1 5 10 10 5 1

6 1 6 15 20 15 6 1

7 1 7 21 35 35 21 7 1

8 1 8 28 56 70 56 28 8 1

9 1 9 36 84 126 126 84 36 9 1

10 ....

$(a+b)^5=a^5+5a^4b+10a^3b^2+10a^2b^3+5ab^4+b^5$

$(x+y)^5=x^5+5x^4y+10x^3y^2+10x^2y^3+5xy^4+y^5$

Javob: (A)

Izoh: Paskal uchburchagi koeffitsiyentlar jadvalidir. ifodani darajalarini esa kamayish va o'sish tartibida joylashtirish lozim.

1623. $(n+m)^4$ ni ko'phad ko'rinishini toping.

A) $n^4+4n^3m+6n^2m^2+4nm^3+m^4$

B) $n^4+4n^4m+6n^3m^2+n^2m^3+m^4$

C) $n^4+4n^4m+5n^3m^2+4n^2m^3+m^5$

D) $n^4+4n^4m+6n^3m^2+4n^2m^3-m^4$

1624. $(c+d)^6$ ni ko'phad ko'rinishini toping.

A) $c^6+6c^5d+15c^4d^2+10c^3d^3+15c^2d^4+6cd^5+d^6$

B) $c^6+6c^5d+15c^4d^2+20c^3d^3+15c^2d^4+6cd^5+d^6$

C) $c^6+6c^5d+15c^4d^2+20c^3d^3+15c^2d^4+4cd^5+d^6$

D) $c^6+6c^5d+15c^4d^2+20c^3d^3+10c^2d^4+6cd^5+d^6$

1625. $(k+n)^7$ ni ko'phad ko'rinishini toping.

A) $k^7+7k^6n+21k^5n^2+35k^4n^3+35k^3n^4+31k^2n^5+7kn^6+n^7$

B) $k^7+7k^6n+21k^5n^2+25k^4n^3+25k^3n^4+21k^2n^5+7kn^6+n^7$

C) $k^7+7k^6n+21k^5n^2+35k^4n^3+35k^3n^4+21k^2n^5+7kn^6+n^7$

D) $k^7+7k^6n+21k^5n^2+35k^4n^3+35k^3n^4+21k^2n^5+7kn^6+n^7$

✓ $(x-y)^5$ ni ko'phad ko'rinishini toping.

A) $x^5-5x^4y+10x^3y^2-10x^2y^3+5xy^4-y^5$

B) $x^5+5x^4y+10x^3y^2+9x^2y^3+5xy^4+y^5$

C) $x^5+5x^4y+10x^3y^2+10x^2y^3+xy^4+y^5$

D) $x^5+5x^4y+10x^3y^2+10x^2y^3+5xy^4-y^5$

Yechimi:

0 1

1 1 1

2 1 2 1

3 1 3 3 1 *Paskal uchburchagi*

4 1 4 6 4 1

5 1 5 10 10 5 1

6 1 6 15 20 15 6 1

7 1 7 21 35 35 21 7 1

8 1 8 28 56 70 56 28 8 1

9 1 9 36 84 126 126 84 36 9 1

10 ....

$(a-b)^5=a^5-5a^4b+10a^3b^2-10a^2b^3+5ab^4-b^5$

$(x-y)^5=x^5-5x^4y+10x^3y^2-10x^2y^3+5xy^4-y^5$

Javob: (A)

Izoh: formulada b toq darajalarining oldida manfiy bo'ladi.

$(a-b)^5=a^5-5a^4b+10a^3b^2-10a^2b^3+5ab^4-b^5$

1626. $(n-m)^4$ ni ko'phad ko'rinishini toping.

A) $n^4+4n^4m-6n^3m^2+4nm^3-m^4$

B) $n^5-4n^4m+6n^3m^2-n^2m^3+m^5$

C) $n^4-4n^3m+6n^2m^2-4nm^3+m^4$

D) $n^5+4n^4m+6n^3m^2+4n^2m^3-m^5$

1627. $(c-d)^6$ ni ko'phad ko'rinishini toping.

A) $c^6+6c^5d+15c^4d^2-20c^3d^3+15c^2d^4-6cd^5+d^6$

B) $c^6+6c^5d+15c^4d^2-20c^3d^3+15c^2d^4+6cd^5+d^6$

C) $c^6-6c^5d+15c^4d^2-20c^3d^3+15c^2d^4-6cd^5+d^6$

D) $c^6+6c^5d+15c^4d^2+20c^3d^3+10c^2d^4+6cd^5+d^6$

1628. $(k-n)^7$ ni ko'phad ko'rinishini toping.

A) $k^7+7k^6n-21k^5n^2+35k^4n^3-35k^3n^4+31k^2n^5+7kn^6-n^7$

B) $k^7+7k^6n-21k^5n^2+25k^4n^3-25k^3n^4+21k^2n^5+7kn^6-n^7$

C) $k^7-7k^6n+21k^5n^2-35k^4n^3+35k^3n^4+21k^2n^5+7kn^6-n^7$

D) $k^7-7k^6n+21k^5n^2+35k^4n^3-35k^3n^4+21k^2n^5+7kn^6-n^7$

✓ 8! ni hisoblang.

A) 40320 B) 4032 C) 680 D) 98015

Yechimi:

$!\rightarrow$ *(undov) faktorial deb o'qiladi.*

$8!\rightarrow$ *8 faktorial deb o'qiladi.*

$2!=1\cdot2=2$

$3!=1\cdot2\cdot3=6$

$4!=1\cdot2\cdot3\cdot4=24$

$5!=1\cdot2\cdot3\cdot4\cdot5=120$

.....

$8!=1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8=40320$

Javob: (A)

Eslatma $0!=1$

izoh: "n!"— n sonigacha bo'lgan sonlar ko'paytmasi tushunilsin. ya'ni $8!=1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8$

1629. $4!+9$ ni hisoblang.

A) 24 B) 33 C) 45 D) 81

1630. $5!-35$ ni hisoblang.

A) 120 B) 75 C) 85 D) 95

1631. $7!-150$ ni hisoblang.

A) 4890 B) 1000 C) 512 D) 81

✓ $\frac{15!}{13!}$ ni hisoblang.

A) 210 B) 4032 C) 680 D) 98015

Yechimi:

$\frac{15!}{13!}=\frac{1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8\cdot9\cdot10\cdot11\cdot12\cdot13\cdot14\cdot15}{1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8\cdot9\cdot10\cdot11\cdot12\cdot13}=$

$=\frac{1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8\cdot9\cdot10\cdot11\cdot12\cdot13\cdot14\cdot15}{1\cdot2\cdot3\cdot4\cdot5\cdot6\cdot7\cdot8\cdot9\cdot10\cdot11\cdot12\cdot13}=\frac{14\cdot15}{1}=14\cdot15=210$

Javob: (A)

1632. $\frac{25!}{23!}$ ni hisoblang.

A) 1200 B) 600 C) 800 D) 400

1633. $\frac{1400!}{1399!}$ ni hisoblang.

A) 1399 B) 700 C) 1400 D) 2800

1634. $\frac{2018!}{2017!}$ ni hisoblang.

A) 2018 B) 8102 C) 4036 D) 2017

✓ C_5^2 ni hisoblang.

A) 210 B) 20 C) 680 D) 10

Yechimi:

$C_n^k=\frac{n!}{k!(n-k)!}\rightarrow$ *binom koeffisiyenti*

$C_5^2=\frac{5!}{2!(5-2)!}=\frac{5!}{2!3!}=\frac{1\cdot2\cdot3\cdot4\cdot5}{1\cdot2\cdot1\cdot2\cdot3}=\frac{1\cdot2\cdot3\cdot4\cdot5}{1\cdot2\cdot1\cdot2\cdot3}=\frac{4\cdot5}{1\cdot2}=\frac{20}{2}=10$

Javob: (D)

1635. C_6^4 ni hisoblang.

A) 24 B) 30 C) 15 D) 81

1636. C_8^5 ni hisoblang.

A) 120 B) 75 C) 56 D) 95

1637. C_9^6 ni hisoblang.

A) 900 B) 1000 C) 147 D) 84

✓ $(x+y)^{13}$ ni ko'phad ko'rinishinida ifodalab x^4y^9 hadining koeffitsentini toping.

A) 720 B) 715 C) 880 D) 980

Yechimi:

$(a+b)^2 = C_2^0 a^2 + C_2^1 ab + C_2^2 b^2$

$(a+b)^3 = C_3^0 a^3 + C_3^1 a^2 b + C_3^2 ab^2 + C_3^3 b^3$

$(a+b)^4 = C_4^0 a^4 + C_4^1 a^3 b + C_4^2 a^2 b^2 + C_4^3 ab^3 + C_4^4 b^4$

....

Nyuton binomi

$(a+b)^n = C^0 a^n + C^1 a^{n-1} b + C^2 a^{n-2} b^2 + \ldots + C^{n-1} ab^{n-1} + C^n b^n$

$T_{k+1} = C^k a^{n-k} b^k$ – *istalgan hadi*

$k = 0,1,2,\ldots n$

$x^4 y^9 \to k = 9 \quad n = 13$

$C_n^k = C_{13}^9 = \frac{13!}{9!(13-9)!} = \frac{13!}{9!4!} = \frac{10 \cdot 11 \cdot 12 \cdot 13}{1 \cdot 2 \cdot 3 \cdot 4} = 715$

Javob: (B)

1638. $(c+d)^{22}$ ko'phad yoyimasining $c^3 d^{19}$ hadining koeffitsentini toping.

A) 77 B) 1540 C) -880 D) -1540

1639. $(n-m)^{15}$ ko'phad yoyimasining $n^4 m^{11}$ hadining koeffitsentini toping.

A) 1258 B) 1365 C) -1365 D) -1445

1640. $(x-y)^8$ ko'phad yoyimasining $x^2 y^6$ hadining koeffitsentini toping.

A) 14 B) -28 C) 28 D) -56

Ko'phadni ko'paytuvchilarga ajratish

✓ $mx+my$ ni ko'paytuvchilarga ajrating.

A) $n(x+y)$ B) $m(x+y)$

C) $m(x-y)$ D) $m(y-x)$

Yechimi: $mx+my = m(x+y)$

Izoh: bir xil ifodalarni qavsdan tashqariga chiqarish lozim.

1641. $kx-px$ ni ko'paytuvchilarga ajrating.

A) $x(k+p)$ B) $x(p-k)$

C) $x(k-p)$ D) $x(p+k)$

1642. $5x+5y$ ni ko'paytuvchilarga ajrating.

A) $5(x-y)$ B) $5(-x+y)$

C) $5(x+y)$ D) $5(-x-y)$

1643. $7a+7y$ ni ko'paytuvchilarga ajrating.

A) $7(a-y)$ B) $7(a+y)$

C) $7(y-a)$ D) $7(-a+y)$

1644 $4a-4b$ ni ko'paytuvchilarga ajrating.

A) $4(b-a)$ B) $4(-a+b)$

C) $4(a+b)$ D) $4(a-b)$

✓ $24x+24$ ni ko'paytuvchilarga ajrating.

A) $24(x+1)$ B) $12(x+1)$

C) $24(x-1)$ D) $2(x+1)$

Yechimi: $24x+24 = \underline{24x} + \underline{24} = 24(x+1)$

1645. $ab+a$ ni ko'paytuvchilarga ajrating.

A) $a(1-b)$ B) $a(b+1)$

C) $a(b-1)$ D) $a(-b+1)$

1646. $cy-c$ ni ko'paytuvchilarga ajrating.

A) $c(y+1)$ B) $c(-y-1)$

C) $y(c-1)$ D) $c(y-1)$

1647. $12a+12$ ni ko'paytuvchilarga ajrating.

A) $12(a-1)$ B) $12(1-a)$

C) $12(a+1)$ D) $a(a+12)$

✓ $35x+50y$ ni ko'paytuvchilarga ajrating.

A) $5(7x+10y)$ B) $5(7x-10y)$

C) $5(7-xy)$ D) $5(10x+7y)$

Yechimi: $35x+50y = 5(7x+10y)$

Izoh: karrali sonlarni $5 \cdot 7x + 5 \cdot 10y$ qavsdan tashqariga chiqarish lozim.

1648. $11z-33y$ ni ko'paytuvchilarga ajrating.

A) $11(z+y)$ B) $11(z-3y)$

C) $11(yz-3)$ D) $11(3z-yz)$

1649. $3c+15d$ ni ko'paytuvchilarga ajrating.

A) $3(5c-d)$ B) $3(c+5d)$

C) $3(5d-c)$ D) $3(c-5d)$

1650. $12x+48y$ ni ko'paytuvchilarga ajrating.

A) $12(x-4y)$ B) $12(4x-y)$

C) $12(4x+y)$ D) $12(x+4y)$

✓ $-kx-5k$ ni ko'paytuvchilarga ajrating.

A) $-k(x+5)$ B) $-k(x-5)$

C) $-k(-x+5)$ D) $k(x+5)$

Yechimi: $-kx-5k = -k(x+5)$

Izoh: minus sonlarni qavsdan tashqariga chiqarish lozim.

1651. $-ab-ac$ ni ko'paytuvchilarga ajrating.

A) $-a(b-c)$ B) $-a(c-b)$

C) $a(b+c)$ D) $-a(b+c)$

1652. $-ma-na$ ni ko'paytuvchilarga ajrating.

A) $-a(n-m)$ B) $-a(m+n)$

C) $-a(m-n)$ D) $-a(-m+n)$

1653. $-6m-9n$ ni ko'paytuvchilarga ajrating.

A) $-3(2n+3m)$ B) $-3(2m+3n)$

C) $-3(2n-3m)$ D) $-3(2m-3n)$

✓ $-kx+7k$ ni ko'paytuvchilarga ajrating.

A) $-k(x-7)$ B) $k(x-7)$ C) $-k(x+7)$ D) $-k(-x+7)$

Yechimi: $-kx+7k=-k(x-7)$ **J:A**

Izoh: minus sonlarni qavsdan tashqariga chiqarish lozim.

1654. $-ab+ac$ ni ko'paytuvchilarga ajrating.

A) $-a(b-c)$ B) $-a(c-b)$ C) $a(b+c)$ D) $-a(b+c)$

1655. $-ma+na$ ni ko'paytuvchilarga ajrating.

A) $-a(n-m)$ B) $-a(m+n)$

C) $-a(m-n)$ D) $-a(-m+n)$

1656. $-6m+9n$ ni ko'paytuvchilarga ajrating.

A) $-3(2n+3m)$ B) $-3(2m+3n)$

C) $-3(2n-3m)$ D) $-3(2m-3n)$

✓ $18xy+24dy$ ni ko'paytuvchilarga ajrating.

A) $6y(3x+4d)$ B) $-6y(3x+4d)$

C) $6y(-3x+4d)$ D) $6y(3x-4d)$

Yechimi: $18xy+24dy=6y(3x+4d)$ **J:A**

Izoh: avval karrali sonlarni, $18xy+24dy=6(3xy+4dy)$ keyin harflarni $18xy+24dy=6y(3x+4d)$ qavsdan tashqariga chiqarish lozim.

1657. $7ax+7bx$ ni ko'paytuvchilarga ajrating.

A) $7x(a-b)$ B) $-7x(a-b)$

C) $7x(a+b)$ D) $7x(-a-b)$

1658. $3by-6b$ ni ko'paytuvchilarga ajrating.

A) $3b(y+2)$ B) $3b(y-2)$

C) $-3b(y+2)$ D) $-3b(-y+2)$

1659. $49ax+14bx$ ni ko'paytuvchilarga ajrating.

A) $7x(2a+7b)$ B) $-7x(a-b)$

C) $7x(7a+2b)$ D) $7x(7a-2b)$

✓ $24m^4+40m^2$ ni ko'paytuvchilarga ajrating.

A) $8m^2(3m^2+5)$ B) $8m^2(3m+5)$

C) $8m^4(3m^2+5)$ D) $8m^2(5m^2+3)$

Yechimi: $24m^4+40m^2=8m^2(3m^2+5)$ **J:A**

Izoh: avval karrali sonlarni, $24m^4+40m^2=8(3m^4+5m^2)$ keyin harflarni kichik daraasini $24m^4+40m^2=8m^2(3m^2+5)$ qavsdan tashqariga chiqarish lozim.

1660. $5y^2-15y$ ni ko'paytuvchilarga ajrating.

A) $5y(3+y)$ B) $5y(y+3)$

C) $5y(3-y)$ D) $5y(y-3)$

1661. $3x+6x^2$ ni ko'paytuvchilarga ajrating.

A) $3x(1+2x)$ B) $3x(1+3x)$

C) $3x(2x-1)$ D) $3x(1-2x)$

1662. x^3-x^2 ni ko'paytuvchilarga ajrating.

A) $x^2(1-x)$ B) $x^2(x-1)$

C) $x^2(3x-1)$ D) $x^2(x+1)$

1663. $4c^2-12c^4$ ni ko'paytuvchilarga ajrating.

A) $4c^2(1+3c^2)$ B) $4c^2(1-3c^2)$

C) $4c^2(1-c^2)$ D) $4c^2(3-c^2)$

1664. x^2y-xy^2 ni ko'paytuvchilarga ajrating.

A) $xy(x-y)$ B) $xy(y-x)$

C) $xy(-x-y)$ D) $xy(x+y)$

✓ $24d^6+40d^4+32d^3$ ni ko'paytuvchilarga ajrating.

A) $8d^3(d^3-5d-4)$ B) $8d^3(d^3+5d+4)$

C) $8d^3(d^3+5d-4)$ D) $8d^3(d^4+5d+4)$

Yechimi: $24d^6+40d^4+32d^3=8d^3(d^3+5d+4)$

Izoh: avval karrali sonlarni, $24d^6+40d^4+32d^3=8(d^6+5d^4+4d^3)$ keyin harflarni kichik daraasini $24d^6+40d^4+32d^3=8d^3(d^3+5d+4)$ qavsdan tashqariga chiqarish lozim. **J:B**

1665. $x^5+x^4-x^3$ ni ko'paytuvchilarga ajrating.

A) $x^2(x^2+x-1)$ B) $x^3(x^2-x-1)$

C) $x^3(x^2+x-1)$ D) $x^4(x^2+x-1)$

1666. $4a^5-2a^3+a$ ni ko'paytuvchilarga ajrating.

A) $a(4a^4-2a^2-1)$ B) $a(4a^4+2a^2+1)$

C) $a(4a^4-2a^3+1)$ D) $a(4a^4-2a^2+1)$

1667. $15a^3-9a^2+6a$ ni ko'paytuvchilarga ajrating.

A) $3a(5a^2-3a+2)$ B) $3a(5a^2+3a+2)$

C) $3a(5a^3-3a+2)$ D) $3a(5a^2-3a-2)$

1668. $c^3-c^4+2c^5$ ni ko'paytuvchilarga ajrating.

A) $c^3(1-c-2c^2)$ B) $c^3(1+c+2c^2)$

C) $c^3(1-c+2c^2)$ D) $c^3(1-c+2c^3)$

✓ $8a^4b^3-12a^2b^4+16a^3b^2$ ni ko'paytuvchilarga ajrating.

A) $4a^2b^2(2a^2b-3b^2+4a)$ B) $4a^2b^2(2a^2b-3b^2-4a)$

C) $4a^2b^2(2a^2b+3b^2+4a)$ D) $4a^2b^2(2a^2b+3b^2-4a)$

Yechimi:

$8a^4b^3-12a^2b^4+16a^3b^2=4a^2b^2(2a^2-3b^2+4a)$

Izoh: avval karrali sonlarni,

$8a^4b^3-12a^2b^4+16a^3b^2=4(2a^4b^3-3a^2b^4+4a^3b^2)$ keyin harflarni kichik darajasini

$8a^4b^3-12a^2b^4+16a^3b^2=4a^2b^2(2a^2-3b^2+4a)$ qavsdan tashqariga chiqarish lozim. **J:A**

1669. $3a^3-15a^2b+5ab^2$ ni ko'paytuvchilarga ajrating.

A) $a(3a^2-15ab-5b^2)$ B) $a(3a^2+15ab+5b^2)$

C) $a(3a^2-15ab+b^2)$ D) $a(3a^2-15ab+5b^2)$

1670. $-6am^2+9m^3-12m^4$ ni ko'paytuvchilarga ajrating.

A) $3m^2(3m-2a-4m^2)$ B) $3m^2(3m+2a-4m^2)$

C) $3m^3(3m-2a-4m^2)$ D) $3m^2(3m+2a+4m^2)$

1671. $-3x^4y^2-6x^2y^2+9x^2y^4$ ni ko'paytuvchilarga ajrating.

A) $-3x^2y^2(x^2+2-3y^2)$ B) $-3x^2y^2(x^2-2-3y^2)$

C) $-3x^2y^2(x^2+3-2y^2)$ D) $-x^2y^2(x^2+2-3y^2)$

1672. $4c^4-6x^2c^2+8c$ ni ko'paytuvchilarga ajrating.

A) $2c(3c^3-2x^2c+4)$ B) $2c(3c^3+2x^2c+4)$

C) $2c(2c^3-3x^2c+4)$ D) $2c(2c^3-3x^2c-4)$

1673. $3ax-6ax^2-9a^2x$ ni ko'paytuvchilarga ajrating.

A) $3ax(1-2x+3a)$ B) $3ax(1-2x-3a)$

C) $3ax(1-3x-2a)$ D) $3ax(2x-3a)$

✓ $c(n-m)-y(n-m)$ ni ko'paytuvchilarga ajrating.

A) $(n-m)(c-y)$ B) $(n+m)(c-y)$

C) $(n+m)(c+y)$ D) $(n-m)(c+y)$

Yechimi:

$ck-yk=k(c-y)$ | $c(n-m)-y(n-m)=c(n-m)-y(n-m)=(n-m)(c-y)$

Izoh: tagiga chizilgan ifodaniqavsdan tashqariga chiqarish lozim. **J:A**

1674. $2a(x+y)+b(x+y)$ ni ko'paytuvchilarga ajrating.

A) $(x-y)(2a+b)$ B) $(x+y)(2a-b)$

C) $(x+y)(a+2b)$ D) $(x+y)(2a+b)$

1675. $y(a-b)+6z(a-b)$ ni ko'paytuvchilarga ajrating.

A) $(a-b)(z+6y)$ B) $(a+b)(y+6z)$

C) $(a-b)(y-6z)$ D) $(a-b)(y+6z)$

1676. $5a(x+n)+4b(x+n)$ ni ko'paytuvchilarga ajrating.

A) $(x-n)(5a+4b)$ B) $(x+n)(5a-4b)$

C) $(x-n)(5a-4b)$ D) $(x+n)(5a+4b)$

1677. $8m(a-3)+n(a-3)$ ni ko'paytuvchilarga ajrating.

A) $(a-3)(8m-n)$ B) $(a+3)(8m+n)$

C) $(a-3)(m+8n)$ D) $(a-3)(8m+n)$

✓ $c(n-m)-(n-m)$ ni ko'paytuvchilarga ajrating.

A) $(n-m)(c-y)$ B) $(n+m)(c-1)$

C) $(n+m)(c+1)$ D) $(n-m)(c+y)$

Yechimi:

$c(n-m)-(n-m)=c(n-m)-(n-m)=(n-m)(c-1)$

Izoh: tagiga chizilgan ifodaniqavsdan tashqariga chiqarish lozim.

1678. $(p^2-5)-q(p^2-5)$ ni ko'paytuvchilarga ajrating.

A) $(p^2+5)(1-q)$ B) $(p^2-5)(1-q)$

C) $(p^2-5)(q-1)$ D) $(p^2-5)(1+q)$

1679. $(x+y)+b(x+y)$ ni ko'paytuvchilarga ajrating.

A) $(x-y)(2a+b)$ B) $(x+y)(1+b)$

C) $(x+y)(a+2b)$ D) $(x+y)(1-b)$

1680. $y(a-b)+(a-b)$ ni ko'paytuvchilarga ajrating.

A) $(a-b)(z+6y)$ B) $(a+b)(y+1)$

C) $(a-b)(y+1)$ D) $(a-b)(y+2)$

1681. $(x+n)-4b(x+n)$ ni ko'paytuvchilarga ajrating.

A) $(x-n)(5a+4b)$ B) $(x+n)(1-4b)$

C) $(x-n)(5a-4b)$ D) $(x+n)(1+4b)$

✓ $a^2(x-y)+b^2(x-y)$ ni ko'paytuvchilarga ajrating.

A) $(x+y)\left(a^2+b^2\right)$ B) $(x-y)\left(a^2+b^2\right)$

C) $(x-y)\left(a^2-b^2\right)$ D) $(x+y)\left(a^2-b^2\right)$

Yechimi: $a^2(x-y)+b^2(x-y)=(x-y)\left(a^2+b^2\right)$ **J:B**

1682. $a^2(x+y)-b^2(x+y)$ ni ko'paytuvchilarga ajrating.

A) $(x+y)\left(a^2+b^2\right)$ B) $(x-y)\left(a^2+b^2\right)$

C) $(x-y)\left(a^2-b^2\right)$ D) $(x+y)\left(a^2-b^2\right)$

1683. $a(x^2-y^2)-b(x^2-y^2)$ ni ko'paytuvchilarga ajrating.

A) $\left(x^2+y^2\right)(a-b)$ B) $(a-b)\left(x^2+y^2\right)$

C) $\left(x^2-y^2\right)(a-b)$ D) $(a-b)(y+2)$

1684. $x(a^2-2b^2)+y(a^2-2b^2)$ ni ko'paytuvchilarga ajrating.

A) $(x+y)(a^2+2b^2)$ B) $(x+y)(a^2-2b^2)$

C) $(x-y)(a^2-2b^2)$ D) $(x+y)(a-2b)$

✓ $2b(x-1)-3a(x-1)+c(x-1)$ ni ko'paytuvchilarga ajrating.

A) $(x-1)(2b-3a-c)$ B) $(x-1)(2b+3a-c)$

C) $(x-1)(2b-3a+c)$ D) $(x+1)(2b-3a+c)$

Yechimi: **J:D**

$2bk-3ak+ck=k(2b-3a+c)$ | $2b(x-1)-3a(x-1)+c(x-1)=2b(x-1)-3a(x-1)+c(x-1)=(x-1)(2b-3a+c)$

1685. $c(p-q)-a(p-q)+d(p-q)$ ni ko'paytuvchilarga ajrating.

A) $(p-q)(c-a+d)$ B) $(q-p)(c-a+d)$

C) $(p-q)(c+a+d)$ D) $(p-q)(c-a-d)$

1686. $a(x^2-y^2)+b(x^2-y^2)-z(x^2-y^2)$ ni ko'paytuvchilarga ajrating.

A) $\left(x^2-y^2\right)(a+b-z)$ B) $(a-b-z)\left(x^2+y^2\right)$

C) $\left(x^2-y^2\right)(a-b-z)$ D) $(a-b)(y+2)$

1687. $x(a^2-2)+y(a^2-2)-l(a^2-2)$ ni ko'paytuvchilarga ajrating.

A) $(a^2-2)(x+y-l)$ B) $(a^2-2)(x-y-l)$

C) $(a^2+2)(x+y-l)$ D) $(a^2-2)(x+y+l)$

✓ $c(a-b)+b(b-a)$ ni ko'paytuvchilarga ajrating.

A) $(a-b)(c-b)$ B) $(a-b)(b-c)$

C) $(a-b)(b+c)$ D) $(a-b)(-b-c)$

Yechimi:

$c\underline{(a-b)}+b\overline{(b-a)}=c\underline{(a-b)}-b\underline{(a-b)}=(a-b)(c-b)$

Izoh: $b\overline{(b-a)}=-b\underline{(a-b)}$ o'rnini almashtirganda "–" oldiga qo'yiladi, bir xil bo'lgandan keyin qavsdan tashqariga chiqarish lozim. **J:A**

1688. $(x-y)+b(y-x)$ ni ko'paytuvchilarga ajrating.

A) $(x-y)(1+b)$ B) $(x-y)(1-b)$

C) $(x-y)(b-1)$ D) $(x-y)(b+1)$

1689. $a(b-c)-c(c-b)$ ni ko'paytuvchilarga ajrating.

A) $(b-c)(a-c)$ B) $(b+c)(a+c)$

C) $(b-c)(a+c)$ D) $(a-b)(a+2)$

1690. $a(b-c)+d(c-b)$ ni ko'paytuvchilarga ajrating.

A) $(b-c)(a+d)$ B) $(b-c)(d-a)$

C) $(b+c)(a-d)$ D) $(b-c)(a-d)$

1691. $x(y-5)-y(5-y)$ ni ko'paytuvchilarga ajrating.

A) $(y-5)(x+y)$ B) $(y+5)(x+y)$

C) $(y-5)(x-y)$ D) $(y-5)(-x+y)$

1692. $3a(2x-7)+5b(7-2x)$ ni ko'paytuvchilarga ajrating.

A) $(2x-7)(3a+5b)$ B) $(2x-7)(3a-5b)$

C) $(2x-7)(5a-3b)$ D) $(7x-2)(3a-5b)$

1693. $x(y-9)+y(9-y)$ ni ko'paytuvchilarga ajrating.

A) $(y-9)(x-y)$ B) $(y-9)(x+y)$

C) $(9-y)(x-y)$ D) $(y+9)(x-y)$

1694. $a(b-c)+b^2(b-c)-7(c-b)$ ni ko'paytuvchilarga ajrating.

A) $(b-c)\left(a+b^2-7\right)$ B) $(b-c)\left(a+b^2+7\right)$

C) $(b-c)\left(a-b^2+7\right)$ D) $(b-c)\left(a-b^2-7\right)$

1695. $x(a-2)+y(2-a)+(2-a)$ ni ko'paytuvchilarga ajrating.

A) $(2-a)(x+y+1)$ B) $(2-a)(-x+y+1)$

C) $(2-a)(-x+y-1)$ D) $(a-2)(-x+y+1)$

✓ $c(n-m)-(n-m)^2$ ni ko'paytuvchilarga ajrating.

A) $(n-m)(c-n+m)$ B) $(n-m)(c+n+m)$

C) $(n-m)(c-n-m)$ D) $(n+m)(c-n+m)$

Yechimi:

$\underline{cx-x^2=x(c-x)}\left|\begin{array}{l}c\underline{(n-m)}-\underline{(n-m)^2}=(n-m)(c-(n-m))\\=(n-m)(c-n+m)\end{array}\right.$

Izoh: chap tomondagi ifoda oddiy ifodani qavsdan tashqariga chiqarishga e'tibor berib o'ng tomon bilan solishtirish lozim.

1696. $x(b-1)+(b-1)^2$ ni ko'paytuvchilarga ajrating.

A) $(b+1)(b-8)$ B) $(b-1)(b-8)$

C) $(b-1)(x+b-1)$ D) $(b+1)(b+8)$

1697. $(x-y)^2-a(x-y)$ ni ko'paytuvchilarga ajrating.

A) $(x-y)(x-a)$ B) $(x-y)(x-y-a)$

C) $(x-y)(x-y+1)$ D) $(x-y)(x-y+a)$

1698. $k(c+2)-(c+2)^2$ ni ko'paytuvchilarga ajrating.

A) $(c+2)(k-c+2)$ B) $(c+2)(k+c+2)$

C) $(c+2)(k-c-2)$ D) $(c+2)(9+c)$

1699. $y(a-3)-(a-3)^2$ ni ko'paytuvchilarga ajrating.

A) $(a-3)(y+a+3)$ B) $(a-3)(y-a+3)$

C) $(a-3)(y+a-3)$ D) $(a-3)(y-a-3)$

1700. $-3n(b-2)-(b-2)^2$ ni ko'paytuvchilarga ajrating.

A) $(b-2)(3n+b+2)$ B) $(b-2)(3n-b-2)$

C) $(b-2)(-3n-b+2)$ D) $(b-2)(3n+b-2)$

✓ $7(c+2)+(c+2)^2$ ni ko'paytuvchilarga ajrating.

A) $(c+2)(c+9)$ B) $(c+2)(c+7)$

C) $(c+2)(c+5)$ D) $(c+2)(c-9)$

Yechimi: **J:A**

$\underline{7n+n^2=n(7+n)}\left|\underline{7(c+2)+(c+2)^2=(c+2)(7+c+2)=(c+2)(c+9)}\right.$

Izoh: ko'paytuvchilarga aratgandan keyin, qavsni ichini soddalashtirish lozim.

1701. $9(b-1)+(b-1)^2$ ni ko'paytuvchilarga ajrating.

A) $(b+1)(b-8)$ B) $(b-1)(b-8)$

C) $(b-1)(b+8)$ D) $(b+1)(b+8)$

1702. $(a+3)^2-a(a+3)$ ni ko'paytuvchilarga ajrating.

A) $3(a-3)$ B) $3(a+3)$

C) $3(a+4)$ D) $(a-3)(a+3)$

1703. $-3b(b-2)+7(b-2)^2$ ni ko'paytuvchilarga ajrating.

A) $(b-2)(4b-1)$ B) $(b-2)(14b-4)$

C) $(b-2)(4b-14)$ D) $(b-2)(4b+14)$

1704. $3(a-2)^2-(a-2)$ ni ko'paytuvchilarga ajrating.

A) $(a-2)(3a+5)$ B) $(a-2)(5a+3)$

C) $(2-a)(3a-5)$ D) $(a-2)(3a-7)$

1705. $2(3-b)+5(3-b)^2$ ni ko'paytuvchilarga ajrating.

A) $(3-b)(5-17b)$ B) $(3-b)(7-5b)$

C) $(3-b)(17-5b)$ D) $(3-b)(17+5b)$

1706. $7(c+2)+(c+2)^2$ ni ko'paytuvchilarga ajrating.

A) $(c+2)(8+c)$ B) $(c+2)(19+c)$

C) $(c+2)(9+c)$ D) $(c+2)(11+c)$

✓ $7(c-2)+(2-c)^2$ ni ko'paytuvchilarga ajrating.

A) $(c+2)(c+9)$ B) $(c+2)(c+7)$

C) $(c-2)(c+5)$ D) $(c-2)(c-9)$

Yechimi: **J:C**

$7n+n^2=n(7+n)$ | $7(c-2)+\underline{(2-c)^2}=7(c-2)+\underline{(c-2)^2}=$
$=(c-2)(7+c-2)=(c-2)(c+5)$

Izoh: tagiga chizilgan ifodalarning o'rnini almashtirsa kvadrat bo'lgani uchun "–" oldiga chiqmaydi, qavsni ichini soddalashtirish lozim.

1707. $9(b-1)+2(1-b)^2$ ni ko'paytuvchilarga ajrating.

A) $(b-1)(2b+11)$ B) $(b-1)(11-2b)$

C) $(b-1)(2b+7)$ D) $(b+1)(b+8)$

1708. $(3-a)^2-a(a-3)$ ni ko'paytuvchilarga ajrating.

A) $-3(a-3)$ B) $3(a+3)$

C) $3(a+4)$ D) $(a-3)(a+3)$

1709. $-4b(b-2)+7(2-b)^2$ ni ko'paytuvchilarga ajrating.

A) $(b-2)(4b-1)$ B) $(b-2)(4b-14)$

C) $(b-2)(3b-14)$ D) $(b-2)(3b+14)$

1710. $3(2-a)^2-(a-2)$ ni ko'paytuvchilarga ajrating.

A) $(a-2)(3a+5)$ B) $(a-2)(5a+3)$

C) $(a-2)(5-3a)$ D) $(a-2)(3a-7)$

1711. $8(3-b)+5(b-3)^2$ ni ko'paytuvchilarga ajrating.

A) $(3-b)(17-5b)$ B) $(3-b)(17-b)$

C) $(3-b)(23-5b)$ D) $(3-b)(17-5b)$

✓ $3(x+y)(x-y)+(x+y)^2$ ni ko'paytuvchilarga ajrating.

A) $(x-y)(4x-2y)$ B) $(x+y)(4x-2y)$

C) $(x+y)(2x-4y)$ D) $(x-y)(4x-2y)$

Yechimi: **J:B**

$3nb+n^2=n(3b+n)$ | $3\underline{(x+y)}(x-y)+\underline{(x+y)}^2=(x+y)(3(x-y)+(x+y))$
$=(x+y)(3x-3y+x+y)=(x+y)(4x-2y)$

Izoh: ustiga chizilgan ifodani qavsdan tashqariga chiqarib, qavsni ichini soddalashtirish lozim.

1712. $5(a-b)^2-(a+b)(b-a)$ ni ko'paytuvchilarga ajrating.

A) $(a-b)(4b-3a)$ B) $2(b-a)(2b-3a)$

C) $(a-b)(2b-6a)$ D) $2(a-b)(4b-6a)$

1713. $(x+y)^3-x(x+y)^2$ ni ko'paytuvchilarga ajrating.

A) $(y-2x)(x+y)^2$ B) $y(x+y)$

C) $y(x-y)^2$ D) $y(x+y)^2$

1714. $a(a-b)^2+7(b-a)^2$ ni ko'paytuvchilarga ajrating.

A) $(a-b)^2(a+7)$ B) $(a-b)(a+7)$

C) $(a-b)^2(a-7)$ D) $(b-2)(3b+14)$

1715. $(n-m)^2-(m-n)$ ni ko'paytuvchilarga ajrating.

A) $(n-m)(n+m-1)$ B) $(n-m)(n+m+1)$

C) $(n-m)(n-m+1)$ D) $(n-m)(n-1)$

✓ Agar $x=2,28$ bo'lsa, $3,28x-x^2$ ni qiymatini toping.

A) 2,28 B) 3,28 C) 4,18 D) 5,28

Yechimi:

$3,28x-x^2=x(3,28-x)=$ $x=2,28$ $(3,28-x)=2,28$ **J:A**

$=2,28\cdot\underbrace{(3,28-2,28)}_{1}=2,28$

Izoh: avval ko'paytuvchilarga aratib, keyin berilgan sonni $x=2,28$ ni qo'yish lozim.

1716. Agar $a=-1,5$ va $y=-8,5$ bo'lsa, a^2y+a^3 ni qiymatini toping.

A) 2,25 B) –3,25 C) –22,5 D) 5,25

1717. Agar $a=8,8$ va $y=-1,2$ bo'lsa, ay^2-y^3 ni qiymatini toping.

A) 1,44 B) 1,2 C) 22,4 D) 14,4

1718. Agar $m=3,48$ va $b=96,52$ bo'lsa, $-mb-m^2$ ni qiymatini toping.

A) –348 B)– 34,8 C) –3,48 D) 348

✓ $3x^2+8x=0$ tenglamani yeching.

A) 2; 8 B) 3; 8 C) $2\frac{2}{3}$ D) 0; $-2\frac{2}{3}$

Yechimi: $\boxed{\begin{array}{l}3x^2+8x=0\\ x(3x+8)=0\end{array}} \Rightarrow \begin{cases}x=0\\ 3x+8=0\end{cases}$

$x=0$ $\quad 3x+8=0$

$3x=-8$ **J:D**

$x=-\frac{8}{3}=-2\frac{2}{3}$

Izoh: avval ko'paytuvchilarga aratib keyin, "0" ga tenglab yechish lozim.

1719. $5x^2-x=0$ tenglamani yeching.

A) 0 B) 0,2 C) 0; 5 D) 0; 0,2

1720. $x^2+8x=0$ tenglamani yeching.

A) 0 B) 0; −8 C) 8 D) 5; 2

1721. $4x^2-3x=0$ tenglamani yeching.

A) 0 B) 5 C) 0; 0,5 D) 0; $\frac{3}{4}$

1722. $6x^2-3,6x=0$ tenglamani yeching.

A) 0 B) 0; 0,6 C) 0,6 D) 0; 6

1723. $5x^2-0,8x=0$ tenglamani yeching.

A) 0 B) 1,6 C) 0; 0,16 D) 0; 1

1724. $7x^2-0,28x=0$ tenglamani yeching.

A) 0; 0,04 B) 0; 0,4 C) 0; 28 D) 0,28

✓ $81a^2-16b^2$ ni ko'paytuvchilarga ajrating.

A) $(9a-4b)(9a+2b)$ B) $(9a-4b)(9a+4b)$

C) $(9a-4b)(3a+4b)$ D) $(9a-2b)(9a+4b)$

Yechimi: **J:B**

$a^2-b^2=(a-b)(a+b)$ | $81a^2-16b^2=(9a)^2-(4b)^2=(9a-4b)(9a+4b)$

Izoh: formulaga ko'ra 2 ta qavsga ajratildi.

$a^2-b^2=(a-b)(a+b)$

1725. $4a^2-9$ ni ko'paytuvchilarga ajrating.

A) $(2a-3)(3a-3)$ B) $(2a-3)(2a+3)$

C) $(3a-2)(2a+3)$ D) $(2a-3)(4a+3)$

1726. $64y^2-36x^2$ ni ko'paytuvchilarga ajrating.

A) $(8x-6y)(8y+6x)$ B) $(8y-6x)(8x+6y)$

C) $(8y-6x)(6y+8x)$ D) $(8y-6x)(8y+6x)$

1727. $4a^2-9b^2$ ni ko'paytuvchilarga ajrating.

A) $(2a-3b)(2a+3b)$ B) $(3a-2b)(2a+3b)$

C) $(2a-3b)(3a+2b)$ D) $(2a-3b)(a+3b)$

1728. $16x^2-25y^2$ ni ko'paytuvchilarga ajrating.

A) $(4x-5y)(5x+4y)$ B) $(5x-4y)(4x+5y)$

C) $(4x-5y)(4x+5y)$ D) $(4x-5y)(x+5y)$

1729. c^2d^2-9 ni ko'paytuvchilarga ajrating.

A) $(cd-3)(c+3)$ B) $(cd-3)(cd+3)$

C) $(cd-3)(d+3)$ D) $(cd-3)(3cd+d)$

1730. $\frac{1}{9}y^2-\frac{16}{25}x^2$ ni ko'paytuvchilarga ajrating.

A) $\left(\frac{1}{3}y-\frac{2}{5}x\right)\left(\frac{1}{3}y+\frac{2}{5}x\right)$ B) $\left(\frac{1}{3}y-\frac{4}{5}x\right)\left(\frac{1}{5}y+\frac{4}{3}x\right)$

C) $\left(\frac{1}{3}y-\frac{4}{5}x\right)\left(\frac{1}{5}y+\frac{4}{5}x\right)$ D) $\left(\frac{1}{3}y-\frac{4}{5}x\right)\left(\frac{1}{3}y+\frac{4}{5}x\right)$

1731. $0,25a^2-49b^2$ ni ko'paytuvchilarga ajrating.

A) $(0,5a-7b)(0,5a+7b)$ B) $(0,5a-7b)(0,5a+b)$

C) $(0,5a-7b)(5a+7b)$ D) $(0,5a-b)(0,5a+7b)$

1732. $\frac{4}{9}a^2-\frac{1}{16}b^2$ ni ko'paytuvchilarga ajrating.

A) $\left(\frac{2}{3}a-\frac{1}{4}b\right)\left(\frac{2}{3}a+\frac{1}{4}b\right)$ B) $\left(\frac{2}{3}a-\frac{1}{4}b\right)\left(\frac{2}{5}a+\frac{1}{4}b\right)$

C) $\left(\frac{2}{3}a-\frac{1}{4}b\right)\left(\frac{2}{3}a+\frac{1}{3}b\right)$ D) $\left(\frac{2}{3}a-\frac{1}{4}b\right)\left(\frac{2}{3}a+\frac{3}{4}b\right)$

1733. $0,09x^2-16y^2$ ni ko'paytuvchilarga ajrating.

A) $(0,3x-4y)(1,3x+4y)$ B) $(0,3x-4y)(0,3x+2y)$

C) $(0,3x-4y)(0,3x+4y)$ D) $(0,3x-4y)(3x+4y)$

✓ m^2-1 ni ko'paytuvchilarga ajrating.

A) $(m-1)\left(m^2+1\right)$ B) $(m-1)(m+1)$

C) $(m-1)(1-m)$ D) $(m-1)(2-m)$

Yechimi:

$a^2-b^2=(a-b)(a+b)$ | $m^2-1=m^2-1^2=(m-1)(m+1)$

Izoh: formulaga ko'ra 2 ta qavsga ajratildi.

1734. $1-b^2$ ni ko'paytuvchilarga ajrating.

A) $(1-b)(2+b)$ B) $(1-b)(1+b)$

C) $(1-b)(b-1)$ D) $(1-b)(b-3)$

1735. a^2-1 ni ko'paytuvchilarga ajrating.

A) $(a-1)(a+2)$ B) $(a-1)(b+1)$

C) $(a-1)(1-a)$ D) $(a-1)(a+1)$

1736. $1-y^2$ ni ko'paytuvchilarga ajrating.

A) $(1-y)(1+y)$ B) $(1-y)(y-1)$

C) $(1-y)(y-2)$ D) $(1-y)(y-6)$

✓ x^4-b^6 ni ko'paytuvchilarga ajrating.

A) $\left(x^2-b^3\right)\left(b^2+x^3\right)$ B) $\left(x^2-b^3\right)\left(x^5+b^3\right)$

C) $\left(x^2-b^3\right)\left(x^2+b^2\right)$ D) $\left(x^2-b^3\right)\left(x^2+b^3\right)$

Yechimi: **J:D**

$a^2-b^2=(a-b)(a+b)$ | $x^4-b^6=\left(x^2\right)^2-\left(b^3\right)^2=\left(x^2-b^3\right)\left(x^2+b^3\right)$

1737. b^4-y^{10} ni ko'paytuvchilarga ajrating.

A) $\left(b^2-y^5\right)\left(b^3+y^2\right)$ B) $\left(b^2-y^5\right)\left(b^2+y^5\right)$

C) $\left(b^2-y^5\right)\left(y^2+b^5\right)$ D) $\left(b^2-y^5\right)\left(b^4+y^2\right)$

1738. m^8-a^2 ni ko'paytuvchilargaajrating.

A) $\left(m^4-a\right)\left(m^4+a^2\right)$ B) $\left(m^4-a\right)\left(m^3+a\right)$

C) $\left(m^4-a\right)\left(m^2+a\right)$ D) $\left(m^4-a\right)\left(m^4+a\right)$

1739. y^6-b^6 ni ko'paytuvchilargaajrating.

A) $\left(y^3-b^3\right)\left(y^3+b^3\right)$ B) $\left(y^3-b^3\right)\left(y^4+b^2\right)$

C) $\left(y^3-b^3\right)\left(y^4+b^4\right)$ D) $\left(y^3-b^3\right)\left(b^4+y^2\right)$

1740. z^4-121 ni ko'paytuvchilargaajrating.

A) $\left(z^2-11\right)\left(z^2+21\right)$ B) $\left(z^2-11\right)\left(z^2-12\right)$

C) $\left(z^2-11\right)\left(z^2+11\right)$ D) $\left(z^2-11\right)\left(z^2+31\right)$

1741. $0{,}36-a^{10}$ ni ko'paytuvchilarga ajrating.

A) $\left(0{,}6-a^5\right)\left(6+a^5\right)$ B) $\left(0{,}6-a^5\right)\left(0{,}6+a^5\right)$

C) $\left(6-a^5\right)\left(0{,}6+a^5\right)$ D) $\left(0{,}6-a^5\right)\left(0{,}6+a^4\right)$

1742. $0{,}49y^6-0{,}81a^4$ ni ko'paytuvchilarga ajrating.

A) $\left(0{,}7y^3-0{,}9a^2\right)\left(7y^3+9a^2\right)$

B) $\left(0{,}7y^3-0{,}9a^2\right)\left(0{,}7y^3+0{,}9a^2\right)$

C) $\left(0{,}7y^3-9a^2\right)\left(0{,}7y^3+0{,}9a^2\right)$

D) $\left(7y^3-0{,}9a^2\right)\left(0{,}7y^3+0{,}9a^2\right)$

✓ x^8-b^4 ni ko'paytuvchilarga ajrating.

A) $\left(x^2-b\right)\left(x^2+b\right)\left(x^3+b^2\right)$ B) $\left(x^2-b\right)\left(x^2-b\right)\left(x^4+b^2\right)$

C) $\left(x^2-b\right)\left(x^2+b\right)\left(x^4+b^2\right)$ D) $\left(x^2-b\right)\left(x^2+b\right)\left(x^4-b^2\right)$

Yechimi: **J:C**

$a^2-b^2=(a-b)(a+b)$ | $x^8-b^4=\left(x^4\right)^2-\left(b^2\right)^2=\left(x^4-b^2\right)\left(x^4+b^2\right)=$
$=\left(x^2-b\right)\left(x^2+b\right)\left(x^4+b^2\right)$

1743. b^4-y^4 ni ko'paytuvchilarga ajrating.

A) $(b-y)(b+y)\left(b^2+y^2\right)$ B) $(b-y)(b+y)\left(b^2-y^2\right)$

C) $(b-y)(b-y)\left(b^2+y^2\right)$ D) $(b-y)(b+y)\left(y^2-b^2\right)$

1744. m^8-a^4 ni ko'paytuvchilarga ajrating.

A) $\left(m^2-a\right)\left(m^2+a\right)\left(a^4+m^2\right)$ B) $\left(m^2-a\right)\left(m^2+a\right)\left(n^4+a^2\right)$

C) $\left(m^2-a\right)\left(m^2+a\right)\left(m^4+a^2\right)$ D) $\left(m^2-a\right)\left(m^2+a\right)\left(a^4+m\right)$

1745. a^4-16 ni ko'paytuvchilarga ajrating.

A) $(a-2)(a+2)\left(a^2-4\right)$ B) $(a-2)(a+4)\left(a^4+4\right)$

C) $(a-2)(a+2)\left(a^2+4\right)$ D) $(2-a)(a+2)\left(a^2+4\right)$

1746. b^4-81 ni ko'paytuvchilarga ajrating.

A) $(b+3)(b+3)\left(b^2+9\right)$ B) $(b-3)(b+13)\left(b^2+9\right)$

C) $(b-3)(b+3)\left(b^2-9\right)$ D) $(b-3)(b+3)\left(b^2+9\right)$

✓ $-81+25y^2$ ni ko'paytuvchilarga ajrating.

A) $(5y-9)(9y+5)$ B) $(9y-5)(5y+9)$

C) $(5y-9)(y+9)$ D) $(5y-9)(5y+9)$

Yechimi: **J: D**

$a^2-b^2=(a-b)(a+b)$ | $-81+25y^2=25y^2-81=(5y)^2-9^2=(5y-9)(5y+9)$

Izoh: formulaga tushishi uchun o'rnini almashtirish lozim. $-81+25y^2=25y^2-81$

1747. $-p^2+1{,}44$ ni ko'paytuvchilarga ajrating.

A) $(1{,}2-p)(1{,}2+p)$ B) $(1{,}2-p)(p+12)$

C) $(12-p)(1{,}2+p)$ D) $(p-12)(p+12)$

1748. $-a^4b^4+\frac{289}{400}$ ni ko'paytuvchilarga ajrating.

A) $(\frac{19}{20}-a^2b^2)(\frac{19}{20}+a^2b^2)$ B) $(\frac{27}{20}-a^2b^2)(\frac{7}{20}+a^2b^2)$

C) $(\frac{17}{20}-a^2b^2)(\frac{17}{20}+a^2b^2)$ D) $(\frac{17}{20}-a^2b^2)(\frac{7}{20}+a^2b^2)$

1749. $-16c^2d^{12}+196$ ni ko'paytuvchilarga ajrating.

A) $(14-4cd^6)(1+4cd^6)$ B) $(14-4cd^6)(14+cd^6)$

C) $(14-4cd^6)(14+4cd^6)$ D) $(14-4cd^6)(14+4c^6)$

✓ $(5a-3b)^2-36a^2$ ni ko'paytuvchilarga ajrating.

A) $-(a+3b)(11a-3b)$ B) $(a+3b)(11a-3b)$

C) $-(a+3b)(10a-3b)$ D) $-(a-3b)(11a-3b)$

Yechimi: **J:A**

$a^2-b^2=(a-b)(a+b)$ | $(5a-3b)^2-36a^2=(5a-3b)^2-(6a)^2=$
$=(5a-3b-6a)(5a-3b+6a)=$
$=(-a-3b)(11a-3b)=-(a+3b)(11a-3b)$

Izoh: tagiga chizilgan ifodaga etibor bering.

$(5a-3b)^2-36a^2=(5a-3b-\underline{6a})(5a-3b+\underline{6a})$

1750. $(a+b)^2-c^2$ ni ko'paytuvchilarga ajrating.

A) $(a+b+c)(a-b-c)$ B) $(a-b-c)(a+b-c)$

C) $(a+b+c)(a-b+c)$ D) $(a+b+c)(a+b-c)$

1751. $(n-m)^2-k^2$ ni ko'paytuvchilarga ajrating.

A) $(n-m-k)(n+m+k)$ B) $(n-m-k)(n-m+k)$

C) $(n-m-k)(n-m-k)$ D) $(n-m-k)(-n-m+k)$

1752. $(4a-3)^2-16$ ni ko'paytuvchilarga ajrating.

A) $(4a+1)(4a-7)$ B) $(4a+1)(4a-3)$

C) $(4a+3)(4a-7)$ D) $(4a+1)(4a-5)$

1753. $(a+2b)^2-9a^2$ ni ko'paytuvchilarga ajrating.

A) $(8a+b)(-a+b)$ B) $(2a+b)(-a+b)$

C) $(2a+b)(-4a+b)$ D) $(2a+4b)(-a+b)$

1754. $(3x-y)^2-4y^2$ ni ko'paytuvchilarga ajrating.

A) $(3x+3y)(x-y)$ B) $(9x+y)(x-y)$

C) $3(3x+y)(x-y)$ D) $3(9x+3y)(x-y)$

1755. $(5y-6)^2-81$ ni ko'paytuvchilarga ajrating.

A) $(5y+3)(5y-3)$ B) $5(5y+3)(y-15)$

C) $5(5y+3)(y-3)$ D) $(5y+3)(y-15)$

1756. $(3c-5)^2-16c^2$ ni ko'paytuvchilarga ajrating.

A) $(7c-5)(-c+5)$ B) $(7c-5)(c-5)$

C) $-(7c-5)(c+5)$ D) $-(7c-5)(c-5)$

1757. $(-2a^2+3b)^2-4a^4$ ni ko'paytuvchilarga ajrating.

A) $3b(-4a^2+3b)$ B) $3b(-4a^2+9b)$

C) $3b(-12a^2+9b)$ D) $3b(-12a^2+3b)$

✓ $64-(b-1)^2$ ni ko'paytuvchilarga ajrating.

A) $(9-b)(7+b)$ B) $(9-b)(7+2b)$

C) $(9-b)(9+b)$ D) $(11-b)(7+b)$

Yechimi: **J:A**

$a^2-b^2=(a-b)(a+b)$

$64-(b-1)^2=8^2-(b-1)^2=$

$=(8-(b-1))(8+(b-1))=$

$=(8-b+1)(8+b-1)=(9-b)(7+b)$

1758. $25-(a+7)^2$ ni ko'paytuvchilarga ajrating.

A) $(a+12)(a+2)$ B) $-(a+12)(a-2)$

C) $-(a+12)(-a-2)$ D) $-(a+12)(a+2)$

1759. $1-(2x-1)^2$ ni ko'paytuvchilarga ajrating.

A) $4x(x-1)$ B) $-4x(x-1)$

C) $-4x(x+1)$ D) $-4x(1-2x)$

1760. $9y^2-(1+2y)^2$ ni ko'paytuvchilarga ajrating.

A) $(5y+1)(y-1)$ B) $-(5y+1)(y-1)$

C) $(5y+1)(1-y)$ D) $(5y-1)(y-1)$

1761. $49x^2-(y+8x)^2$ ni ko'paytuvchilarga ajrating.

A) $-(15y+x)(x+y)$ B) $-(15x+y)(x+y)$

C) $(15x+y)(-x+y)$ D) $-(15x+y)(x-y)$

1762. $9-(7+3a)^2$ ni ko'paytuvchilarga ajrating.

A) $-(3a+10)(-3a-4)$ B) $(3a+10)(3a+4)$

C) $-(3a+10)(3a+4)$ D) $-(3a+10)(3a-4)$

✓ $4+(-x^2-2xy-y^2)$ ni ko'paytuvchilarga ajrating.

A) $(2-x-y)(2+x+y)$ B) $(2-x+y)(2+x+y)$

C) $(2-x-y)(2+x-y)$ D) $(2-x-y)(2-x-y)$

Yechimi:

$4+\left(-x^2-2xy-y^2\right)=4-\left(x^2+2xy+y^2\right)=$

$=4-(x+y)^2=2^2-(x+y)^2=(2-x-y)(2+x+y)$

Izoh: $(-x^2-2xy-y^2)$ ni nimanidir kvadratiga mos qo'yish $-(x+y)^2$ lozim.

1763. $(a^2+2ab+b^2)-c^2$ ni ko'paytuvchilarga ajrating.

A) $(a+b+c)(a-b-c)$ B) $(a-b-c)(a+b-c)$

C) $(a+b+c)(a-b+c)$ D) $(a+b+c)(a+b-c)$

1764. $1-a^2-2ab-b^2$ ni ko'paytuvchilarga ajrating.

A) $(1-a-b)(1-a+b)$ B) $(1+a+b)(1-a-b)$

C) $(1-a+b)(1-a+b)$ D) $(1+a-b)(1-a+b)$

1765. $25-(x^2-2xy+y^2)$ ni ko'paytuvchilarga ajrating.

A) $(5-x+y)(5+x-y)$ B) $(5-x-y)(5+x-y)$

C) $(5-x+y)(5-x-y)$ D) $(5-x-y)(5-x+y)$

✓ $(a-3b)^2-(3a+b)^2$ ni ko'paytuvchilarga ajrating.

A) $-4(a+2b)(2a-b)$ B) $-2(a+2b)(2a-b)$

C) $4(a+2b)(2a-b)$ D) $-4(a+2b)(a-2b)$

Yechimi: **J: A**

$a^2-b^2=(a-b)(a+b)$ ga ko'ra

$(a-3b)^2-(3a+b)^2=((a-3b)-(3a+b))((a-3b)+(3a+b))=$

$=(a-3b-3a-b)(a-3b+3a+b)=(-2a-4b)(4a-2b)=$

$=-2(a+2b)2(2a-b)=-4(a+2b)(2a-b)$

Izoh: Qisqa ko'paytirish formulalaridan biriga tushgani uchun ko'paytuvchilarga ajratildi.

1766. $(a+b)^2-(a-c)^2$ ni ko'paytuvchilarga ajrating.

A) $(b+c)(2a+b+c)$ B) $(b+c)(2a-b+c)$

C) $(b+c)(2a-b-c)$ D) $(b+c)(2a+b-c)$

1767. $(a+b)^2-(b+c)^2$ ni ko'paytuvchilarga ajrating.

A) $(a-c)(a+2b-c)$ B) $(a-c)(a+2b+c)$

C) $(a-c)(a-2b+c)$ D) $(a-c)(a-2b-c)$

1768. $(2a+b)^2-(2b+a)^2$ ni ko'paytuvchilarga ajrating.

A) $3(a+b)(a-b)$ B) $(a+b)(a-b)$

C) $3(-a+b)(a-b)$ D) $-3(a+b)(a-b)$

✓ n^3-m^3 ni ko'paytuvchilarga ajrating.

A) $(n-m)\left(n^2+nm-m^2\right)$ B) $(n-m)\left(n^2-nm+m^2\right)$

C) $(n-m)\left(n^2+nm+m^2\right)$ D) $(n+m)\left(n^2+nmm^2\right)$

Yechimi:

$a^3-b^3=(a-b)\left(a^2+ab+b^2\right)$ ga ko'ra

$n^3-m^3=(n-m)\left(n^2+nm+m^2\right)$

Izoh: Qisqa ko'paytirish formulalaridan biriga tushgani uchun ko'paytuvchilarga ajratildi.

1769. x^3-y^3 ni ko'paytuvchilarga ajrating.

A) $(x-y)(x^2-xy+y^2)$ B) $(x-y)(x^2+xy-y^2)$

C) $(x-y)(x^2-xy-y^2)$ D) $(x-y)(x^2+xy+y^2)$

1770. p^3-q^3 ni ko'paytuvchilarga ajrating.

A) $(p-q)(p^2-pq+q^2)$ B) $(p-q)(p^2+pq+q^2)$

C) $(p-q)(p^2-pq-q^2)$ D) $(p-q)(p^2+pq-q^2)$

1771. z^3-k^3 ni ko'paytuvchilarga ajrating.

A) $(z-k)(z^2+zk+k^2)$ B) $(z-k)(z^2+zk-k^2)$

C) $(z-k)(z^2-zk+k^2)$ D) $(z-k)(z^2-zk-k^2)$

✓ n^3+m^3 ni ko'paytuvchilarga ajrating.

A) $(n-m)(n^2+nm-m^2)$ B) $(n+m)(n^2-nm+m^2)$

C) $(n-m)(n^2+nm+m^2)$ D) $(n+m)(n^2+nm+m^2)$

Yechimi: **J:B**

$a^3+b^3=(a+b)(a^2-ab+b^2)$ *ga ko'ra*

$n^3+m^3=(n+m)(n^2-nm+m^2)$

1772. x^3+y^3 ni ko'paytuvchilarga ajrating.

A) $(x+y)(x^2-xy+y^2)$ B) $(x-y)(x^2+xy-y^2)$

C) $(x+y)(x^2-xy-y^2)$ D) $(x-y)(x^2+xy+y^2)$

1773. p^3+q^3 ni ko'paytuvchilarga ajrating.

A) $(p+q)(p^2-pq+q^2)$ B) $(p-q)(p^2+pq+q^2)$

C) $(p+q)(p^2-pq-q^2)$ D) $(p-q)(p^2+pq-q^2)$

1774. z^3+k^3 ni ko'paytuvchilarga ajrating.

A) $(z+k)(z^2+zk+k^2)$ B) $(z+k)(z^2+zk-k^2)$

C) $(z+k)(z^2-zk+k^2)$ D) $(z-k)(z^2-zk-k^2)$

✓ $1+m^3$ ni ko'paytuvchilarga ajrating.

A) $(1+m)(1-m-m^2)$ B) $(1+m)(1+m+m^2)$

C) $(1-m)(1-m+m^2)$ D) $(1+m)(1-m+m^2)$

Yechimi:

$a^3+b^3=(a+b)(a^2-ab+b^2)$ *ga ko'ra* **J:D**

$1+m^3=1^3+m^3=(1+m)(1-m+m^2)$

1775. t^3+1 ni ko'paytuvchilarga ajrating.

A) $(t+1)(t^2-t-1)$ B) $(t+1)(t^2-t+1)$

C) $(t-1)(t^2-t+1)$ D) $(t+1)(t^2+t+1)$

1776. $1-c^3$ ni ko'paytuvchilarga ajrating.

A) $(c-1)(1+c+c^2)$ B) $(1-c)(1+c+c^2)$

C) $(1-c)(1-c+c^2)$ D) $(1-c)(1+c-c^2)$

1777. $1+b^3$ ni ko'paytuvchilarga ajrating.

A) $(1+b)(1-b-b^2)$ B) $(1+b)(1-b+b^2)$

C) $(1-b)(1-b+b^2)$ D) $(1-b)(1+b+b^2)$

1778. y^3-1 ni ko'paytuvchilarga ajrating.

A) $(y-1)(y^2+y-1)$ B) $(y-1)(y^2+y+1)$

C) $(y-1)(y^2-y+1)$ D) $(y+1)(y^2+y+1)$

✓ $\frac{1}{64}m^3-27$ ni ko'paytuvchilarga ajrating.

A) $\left(\frac{1}{4}m-3\right)\left(\frac{1}{16}m^2-\frac{3}{4}m-9\right)$

B) $\left(\frac{1}{4}m-3\right)\left(\frac{1}{16}m^2+\frac{3}{4}m-9\right)$

C) $\left(\frac{1}{4}m-3\right)\left(\frac{1}{16}m^2-\frac{3}{4}m+9\right)$

D) $\left(\frac{1}{4}m-3\right)\left(\frac{1}{16}m^2+\frac{3}{4}m+9\right)$

Yechimi:

$a^3-b^3=(a-b)(a^2+ab+b^2)$ *ga ko'ra*

$\frac{1}{64}m^3-27=\left(\frac{1}{4}m\right)^3-3^3=\left(\frac{1}{4}m-3\right)\left(\frac{1}{16}m^2+\frac{3}{4}m+9\right)$

1779. $27m^3-8$ ni ko'paytuvchilarga ajrating.

A) $(3m+2)(9m^2-6m+4)$

B) $(3m-2)(9m^2-6m+4)$

C) $(3m-2)(9m^2+6m+4)$

D) $(3m-2)(9m^2-6m-4)$

1780. $64-125y^3$ ni ko'paytuvchilarga ajrating.

A) $(4+5y)(16-20y+25y^2)$

B) $(4-5y)(16+20y+25y^2)$

C) $(4-5y)(16-20y+25y^2)$

D) $(4-5y)(16+20y-25y^2)$

1781. $125-\frac{1}{8}b^3$ ni ko'paytuvchilarga ajrating.

A) $\left(5-\frac{1}{2}b\right)\left(25-\frac{5}{2}b-\frac{1}{4}b^2\right)$

B) $\left(5+\frac{1}{2}b\right)\left(25-\frac{5}{2}b+\frac{1}{4}b^2\right)$

C) $\left(5-\frac{1}{2}b\right)\left(25+\frac{5}{2}b+\frac{1}{4}b^2\right)$

D) $\left(5-\frac{1}{2}b\right)\left(25-\frac{5}{2}b+\frac{1}{4}b^2\right)$

1782. $8y^3-\frac{1}{8}$ ni ko'paytuvchilarga ajrating.

A) $\left(2y+\frac{1}{2}\right)\left(4y^2-y+\frac{1}{4}\right)$

B) $\left(2y-\frac{1}{2}\right)\left(4y^2-y+\frac{1}{4}\right)$

C) $\left(2y-\frac{1}{2}\right)\left(4y^2+y-\frac{1}{4}\right)$

D) $\left(2y-\frac{1}{2}\right)\left(4y^2+y+\frac{1}{4}\right)$

✓ a^6-b^9 ni ko'paytuvchilarga ajrating.

A) $\left(a^2-b^3\right)\left(a^4+a^2b^3+b^6\right)$

B) $\left(a^2-b^3\right)\left(a^4-a^2b^3+b^6\right)$

C) $\left(a^2+b^3\right)\left(a^4-a^2b^3+b^6\right)$

D) $\left(a^2-b^3\right)\left(a^4-a^2b^3+b^6\right)$

Yechimi:

$a^3-b^3=(a-b)\left(a^2+ab+b^2\right)$ *ga ko'ra*

$a^6-b^9=\left(a^2\right)^3-\left(b^3\right)^3=\left(a^2-b^3\right)\left(a^4+a^2b^3+b^6\right)$

1783. m^3-y^6 ni ko'paytuvchilarga ajrating.

A) $\left(m-y^2\right)\left(m^2-my^2+y^4\right)$ B) $\left(m-y^2\right)\left(m^2+my^2+y^4\right)$

C) $\left(m-y^2\right)\left(m^2-my^2-y^4\right)$ D) $\left(m+y^2\right)\left(m^2-my^2+y^4\right)$

1784. p^3-k^9 ni ko'paytuvchilarga ajrating.

A) $\left(p-k^3\right)\left(p^2+pk^3+k^6\right)$ B) $\left(p-k^3\right)\left(p^2-pk^3+k^6\right)$

C) $\left(p-k^3\right)\left(p^2-pk^3-k^6\right)$ D) $\left(p+k^3\right)\left(p^2+pk^3-k^6\right)$

1785. $x^6y^3-c^3$ ni ko'paytuvchilarga ajrating.

A) $\left(x^6y-c\right)\left(x^4y^2+x^2yc+c^2\right)$

B) $\left(x^6y-c\right)\left(x^4y^2-x^2yc+c^2\right)$

C) $\left(x^6y+c\right)\left(x^4y^2+x^2yc+c^2\right)$

D) $\left(x^6y+c\right)\left(x^4y^2-x^2yc+c^2\right)$

✓ y^6-64 ni ko'pi bilan nechta ko'paytuvchilarga ajratish mumkin?

A) 3 B) 4 C) 5 D) 6

Yechimi:

$a^2-b^2=(a-b)(a+b)$ *ga ko'ra*

$y^6-64=\left(y^3\right)^2-(8)^2=\left(y^3-8\right)\left(y^3+8\right)$

$a^3-b^3=(a-b)\left(a^2+ab+b^2\right)$ *ga ko'ra*

$$\underbrace{\left(y^3-8\right)}_{(y-2)\left(y^2+2y+4\right)}\underbrace{\left(y^3+8\right)}_{(y+2)\left(y^2-2y+4\right)} \Rightarrow$$

1 2 3 4

javob: 4*ta*

Izoh: ko'paytuvchilarga ajratganda nechta ko'paytuvchi qatnashsa soni o'shanchadir. Quyidagi hato qilinmasin:

$y^6-64=\left(y^2\right)^3-(4)^3=\left(y^2-4\right)\left(y^4+4y^2+16\right)=$

$=(y-2)(y+2)\left(y^4+4y^2+16\right)\Rightarrow 3ta$

1786. x^6-729 ni ko'pi bilan nechta ko'paytuvchilarga ajratish mumkin?

A) 3 B) 4 C) 5 D)6

1787. $1-n^6$ ni ko'pi bilan nechta ko'paytuvchilarga ajratish mumkin?

A) 3 B) 4 C) 5 D) 6

1788. $1-x^{12}$ ni ko'pi bilan nechta ko'paytuvchilarga ajratish mumkin?

A) 3 B) 4 C) 5 D) 6

✓ n^3m-m^3n ni ko'paytuvchilarga ajrating.

A) $nm(n-m)(n+m)$ B) $m(n-m)(n+m)$

C) $n(n-m)(n+m)$ D) $nm(n-m)(n-m)$

Yechimi:

$n^3m-m^3n=nm\left(n^2-m^2\right)=nm(n-m)(n+m)$

Izoh: bir xil ifodani qavsdan tashqariga chiqarib, keyin formulaga tushurish lozim.

1789. $3a^3-3$ ni ko'paytuvchilarga ajrating.

A) $(a-3)\left(a^2+a+1\right)$ B) $3(a-1)\left(a^2+a+1\right)$

C) $3(a-1)\left(a^2+a-1\right)$ D) $3(a-1)\left(a^2-a+1\right)$

1790. p^3-p ni ko'paytuvchilarga ajrating.

A) $-p(p-1)(p+1)$ B) $(p-1)(p+1)$

C) $p(p-1)(p+1)$ D) $p(1-p)(p+1)$

1791. $2y^3-2yb^2$ ni ko'paytuvchilarga ajrating.

A) $2y(y-b)(y+b)$ B) $2(y-b)(y+b)$

C) $2y(y-b)(-y+b)$ D) $2y(-y-b)(y+b)$

1792. $x^4y^2-x^2y^4$ ni ko'paytuvchilarga ajrating.

A) $-xy^2(x-y)(x+y)$ B) $-x(x-y)(x+y)$

C) $-x^2y^2(x-y)(x-y)$ D) $x^2y^2(x-y)(x+y)$

1793. $8-72x^6y^2$ ni ko'paytuvchilarga ajrating.

A) $8\left(1-3x^3y\right)\left(1+3x^3y\right)$ B) $\left(1-3x^4y\right)\left(1+3x^4y\right)$

C) $8\left(1-9x^3y\right)\left(1+9x^3y\right)$ D) $8\left(1-3x^4y\right)\left(1+3x^4y\right)$

1794. $7c^2d^2-63c^2b^2$ ni ko'paytuvchilarga ajrating.

A) $c^2(d-3b)(d+3b)$ B) $7c^2(3d-b)(d+3b)$

C) $7c^2(d-3b)(d+3b)$ D) $7c^2(d-3b)(d+6b)$

1795. $7x^2-56x^2y^3$ ni ko'paytuvchilarga ajrating.

A) $7x^2(1-2y)\left(1+y+4y^2\right)$ B) $7x^2(1-2y)\left(1+2y+4y^2\right)$

C) $7x(1-2y)\left(1+y+4y^2\right)$ D) $7x^2(1-y)\left(1+y-y^2\right)$

✓ $4q(p-1)+1-p$ ni ko'paytuvchilarga ajrating.

A) $-(p-1)(4q-1)$ B) $(p+1)(4q-1)$

C) $(p-1)(4q+1)$ D) $(p-1)(4q-1)$

Yechimi:

$4q(p-1)+1-p=4q(p-1)-(p-1)=(p-1)(4q-1)$

Izoh: 2 ta 2ta qilib guruhlash lozim.

1796. $2m(m-n)+m-n$ ni ko'paytuvchilarga ajrating.

A) $(m-n)(2m-1)$ B) $(m-n)(2m+1)$

C) $-(m-n)(2m-1)$ D) $(m+n)(2m+1)$

1797. $2m(m-n)-n+m$ ni ko'paytuvchilarga ajrating.

A) $(m-n)(2m-1)$ B) $(m-n)(2m+1)$

C) $-(m-n)(2m-1)$ D) $(m+n)(2m+1)$

1798. $4q(p-1)+p-1$ ni ko'paytuvchilarga ajrating.

A) $-(p-1)(4q-1)$ B) $(p+1)(4q-1)$

C) $(p-1)(4q+1)$ D) $(p-1)(4q-1)$

✓ $3a(2b+c)+8b+4c$ ni ko'paytuvchilarga ajrating.

A) $-(2b+c)(3a+4)$ B) $(2b+c)(3a+4)$

C) $(2b+c)(3a-4)$ D) $(2b-c)(3a+4)$

Yechimi:

$3a(2b+c)+8b+4c=3a(2b+c)+4(2b+c)=(2b+c)(3a+4)$

Izoh: 2 ta 2ta qilib guruhlash lozim.

1799. $a(x-c)+bc-bx$ ni ko'paytuvchilarga ajrating.

A) $(x-c)(a-b)$ B) $(x-c)(a+b)$

C) $-(x-c)(a+b)$ D) $(x-c)(2a+b)$

1800. $a(b+c)+db+dc$ ni ko'paytuvchilarga ajrating.

A) $(b+c)(a+c)$ B) $(b+c)(a+d)$

C) $(b+d)(a+d)$ D) $(b+c)(a-d)$

1801. $2x(3x-4y)-6x+8$ ni ko'paytuvchilarga ajrating.

A) $2(3x-4y)(x-2)$ B) $2(3x-4y)(2x-1)$

C) $2(3x-4y)(x-1)$ D) $2(3x-4y)(2x-2)$

✓ $2bx-3ay-6by+ax$ ni ko'paytuvchilarga ajrating.

A) $(2b+a)(x-3y)$ B) $-(2b+a)(x-3y)$

C) $(2b+a)(3y-x)$ D) $(2b-a)(x-3y)$

Yechimi:

$2bx-3ay-6by+ax=\overline{2bx}-3ay-6by+\overline{ax}=$

$=2ba+ax-3ay-6by=x(2b+a)-3y(a+2b)=$

$=x(2b+a)-3y(2b+a)=(2b+a)(x-3y)$

Izoh: 2 ta 2ta qilib guruhlash lozim.Ustiga chizilgan ifodaga e'tibor bering.

1802. $ac-3bd+ad-3bc$ ni ko'paytuvchilarga ajrating.

A) $(c+d)(a-3b)$ B) $(c+3d)(a-b)$

C) $(3c+d)(a-b)$ D) $-(c+d)(a-3b)$

1803. $ac+bc-2ad-2bd$ ni ko'paytuvchilarga ajrating.

A) $-(a+b)(c-2d)$ B) $(a+b)(c-2d)$

C) $(a+b)(c+2d)$ D) $(a-b)(c-2d)$

1804. $5ay-3bx+ax-15by$ ni ko'paytuvchilarga ajrating.

A) $(5y+x)(a-3b)$ B) $(5y+x)(3b-a)$

C) $(5+yx)(a-3b)$ D) $(3y-x)(a-5b)$

✓ $ax^2-2y-bx^2+ay+2x^2-by$ ni ko'paytuvchilarga ajrating.

A) $(x^2+y)(a+2-b)$ B) $-(x^2+y)(a-2-b)$

C) $(x^2+y)(a-2-b)$ D) $(x^2+y)(a-2+b)$

Yechimi:

$ax^2-2y-bx^2+ay+2x^2-by=ax^2-\underline{2y}-\overline{bx^2}+ay+\underline{2x^2}-\overline{by}=$

$=ax^2+ay-2y-2x^2-bx^2-by=a(x^2+y)-2(x^2+y)-b(x^2+y)=$

$=(x^2+y)(a-2-b)$

Izoh: 2 ta 2ta qilib guruhlash lozim.Ustiga va tagiga chizilgan ifodaga e'tibor bering.

1805. $ma-mb+na-nb+pa-pb$ ni ko'paytuvchilarga ajrating.

A) $(a-b)(n+m+p)$ B) $(a-b)(n+m-p)$

C) $(a-b)(n-m+p)$ D) $-(a-b)(n+m+p)$

1806. $ax-bx-cx+ay-by-cy$ ni ko'paytuvchilarga ajrating.

A) $-(x+y)(a-b-c)$ B) $(x+y)(a-b-c)$

C) $(x+y)(a+b-c)$ D) $(x+y)(a-b+c)$

1807. $x^2+ax^2-y-ay+cx^2-cy$ ni ko'paytuvchilarga ajrating.

A) $(x^2-y)(1+a+c)$ B) $(x^2-y)(1-a+c)$

C) $(x^2-y)(1+a-c)$ D) $(x^2-y)(1-a-c)$

✓ x^2+8x+7 ni ko'paytuvchilarga ajrating.

A) $(x+1)(x-7)$ B) $-(x+1)(x+7)$

C) $(x+1)(x+7)$ D) $(x-1)(x+7)$

Yechimi:

$x^2+\overset{8x}{8x}+7=x^2+x+7x+7=x(x+1)+7(x+1)=$

$=(x+1)(x+7)$

Izoh: $8x$ ni maydalab guruhlarga ajratib $x^2+\overset{8x}{x+7x}+7$ qavsdan tashqariga chiqarish lozim.

1808. z^2+3z+2 ni ko'paytuvchilarga ajrating.

A) $-(z+1)(z+2)$ B) $(z+1)(z-2)$

C) $(z+1)(z+2)$ D) $(z+3)(z+2)$

1809. x^2+6x+5 ni ko'paytuvchilarga ajrating.

A) $(x+3)(x+2)$ B) $(x-1)(x-5)$

C) $(x+1)(x+5)$ D) $-(x+1)(x+5)$

1810. $y^2+10y+9$ ni ko'paytuvchilarga ajrating.

A) $-(y+1)(y+9)$ B) $(y+1)(y+9)$

C) $(y+1)(y-9)$ D) $(y-1)(y+9)$

✓ $x^2-10x+24$ ni ko'paytuvchilarga ajrating.

A) $(x-4)(x-6)$ B) $-(x+1)(x+24)$

C) $(x+4)(x-6)$ D) $(x-1)(x+7)$

Yechimi:

$$x^2\overset{-10x}{-10x}+24=x^2\overset{-10x}{-4x-6x}+24=x(x-4)-6(x-4)=(x-4)(x-6)$$

Izoh: $-10x$ ni maydalab guruhlarga ajratib $x^2\overset{-10x}{-4x-6x}+24$ qavsdan tashqariga chiqarish lozim.

1811. $z^2-13z+40$ ni ko'paytuvchilarga ajrating.

A) $(z+8)(z+5)$ B) $(z-8)(z+5)$

C) $(z-8)(z-5)$ D) $-(z-8)(z-5)$

1812. x^2-6x+5 ni ko'paytuvchilarga ajrating.

A) $(x+3)(x+2)$ B) $(x-1)(x+5)$

C) $(x-1)(x-5)$ D) $-(x+1)(x+5)$

1813. $y^2-10y+16$ ni ko'paytuvchilarga ajrating.

A) $-(y-2)(y-8)$ B) $(y-2)(y-8)$

C) $(y+1)(y-9)$ D) $(y-2)(y+8)$

✓ $-1+c^6$ ko'phad nechta ratsional ko'paytuvchilarga ajraladi?

A) 3 B) 4 C) 5 D) 6

Yechimi:

$$-1+c^6=c^6-1=\left(c^3\right)^2-1^2=\left(c^3-1\right)\left(c^3+1\right)=$$

$$=(c-1)\left(c^2+c+1\right)(c+1)\left(c^2-c+1\right)=$$

1 2 3 4

Javob: **4** *ta*

Izoh: Quyidagi hatoga yo'l qo'yilmasin:

$$-1+c^6=c^6-1=\left(c^2\right)^3-1^3=\left(c^2-1\right)\left(c^4+c^2+1\right)=$$

$$=(c-1)(c+1)\left(c^4+c^2+1\right)$$

1 2 3

1814. $-a^6+\frac{1}{64}$ ko'phad nechta ratsional ko'paytuvchilarga ajraladi?

A) 3 B) 4 C) 5 D) 6

1815. $-a^6+b^6$ ko'phad nechta ratsional ko'paytuvchilarga ajraladi?

A) 3 B) 4 C) 5 D) 6

1816. $-1+c^8$ ko'phad nechta ratsional ko'paytuvchilarga ajraladi?

A) 3 B) 4 C) 5 D) 6

✓ $-x^3-\frac{1}{27}$ ni ko'paytuvchilarga ajrating.

A) $-\left(x+\frac{1}{3}\right)\left(x^2-\frac{x}{3}+\frac{1}{9}\right)$ B) $\left(x-\frac{1}{3}\right)\left(x^2+\frac{x}{3}+\frac{1}{9}\right)$

C) $\left(x+\frac{1}{3}\right)\left(x^2+\frac{x}{3}+\frac{1}{9}\right)$ D) $\left(x-\frac{1}{3}\right)\left(x^2-\frac{x}{3}+\frac{1}{9}\right)$

Yechimi:

$$-x^3-\frac{1}{27}=-\left(x^3+\frac{1}{27}\right)=-\left(x^3+\left(\frac{1}{3}\right)^3\right)=$$

$$=-\left(x+\frac{1}{3}\right)\left(x^2-\frac{x}{3}+\frac{1}{9}\right)$$

Izoh: "$-$" ni qavsdan tashqariga chiqarish lozim.

1817. $-8-c^3a^3$ ni ko'paytuvchilarga ajrating.

A) $-(2+ac)\left(4+2ac+c^2a^2\right)$ B) $(2+ac)\left(4-2ac+c^2a^2\right)$

C) $-(2+ac)\left(4-2ac+c^2a^2\right)$ D) $(2+ac)\left(4-2ac-c^2a^2\right)$

1818. $-a^3-m^3n^6$ ni ko'paytuvchilarga ajrating.

A) $-\left(a+mn^2\right)\left(a^2+amn^2+m^2n^4\right)$

B) $-\left(a-mn^2\right)\left(a^2-amn^2+m^2n^4\right)$

C) $-\left(a+mn^2\right)\left(a^2-amn^2+m^2n^4\right)$

D) $-\left(a+mn^2\right)\left(a^2-amn^2-m^2n^4\right)$

1819. $-343-\frac{k^9}{n^3}$ ni ko'paytuvchilarga ajrating.

A) $-\left(7-\frac{k^3}{n}\right)\left(49-\frac{7k^3}{n}+\frac{k^6}{n^2}\right)$

B) $-\left(7+\frac{k^3}{n}\right)\left(49-\frac{7k^3}{n}+\frac{k^6}{n^2}\right)$

C) $-\left(7+\frac{k^3}{n}\right)\left(49+\frac{7k^3}{n}+\frac{k^6}{n^2}\right)$

D) $-\left(7-\frac{k^3}{n}\right)\left(49-\frac{7k^3}{n}-\frac{k^6}{n^2}\right)$

✓ $(n-m)^3+(m-k)^3+(k-n)^3$ ni ko'paytuvchilarga ajrating.

A) $-3(n-m)(k-m)(k-n)$ B) $-3(n-m)(m-k)(k-n)$

C) $3(n-m)(k+m)(k-n)$ D) $3(n-m)(k-m)(k+n)$

Yechimi:

$(a-b)^3+(b-c)^3+(c-a)^3=3(a-b)(b-c)(c-a)$ *ga ko'ra*

$(n-m)^3+(m-k)^3+(k-n)^3=3(n-m)(m-k)(k-n)$

J:A

Izoh: javoblarni $3(n-m)(m-k)(k-n)$ ni oldiga "–" chiqarib ham qo'yishi mumkin.

$3(n-m)(m-k)(k-n)=-3(n-m)(k-m)(k-n)$

1820. $(t-m)^3+(m-d)^3+(d-t)^3$ ni ko'paytuvchilarga ajrating.

A) $3(t-m)(d-m)(d-t)$ B) $-3(t-m)(d-m)(d-t)$

C) $-3(t-m)(d-m)(d+t)$ D) $3(t-m)(m-d)(t-d)$

1821. $(c-d)^3+(d-z)^3+(z-c)^3$ ni ko'paytuvchilarga ajrating.

A) $-(c-d)(z-d)(c-z)$ B) $3(c-d)(z-d)(z-c)$

C) $-3(c-d)(z-d)(z-c)$ D) $-3(d-c)(d-z)(c-z)$

1822. $(x-y)^3+(y-z)^3+(z-x)^3$ ni ko'paytuvchilarga ajrating.

A) $-3(y-x)(y-z)(z-x)$ B) $3(x-y)(z-y)(z-x)$

C) $3(x-y)(y-z)(x-z)$ D) $-3(y-x)(y-z)(x-z)$

✓ $(n-m)^3-(m-k)^3+(k-n)^3$ ni ko'paytuvchilarga ajrating.

A) $-3(n-m)(k-m)(k-n)$ B) $-3(n-m)(m-k)(k-n)$

C) $3(n-m)(k+m)(k-n)$ D) $3(n-m)(k-m)(k+n)$

Yechimi:

$(a-b)^3+(b-c)^3+(c-a)^3=3(a-b)(b-c)(c-a)$ ga ko'ra

$(n-m)^3-(m-k)^3+(k-n)^3$

↘

$(n-m)^3-\overline{(m-k)^3}+(k-n)^3=(n-m)^3+\underline{(k-m)^3}+(k-n)^3=$

$=3(n-m)(k-m)(k-n)=-3(n-m)(m-k)(k-n)$

Izoh: strelka ↘ ko'rsatayotgan ifodaga e'tibor bering. o'rni almashsa oldiga "–" qo'yiladi.

$-(m-k)^3=--(k-m)^3=(k-m)^3$

1823. $(t-m)^3+(m-d)^3-(d-t)^3$ ni ko'paytuvchilarga ajrating.

A) $3(t-m)(m-d)(d-t)$ B) $-3(t-m)(m-d)(d-t)$

C) $-3(t-m)(d-m)(d+t)$ D) $-3(m-t)(m-d)(d-t)$

1824. $(c-d)^3-(d-z)^3-(z-c)^3$ ni ko'paytuvchilarga ajrating.

A) $3(c-d)(d-z)(c-z)$ B) $3(c-d)(z-d)(c-z)$

C) $-3(c-d)(z-d)(c-z)$ D) $-3(d-c)(d-z)(c-z)$

1825. $(x-y)^3-(y-z)^3-(z-x)^3$ ni ko'paytuvchilarga ajrating.

A) $-3(x-y)(y-z)(z-x)$ B) $-3(y-x)(z-y)(z-x)$

C) $3(x-y)(y-z)(z-x)$ D) $3(x-y)(y-z)(x-z)$

✓ Quyidagilardan qaysi biri x^5-16x ko'phadning ko'paytuvchisi emas.

A) x B) $x-2$ C) $x+2$ D) $x+1$

Yechimi:

$x^5-16x=x(x^4-16)=x(x^2-4)(x^2+4)=$

$=x(x-2)(x+2)(x^2+4)$

Javob: $x+1$ ga karrali emas

Izoh: Berilgan javoblarga qarab qaysi biri $x(x-2)(x+2)(x^2+4)$ da yo'q ekaniga e'tibor bering.

1826. Quyidagilardan qaysi biri y^6-81y^2 ko'phadning ko'paytuvchisi emas.

A) y B) $y-3$ C) $y+3$ D) $y+1$

1827. Quyidagilardan qaysi biri y^6-64y^3 ko'phadning ko'paytuvchisi emas.

A) y B) $y-4$ C) $y+4$ D) $y^2+4y+16$

1828. Quyidagilardan qaysi biri $n^6m^3-n^3m^6$ ko'phadning ko'paytuvchisi emas.

A) $n-m$ B) n^2+nm+m^2 C) $n+m$ D) nm

✓ k^5-m^5 ni ko'paytuvchilarga ajrating.

A) $(k-m)(k^4+k^3m+km^2+km^3+m^4)$

B) $(k-m)(k^4+k^3m+k^2m^2+km^2+m^4)$

C) $(k-m)(k^4+k^3m+k^2m^2+k^2m^3+m^4)$

D) $(k-m)(k^4+k^3m+k^2m^2+km^3+m^4)$

Yechimi:

$a^3-b^3=(a-b)(a^2+ab+b^2)$

$a^4-b^4=(a-b)(a^3+a^2b+ab^2+b^3)$

$a^5-b^5=(a-b)(a^4+a^3b+a^2b^2+ab^3+b^4)$

....

$a^n-b^n=(a-b)(a^{n-1}+a^{n-2}b+\ldots+b^{n-2}a+b^{n-1})$ ga ko'ra

$k^5-m^5=(k-m)(k^4+k^3m+k^2m^2+km^3+m^4)$

1829. x^7-n^7 ni ko'paytuvchilarga ajrating.

A) $(x-n)(x^6+x^5n+x^4n^2+x^3n^3+xn^4+xn^5+n^6)$

B) $(x-n)(x^6+x^5n+x^4n^2+x^3n^3+x^2n^4+xn^5+n^6)$

C) $(x-n)(x^6+x^5n+x^4n^2+x^3n^3+x^3n^4+xn^5+n^6)$

D) $(x-n)(x^6+x^5n+x^4n^2+x^3n^3+x^3n^4+xn^5+n^6)$

1830. d^8-z^8 ni ko'paytuvchilarga ajrating.

A) $(d-z)(d^7+d^6z+d^5z^2+d^4z^3+d^3z^4+dz^6+z^7)$

B) $(d-z)(d^7+d^6z+d^5z^2+d^4z^3+d^3z^4+d^2z^5+dz^6+z^7)$

C) $(d-z)(d^7+d^6z+d^5z^2+d^4z^3+d^3z^4+dz^5+dz^6+z^7)$

D) $(d-z)(d^7+d^6z+d^5z^2+d^4z^3+d^3z^4+x^2z^5+dz^6+z^7)$

1831. x^9-1 ni ko'paytuvchilarga ajrating.

A) $(x-1)(x^8+x^7+x^6+x^5+x^4+x^2+x+1)$

B) $(x-1)(x^8+x^7+x^6+x^5+x^4+x^3+x^2+1)$

C) $(x-1)(x^8+x^7+x^6+x^5+x^4+x^3+x^2+x+1)$

D) $(x-1)(x^8+x^7+x^6+x^4+x^4+x^3+x^2+x+1)$

✓ k^5+m^5 ni ko'paytuvchilarga ajrating.

A) $(k+m)(k^4-k^3m+k^2m^2-km^3+m^4)$

B) $(k+m)(k^4+k^3m+k^2m^2+km+m^4)$

C) $(k-m)(k^4+k^3m+k^2m^2+km^2+m^4)$

D) $(k+m)(k^4+k^3m+k^2m^2+km^3+m^4)$

Yechimi:

$a^3+b^3=(a+b)(a^2-ab+b^2)$

$a^4+b^4=(a+b)(a^3-a^2b+ab^2-b^3)$

$a^5+b^5=(a+b)(a^4-a^3b+a^2b^2-ab^3+b^4)$

$a^n+b^n=(a+b)(a^{n-1}-a^{n-2}b+\ldots+b^{n-2}a+b^{n-1})$

$k^5+m^5=(k+m)(k^4-k^3m+k^2m^2-km^3+m^4)$

Izoh: m ning toq darajalari oldiga minus qo'yiladi.

1832. x^7+n^7 ni ko'paytuvchilarga ajrating.

A) $(x+n)(x^6-x^5n+x^4n^2+x^3n^3-x^2n^4-xn^5+n^6)$

B) $(x+n)(x^6-x^5n+x^4n^2-x^3n^3+x^2n^4-xn^5+n^6)$

C) $(x+n)(x^6-x^5n+x^4n^2+x^3n^3-x^2n^4+xn^5-n^6)$

D) $(x+n)(x^6-x^5n+x^4n^2-x^3n^3+x^2n^4+xn^5+n^6)$

1833. d^8+z^8 ni ko'paytuvchilarga ajrating.

A) $(d+z)(d^7-d^6z+d^5z^2-d^4z^3+d^3z^4+d^2z^5+dz^6-z^7)$

B) $(d+z)(d^7-d^6z+d^5z^2-d^4z^3+d^3z^4-d^2z^5+dz^6-z^7)$

C) $(d+z)(d^7+d^6z-d^5z^2-d^4z^3+d^3z^4-d^2z^5+dz^6-z^7)$

D) $(d+z)(-d^7+d^6z+d^5z^2-d^4z^3+d^3z^4-d^2z^5+dz^6-z^7)$

1834. x^9+1 ni ko'paytuvchilarga ajrating.

A) $(x+1)(x^8-x^7+x^6+x^5+x^4-x^3+x^2-x+1)$

B) $(x+1)(x^8-x^7+x^6-x^5+x^4+x^3+x^2-x+1)$

C) $(x+1)(x^8-x^7+x^6-x^5+x^4-x^3+x^2-x+1)$

D) $(x+1)(x^8-x^7+x^6-x^5+x^4-x^3+x^2+x-1)$

✓ $k^2+2km+m^2+10$ ni eng kichik qiymatini toping.

A) 3 B) 20 C) 1 D) 10

Yechimi:

eng kichik qiymati – ? $(a-b)^2+?$

yoki

eng kichik qiyaymati – ? $(a+b)^2+?$

eng kichik qiyaymati : 10

$k^2+2km+m^2+10=(k+m)^2+10$

Izoh: Qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng kichik qiymat bo'ladi.

1835. $a^2+2ab+b^2+12$ ni eng kichik qiymatini toping.

A) 3 B) 20 C) 12 D) 10

1836. $x^2+2xy+y^2+2018$ ni eng kichik qiymatini toping.

A) 3 B) 2018 C) 18 D) 20

1837. $b^2+2bn+n^2+25$ ni eng kichik qiymatini toping.

A) 25 B) 20 C) 5 D) 10

✓ $a^2-2a+10$ ni eng kichik qiymatini toping.

A) 3 B) 20 C) 9 D) 10

Yechimi:

eng kichik qiymati – ? $(a-b)^2+?$

yoki

eng kichik qiyaymati – ? $(a+b)^2+?$

eng kichik qiyaymati – 9

9

$a^2-2a+10=a^2-2a+1-1+10=(a-1)^2+9$

Izoh: Qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng kichik qiymat bo'ladi.

1838. n^2+2n+4 ni eng kichik qiymatini toping.

A) 3 B) 20 C) 12 D) 10

1839. $x^2-2x+2019$ ni eng kichik qiymatini toping.

A) 3 B) 2018 C) 18 D) 20

1840. $b^2-2b+55$ ni eng kichik qiymatini toping.

A) 25 B) 20 C) 54 D) 10

✓ $x^2+10x+80$ ni eng kichik qiymatini toping.

A) 3 B) -15 C) 55 D) -10

Yechimi:

eng kichik qiymati – "55"

$x^2+10x+80=x^2+2\cdot5x+80=x^2+2\cdot5x+\overbrace{25-25}^{55}+80=(x+5)^2+55$

Javob : 55

Izoh: Qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng kichik qiymat bo'ladi.

1841. $n^2+8n+26$ ni eng kichik qiymatini toping.

A) 10 B) 20 C) 12 D) -10

1842. $x^2-6x+22$ ni eng kichik qiymatini toping.

A) -13 B) 7 C) 2 D) 13

1843. $x^2-6x+2019$ ni eng kichik qiymatini toping.

A) 19 B) 2018 C) 10 D) 2010

1844. $b^2-14b+55$ ni eng kichik qiymatini toping.

A) 8 B) 2 C) 6 D) 1

✓ $x^2+10x+10$ ni eng kichik qiymatini toping.

A) 3 B) -15 C) 15 D) -10

Yechimi:

eng kichik qiymati – "–15"

$$x^2+10x+10=x^2+2\cdot5x+10=x^2+2\cdot5x+25\overbrace{-25+10}^{-15}=$$

$$=(x+5)^2-15 \qquad \textit{Javob}: -15$$

Izoh: Qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng kichik qiymat bo'ladi.

1845. n^2+8n+6 ni eng kichik qiymatini toping.
A) 10 B) 20 C) 12 D) –10

1846. x^2-6x+2 ni eng kichik qiymatini toping.
A) – 6 **B) 7** C) 2 D) –7

1847. $b^2-14b+5$ ni eng kichik qiymatini toping.
A) 44 B) –7 C) – 44 D) 5

✓ x^4+16x^2+100 ni eng kichik qiymatini toping.
A) 3 B) –36 C) 15 D) 36

Yechimi: **J:D**

eng kichik qiymati – "36"

$$x^4+16x^2+100=x^4+2\cdot8x^2+100=$$

$$=x^4+2\cdot8x^2+\overbrace{64-64+100}^{36}=\left(x^2+8\right)^2+36 \quad \textit{Javob}:36$$

Izoh: Qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng kichik qiymat bo'ladi.

1848. n^3+18n^2+88 ni eng kichik qiymatini toping.
A) 10 B) –7 C) 12 D) 7

1849. x^6-24x^4+144 ni eng kichik qiymatini toping.
A) –6 B) 7 C) 2 **D) 0**

1850. n^6+20n^3+6 ni eng kichik qiymatini toping.
A) –12 B) 30 C) 94 D) –94

✓ $3x^2+18x+60$ ni eng kichik qiymatini toping.
A) 3 B) 33 C) 15 D) –10

Yechimi: **J:B**

eng kichik qiymati: "33"

$$3x^2+18x+60=3\left(x^2+6x+20\right)=3\left(x^2+2\cdot3x+20\right)=$$

$$=3\left(x^2+2\cdot3x+\overbrace{9-9+20}^{11}\right)=3\left(\left(x+3\right)^2+11\right)=3\left(x+3\right)^2+33$$

Izoh: x^2 ning oldida turgan $3x^2 \Rightarrow 3$ sonni qavsdan tashqariga chiqarish lozim.

1851. $4n^2+8n+36$ ni eng kichik qiymatini toping.
A) 8 B) 32 C) 4 D) –32

1852. $5x^2-50x+100$ ni eng kichik qiymatini toping.
A) –25 B) 5 C) 25 D) 20

1853. $7b^2-14b+49$ ni eng kichik qiymatini toping.
A) 14 B) 7 C) 42 D) 49

✓ $2(x-3)^2-x(x-10)$ ni eng kichik qiymatini toping.
A) 3 B) –15 C) 17 D) –10

Yechimi: **J:C**

eng kichik qiymati : "17"

$$2(x-3)^2-x(x-10)=2\left(x^2-6x+9\right)-x^2+10x=$$

$$=2x^2-12x+18-x^2+10x=x^2-2x+18$$

$$x^2-2x+1\overbrace{-1+18}^{17}=(x-1)^2+17$$

Javob :17

Izoh: Berilgan ifodani soddalashtirib keyin kichik qiymatini toping.

1854. $2(a-7)(a-1)-(a-5)^2$ ni eng kichik qiymatini toping.
A) 8 **B) 19** C) 20 D) –20

1855. $-(y-4)^2+2(y+3)(y-4)$ ni eng kichik qiymatini toping.
A) –49 B) 36 C) 49 D) –40

1856. $2(x-8)^2-(x-5)(x-3)$ ni eng kichik qiymatini toping.
A) 31 B) –144 C) –31 D) 113

✓ $-k^2-2km-m^2+8$ ni eng katta qiymatini toping.
A) 8 B) 20 C) 1 D) 10

Yechimi: **J:A**

eng katta qiymati – ? $\quad -(a-b)^2+?$

yoki

eng katta qiyaymati – ? $\quad -(a+b)^2+?$

eng katta qiymati: 8

$$-k^2-2km-m^2+8=-(k+m)^2+8$$

Izoh: "–" ni qavsdan chiqarib, qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng katta qiymat bo'ladi.

1857. $-a^2-2ab-b^2+9$ ni eng katta qiymatini toping.
A) 3 B) 20 C) 9 D) 10

1858. $-x^2-2xy-y^2+2018$ ni eng katta qiymatini toping.
A) 3 B) 2018 C) 18 D) 20

1859. $-b^2-2bn-n^2+25$ ni eng katta qiymatini toping.
A) 25 B) 20 C) 5 D) 10

✓ $-a^2+2a+10$ ni eng katta qiymatini toping.
A) 3 B) 20 C) 9 D) 11

Yechimi: **J:D**

eng katta qiymati – ? $\quad -(a-b)^2+?$

yoki

eng katta qiyaymati – ? $\quad -(a+b)^2+?$

eng katta qiymati: 11

$$-a^2+2a+10=-a^2+2a-1\overbrace{+1+10}^{11}=-(a-1)^2+11$$

Izoh: "–" ni qavsdan chiqarib, qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng katta qiymat bo'ladi.

$$-(a-1)^2+11$$

1860. $-n^2-2n+4$ ni eng katta qiymatini toping.
A) 5 B) 20 C) 12 D) 10

1861. $-x^2-2x+2019$ ni eng katta qiymatini toping.
A) 3 B) 2020 C) 18 D) 2018

1862. $-b^2-2b+55$ ni eng katta qiymatini toping.
A) 25 B) 20 C) 56 D) 10

✓ $-x^2-10x+80$ ni eng katta qiymatini toping.
A) 3 B) 105 C) 15 D) –80
Yechimi: **J:B**
eng katta qiymati – "105"

$$-x^2-10x+80=-x^2-2\cdot 5x+80=$$

$$=-x^2-2\cdot 5x-25\overbrace{+25+80}^{105}=-(x+5)^2+105$$

Javob: 105
Izoh: "–" ni qavsdan chiqarib, qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng katta qiymat bo'ladi.

$$-(x+5)^2+105$$

1863. $-n^2+8n+26$ ni eng katta qiymatini toping.
A) 42 B) 20 C) 16 D) –42

1864. $-x^2-6x+22$ ni eng katta qiymatini toping.
A) –31 B) 9 C) 2 D) 31

1865. $-x^2-6x+2019$ ni eng katta qiymatini toping.
A) 19 B) 2027 C) 10 D) 2028

✓ $-x^2-10x+10$ ni eng katta qiymatini toping.
A) 35 B) –15 C) 15 D) –10
Yechimi:
eng katta qiymati – "35"

$$-x^2-10x+10=-x^2-2\cdot 5x+10=$$

$$=-x^2-2\cdot 5x-25\overbrace{+25+10}^{35}=-(x+5)^2+35$$

Javob: 35
Izoh: "—" ni qavsdan chiqarib, qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng katta qiymat bo'ladi.

$$-(x+5)^2+35$$

1866. $-n^2+8n+6$ ni eng katta qiymatini toping.
A) 10 B) 6 C) 12 D) 22

1867. $-x^2-6x+2$ ni eng katta qiymatini toping.
A) –6 B) 7 C) 2 D) 11

1868. $-b^2-14b+5$ ni eng katta qiymatini toping.
A) 44 B) –7 C) 54 D) 5

1869. $-n^2+12n+6$ ni eng katta qiymatini toping.
A) –12 B) 30 C) 6 D) 42

✓ $-x^4+16x^2+100$ ni eng katta qiymatini toping.
A) 3 B) –36 C) 15 D) 164
Yechimi: **J:D**
eng katta qiymati : "164"

$$-x^4+16x^2+100=-x^4+2\cdot 8x^2+100=$$

$$=-x^4+2\cdot 8x^2-64\overbrace{+64+100}^{164}=-\left(x^2-8\right)^2+164 \qquad J:164$$

Izoh: "–" ni qavsdan chiqarib, qandaydir sonni kvadrati va "+" son ko'rinishida ifodalash lozim. "+" son eng katta qiymat bo'ladi.

1870. $-n^4+18n^2+88$ ni eng katta qiymatini toping.
A) 10 B) –169 C) 12 D) 169

1871. $-x^8-30x^4-225$ ni eng katta qiymatini toping.
A) –6 B) 7 C) 2 D) 0

1872. $-b^4-22b^2+77$ ni eng katta qiymatini toping.
A) 44 B) –221 C) 198 D) 5

✓ $-3x^2+18x+60$ ni eng katta qiymatini toping.
A) 3 B) 87 C) 15 D) –10
Yechimi: **J:B**
eng katta qiymati – "87"

$$-3x^2+18x+60=-3\left(x^2-6x-20\right)=-3\left(x^2-2\cdot 3x-20\right)=$$

$$=-3\left(x^2-2\cdot 3x+\overbrace{9-9-20}^{-29}\right)=-3\left((x-3)^2-29\right)=-3(x-3)^2+87$$

Izoh: x^2 ning oldida turgan $-3x^2 \Rightarrow -3$ sonni qavsdan tashqariga chiqarish lozim.

1873. $-4n^2+8n+40$ ni eng katta qiymatini toping.
A) 8 B) 44 C) 4 D) –44

1874. $-5x^2-50x+100$ ni eng katta qiymatini toping.
A) 225 B) 5 C) –225 D) 20

1875. $-7b^2-14b+49$ ni eng katta qiymatini toping.
A) –56 B) 8 C) 56 D) 49

✓ $-2(x-3)^2+x(x-10)$ ni eng katta qiymatini toping.
A) 3 B) –17 C) 15 D) –10
Yechimi: **J:B**
eng kichik qiymati – "–17"

$$-2(x-3)^2+(x-10)=-2\left(x^2-6x+9\right)+x^2-10x=$$

$$=-2x^2+12x-18+x^2-10x=-x^2+2x-18$$

$$-x^2+2x-1\overbrace{+1-18}^{-17}=-(x-1)^2-17$$

Javob: –17
Izoh: Berilgan ifodani soddalashtirib keyin katta qiymatini toping.

1876. $-2(a-7)(a-1)+(a-5)^2$ ni eng katta qiymatini toping.

A) 8 B) 19 C) 20 D) –20

1877. $(y-4)^2-2(y+3)(y-4)$ ni eng katta qiymatini toping.

A) –76 B) 36 C) 49 D) –40

1878. $-2(x-8)^2+(x-5)(x-3)$ ni eng katta qiymatini toping.

A) 31 B) –144 C) –31 D) 113

✓ x^4+x^2+1 ni ko'paytuvchilarga ajrating.

A) $\left(x^2-x+1\right)\left(x^2+x+1\right)$ B) $\left(x^2-x-1\right)\left(x^2+x-1\right)$

C) $\left(x^2-x-1\right)\left(x^2+x-1\right)$ D) $\left(-x^2-x-1\right)\left(x^2+x-1\right)$

Yechimi: **J:A**

$x^4+x^2-1=x^4+2x^2+1-x^2=$

$=\underline{x^4+2x^2+1}-x^2=(x^2+1)^2-x^2=$

$=(x^2+1-x)(x^2+1+x)=(x^2-x+1)(x^2+x+1)$

Izoh: Nimadirni kvadrati qilib, so'ngra 2 ta qavsga ajratish lozim.

1879. $x^{12}+x^6+1$ ni ko'paytuvchilarga ajrating.

A) $(x^6-x^3+1)(x^6-x^3+1)$ B) $(x^6-x^3+1)(x^6+x^3+1)$

C) $(x^6-x+1)(x^6+x+1)$ D) $(x^{10}-x^3+1)(x^2+x^3+1)$

1880. z^8+z^4+1 ni ko'paytuvchilarga ajrating.

A) $(z^4-z^2+1)(z^4-z^2-1)$ B) $(z^4-z^2+1)(z^4+z^2+1)$

C) $(z^4-z^2-1)(z^4-z^2-1)$ D) $(z^4+z^2+1)(z^4-z^2-1)$

1881. $x^{24}+x^{12}+1$ ni ko'paytuvchilarga ajrating.

A) $(x^{20}+x^6+1)(x^4-x^6+1)$ B) $(x^{12}-x^6+1)(x^{12}-x^6+1)$

C) $(x^{12}+x^6+1)(x^{12}-x^6+1)$ D) $(x^{12}+x^4+1)(x^{12}-x^8+1)$

Algebraik kasrlar
(harf qatnashdan kasrlar)

✓ $\frac{12a^4b^2}{18a^3b^3}$ ni qisqartiring.

A) $\frac{4a}{3b}$ B) $\frac{2a}{3b}$ C) $\frac{2a}{9b}$ D) $\frac{6a}{5b}$

Yechimi: **J:B**

$\frac{12a^4b^2}{18a^3b^3}=\frac{12\,a^4b^2}{18\,a^3b^3}=\frac{\cancel{12}^{2}}{3\cancel{18}}\frac{a^{1}}{\cancel{a^3}}\frac{\cancel{a^4}}{\cancel{b^3}}\frac{\cancel{b^2}}{b^{1}}=\frac{2a}{3b}$

Izoh: son bilan sonni $\frac{12}{18}=\frac{\cancel{12}^{2}}{3\cancel{18}}=\frac{2}{3}$ harf bilan harfni qisqartirish $\frac{a^4b^2}{a^3b^3}=\frac{a}{b}$ lozim.

1882. $\frac{6ab}{4a}$ kasrni qisqartiring.

A) $\frac{3b}{4}$ B) $\frac{3b}{2}$ C) $\frac{5b}{2}$ D) $\frac{3b}{8}$

1883. $\frac{14c}{49c}$ kasrni qisqartiring.

A) $\frac{2c}{7}$ B) $\frac{2}{14}$ C) $\frac{2}{7}$ D) $\frac{2}{9}$

1884. $\frac{a^4b}{ab^3}$ kasrni qisqartiring.

A) $\frac{a^3}{b^2}$ B) $\frac{a^2}{b^3}$ C) $\frac{b^3}{a^2}$ D) $\frac{a^4}{b^3}$

1885. $\frac{3a^2b}{9a^3}$ kasrni qisqartiring.

A) $\frac{a}{3b}$ B) $\frac{b}{6a}$ C) $\frac{3b}{a}$ D) $\frac{b}{3a}$

1886. $\frac{25a^3bc^2}{125ac^3}$ kasrni qisqartiring.

A) $\frac{a^2b}{5c}$ B) $\frac{c^2}{5a}$ C) $\frac{5a^2}{c}$ D) $\frac{a^2}{25c}$

✓ $\frac{3a(a+b)}{9a(a+b)(a-b)}$ kasrni qisqartiring.

A) $\frac{1}{3(a-b)}$ B) $\frac{1}{2(a-b)}$ C) $\frac{1}{3(-a-b)}$ D) $\frac{1}{3(a+b)}$

Yechimi:

$\frac{3a(a+b)}{9a(a+b)(a-b)}=\frac{3\cancel{a}\cancel{(a+b)}}{9\cancel{a}\cancel{(a+b)}(a-b)}=\frac{1}{3(a-b)}$

Izoh: son bilan sonni harf bilan harfni qisqartirish (bir xil harflarni) $\frac{a(a+b)}{a(a+b)(a-b)}=\frac{\cancel{a}\cancel{(a+b)}}{\cancel{a}\cancel{(a+b)}(a-b)}=\frac{1}{(a-b)}$ lozim.

1887. $\frac{4(m+n)}{5(m+n)}$ kasrni qisqartiring.

A) $\frac{1}{5}$ B) $\frac{4}{5}$ C) $\frac{5}{4}$ D) $\frac{2}{5}$

1888. $\frac{7a(a-b)}{5(a-b)}$ kasrni qisqartiring.

A) $\frac{7b}{5}$ B) $\frac{5a}{7}$ C) $\frac{a}{35}$ D) $\frac{7a}{5}$

1889. $\frac{2b(m-n)}{8b(m-n)(m-n)}$ kasrni qisqartiring.

A) $\frac{1}{8(m-n)}$ B) $\frac{1}{4(m-n)}$ C) $\frac{1}{5(m-n)}$ D) $\frac{4}{(m-n)}$

✓ $\frac{3a^4(b-a)}{24a^2(a-b)}$ kasrni qisqartiring.

A) $\frac{a^2}{8}$ B) $-\frac{a^2}{8}$ C) $-\frac{a}{8}$ D) $-\frac{1}{8a^2}$

Yechimi:

$\frac{3a^4(b-a)}{24a^2(a-b)}=\frac{3\cancel{a^2}\cancel{(b-a)}}{24\cancel{a^2}(a-b)}=\frac{a^2(-(a-b))}{8(a-b)}=-\frac{a^2}{8}$

Izoh: Tepasiga chizilgan ifodada harflar o'rnini almashtirib ("—" oldiga chiqarib) keyin qisqartirish lozim.

1890. $\frac{2(a-b)}{b-a}$ kasrni qisqartiring.

A) 2 B) 4 C) 6 D) –2

1891. $\frac{5(x-y)}{15(y-x)}$ kasrni qisqartiring.

A) $\frac{1}{3}$ B) –3 C) $-\frac{1}{3}$ D) $-\frac{2}{3}$

1892. $\frac{27(z-d)}{81(d-z)}$ kasrni qisqartiring.

A) $-\frac{1}{3}$ B) –3 C) $\frac{1}{3}$ D) $-\frac{2}{3}$

1893. $\frac{3a(a-b)}{6a^2(b-a)}$ kasrni qisqartiring.

A) $\frac{1}{2a}$ B) $-\frac{1}{2a}$ C) $\frac{1}{4a}$ D) $-\frac{1}{6a}$

✓ $\frac{35c^4(y+x)}{49c^2(x+y)}$ kasrni qisqartiring.

A) $\frac{5c^2}{7}$ B) $-\frac{5c^2}{7}$ C) $\frac{c^2}{5}$ D) $\frac{7c^2}{5}$

Yechimi:

$$\frac{35c^4(y+x)}{49c^2(x+y)}=\frac{35c^4\cancel{(y+x)}}{49c^2\cancel{(x+y)}}=\frac{5c^2}{7}$$

Izoh: harflar orasida "+" bo'lsa, "—" oldiga chiqarlmaydi $(y+x)=(x+y)$

1894. $\frac{6(a+b)}{b+a}$ kasrni qisqartiring.

A) 2 B) 4 C) 6 D) –2

1895. $\frac{10(x+y)}{15(y+x)}$ kasrni qisqartiring.

A) $\frac{1}{3}$ B) –3 C) $-\frac{1}{3}$ D) $\frac{2}{3}$

1896. $\frac{27(z+d)}{9(d+z)}$ kasrni qisqartiring.

A) $\frac{1}{3}$ B) 3 C) $-\frac{1}{3}$ D) $-\frac{2}{3}$

✓ $\frac{(2x-3y)^2}{3y-2x}$ kasrni qisqartiring.

A) $3c-2x$ B) $3y-2x$

C) $3y+2x$ D) $3x-2y$

Yechimi:

$$\frac{(2x-3y)^2}{3y-2x}=\frac{(3y-2x)^2}{3y-2x}=\frac{\cancel{(3y-2x)^2}}{\cancel{3y-2x}}=3y-2x$$

Izoh: ifodada harflar o'rnini almashtirib (**"—" oldiga chiqmaydi)** keyin qisqartirish lozim.

1897. $\frac{m-n}{(n-m)^2}$ kasrni qisqartiring.

A) $\frac{1}{m-n}$ B) $\frac{1}{m+n}$ C) $m-n$ D) $\frac{1}{n-m}$

1898. $\frac{(b-a)^2}{(a-b)}$ kasrni qisqartiring.

A) 1 B) $a+b$ C) 0 D) $a-b$

1899. $\frac{8a^2b(a-b)}{4a^3b(b-a)^2}$ kasrni qisqartiring.

A) $\frac{2a}{(a-b)}$ B) $\frac{2}{a(a-b)}$ C) $\frac{2}{b(a-b)}$ D) $\frac{2}{(a-b)}$

1900. $\frac{m+n}{(m+n)^4}$ kasrni qisqartiring.

A) $\frac{1}{(m+n)^4}$ B) $\frac{1}{(m+n)^3}$ C) $\frac{1}{(m+n)^6}$ D) $\frac{1}{(m+n)^5}$

1901. $\frac{3m(1-x)^2}{9m^2(x-1)^2}$ kasrni qisqartiring.

A) $\frac{1}{3m}$ B) $-\frac{1}{5m}$ C) $-\frac{1}{3m}$ D) $\frac{3}{m}$

✓ $\frac{a^3-2a^2b}{2a^3b^2-a^4b}$ kasrni qisqartiring.

A) $-\frac{1}{ab}$ B) $\frac{1}{ab}$ C) $\frac{1}{a^2b}$ D) ab

Yechimi:

$$\frac{a^3-2a^2b}{2a^3b^2-a^4b}=\frac{a^2(a-2b)}{a^3b(2b-a)}=\frac{\cancel{a^2}(a-2b)}{\cancel{a^3}b(2b-a)}=$$

$$=\frac{-(2b-a)}{ab(2b-a)}=-\frac{1}{ab}$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim. quyidagi hato qilinmasin: $\frac{\cancel{a^3}-2a^2\cancel{b}}{2\cancel{a^3}b^2-a^4\cancel{b}}=\frac{1-2a^2}{2b-a^4}$

1902. $\frac{pq^3}{p^2q-pq^2}$ kasrni qisqartiring.

A) $\frac{p^2}{p-q}$ B) $\frac{q^2}{p-q}$ C) $\frac{q^2}{q-p}$ D) $-\frac{q^2}{p-q}$

1903. $\frac{7a+14b}{3a+6b}$ kasrni qisqartiring.

A) $\frac{7}{3}$ B) $\frac{4}{7}$ C) $\frac{3}{7}$ D) $-\frac{7}{3}$

1904. $\frac{2m^2-mn}{2mn-n^2}$ kasrni qisqartiring.

A) $\frac{n}{m}$ B) $\frac{m}{n}$ C) $\frac{m^2}{n}$ D) $\frac{1}{mn}$

1905. $\frac{3a-6b}{12b-6a}$ kasrni qisqartiring.

A) $\frac{1}{2}$ B) $-\frac{1}{4}$ C) $-\frac{1}{2}$ D) $-\frac{1}{6}$

1906. $\frac{x^2-2xy}{2y^2-xy}$ kasrni qisqartiring.

A) $\frac{x}{y}$ B) $-\frac{y}{x}$ C) $-\frac{x}{y}$ D) $\frac{y}{x}$

✓ $\frac{8-3c}{9c^2-64}$ kasrni qisqartiring.

A) $-\frac{1}{3c+8}$ B) $\frac{1}{3c+8}$ C) $-\frac{1}{3c-8}$ D) $-\frac{1}{-3c+8}$

Yechimi:

$$\frac{8-3c}{9c^2-64}=\frac{8-3c}{(3c-8)(3c+8)}=\frac{8-3c}{-(8-3c)(3c+8)}=$$

$$=\frac{\cancel{8-3c}}{-\cancel{(8-3c)}(3c+8)}=-\frac{1}{3c+8}$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim.

$a^2-b^2=(a-b)(a+b)\Big|9c^2-64=(3c)^2-8^2=(3c-8)(3c+8)$

1907. $\frac{a-b}{a^2-b^2}$ kasrni qisqartiring.

A) $\frac{1}{a+b}$ B) $\frac{1}{a-b}$ C) $a+b$ D) $-\frac{1}{a+b}$

1908. $\frac{4c^2-9x^2}{2c-3x}$ kasrni qisqartiring.

A) $2c+3x$ B) $2x+3c$ C) $2c-3x$ D) $2x-3c$

1909. $\frac{25-x^2}{5-x}$ kasrni qisqartiring.

A) $5-x$ B) $-5-x$ C) $\frac{1}{5+x}$ D) $5+x$

1910. $\frac{100-49b^2}{7b+10}$ kasrni qisqartiring.

A) $\frac{1}{10-7b}$ B) $-10-7b$ C) $10-7b$ D) $10+7b$

1911. $\frac{2y^2-50}{5-y}$ kasrni qisqartiring.

A) $2(5+y)$ B) $\frac{2}{-(5+y)}$ C) $-2(5+y)$ D) $-2(5-y)$

1912. $\frac{5a(c^2-4)}{10a^2(2-c)}$ kasrni qisqartiring.

A) $\frac{2-c}{2-a}$ B) $\frac{2-c}{2a}$ C) $-\frac{2+c}{2a}$ D) $\frac{1-c}{2a}$

1913. $\frac{5a^3b+5ab^3}{a^4-b^4}$ kasrni qisqartiring.

A) $\frac{5ab}{a-b}$ B) $-\frac{5ab}{a^2-b^2}$ C) $\frac{ab}{a^2-b^2}$ D) $\frac{5ab}{a^2-b^2}$

✓ $\frac{4a-1}{16a^2-8a+1}$ kasrni qisqartiring.

A) $-\frac{1}{4a-1}$ B) $\frac{1}{4a-1}$ C) $4a-1$ D) $\frac{1}{4-a}$

Yechimi:

$$\frac{4a-1}{16a^2-8a+1}=\frac{4a-1}{(4a-1)^2}=\frac{1}{4a-1}$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim. $(a-b)^2=a^2-2ab+b^2\Big|16a^2-8a+1=(4a-1)^2$

1914. $\frac{d^2-6d+9}{d-3}$ kasrni qisq artiring.

A) $d-3$ B) $3-d$ C) $d+3$ D) $\frac{1}{d-3}$

1915. $\frac{b+7}{b^2+14b+49}$ kasrni qisqartiring.

A) $-\frac{1}{b+7}$ B) $\frac{1}{b+7}$ C) $\frac{1}{b-7}$ D) $b+7$

1916. $\frac{9-6a+a^2}{3-a}$ kasrni qisqartiring.

A) $\frac{1}{3-a}$ B) $3-a$ C) $3+a$ D) $-3-a$

1917. $\frac{1-2p}{1-4p+4p^2}$ kasrni qisqartiring.

A) $1-2p$ B) $-1+2p$ C) $1+2p$ D) $\frac{1}{1-2p}$

1918. $\frac{4y^2-4y+1}{2-4y}$ kasrni qisqartiring.

A) $\frac{1+2y}{2}$ B) $\frac{1-2y}{2}$ C) $\frac{1-2y}{4}$ D) $\frac{2}{1-2y}$

1919. $\frac{5-2x}{4x^2-20x+25}$ kasrni qisqartiring.

A) $\frac{1}{5+2x}$ B) $5-2x$ C) $\frac{1}{5-2x}$ D) $\frac{1}{2-5x}$

✓ $\frac{3n^2-6mn+3m^2}{6n^2-6m^2}$ kasrni qisqartiring.

A) $-\frac{(n-m)}{2(n+m)}$ B) $\frac{(m-n)}{2(n+m)}$

C) $\frac{-n+m}{2(n+m)}$ D) $\frac{(n-m)}{2(n+m)}$

Yechimi:

$$\frac{3n^2-6mn+3m^2}{6n^2-6m^2}=\frac{3\left(n^2-2mn+m^2\right)}{6\left(n^2-m^2\right)}=\frac{3(n-m)^2}{6(n-m)(n+m)}=$$

$$=\frac{\cancel{3}(n-m)^2}{\cancel{6}(n-m)(n+m)}=\frac{(n-m)}{2(n+m)}$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim.

1920. $\frac{1-a^2}{(a-1)^2}$ kasrni qisqartiring.

A) $\frac{1+a}{1-a}$ B) $\frac{1-a}{1+a}$ C) $-\frac{1+a}{1-a}$ D) $\frac{1+a}{a-1}$

1921. $\frac{(m-n)^2}{n-m}$ kasrni qisqartiring.

A) $-n-m$ B) $n+m$ C) $\frac{1}{n-m}$ D) $n-m$

1922. $\frac{9c^2-16}{16-24c+9c^2}$ kasrni qisqartiring.

A) $\frac{3-4c}{3c-4}$ B) $\frac{4c+3}{4c-3}$ C) $\frac{3c-4}{3c+4}$ D) $\frac{3c+4}{3c-4}$

1923. $\frac{16x^2-24xy+9y^2}{9y^2-16x^2}$ kasrni qisqartiring.

A) $\frac{3x+4y}{4y-3x}$ B) $-\frac{4x-3y}{3y+4x}$ C) $-\frac{4x+3y}{3y-4x}$ D) $\frac{4x+3y}{3y-4x}$

1924. $\frac{25b-49b^3}{49b^3-70b^2+25b}$ kasrni qisqartiring.

A) $\frac{7+5b}{5-7b}$ B) $-\frac{5+7b}{5-7b}$ C) $\frac{5+7b}{7-5b}$ D) $\frac{5+7b}{5-7b}$

1925. $\frac{36c-c^3}{c^3+12c^2+36c}$ kasrni qisqartiring.

A) $-\frac{c+6}{c-6}$ B) $\frac{c-6}{c+6}$ C) $\frac{36-c}{c+6}$ D) $-\frac{c-6}{c+6}$

1926. $\frac{50m^2+100mn+50n^2}{15m^2-15n^2}$ kasrni qisqartiring.

A) $\frac{m+n}{m-n}$ B) $\frac{10(m-n)}{3(m+n)}$

C) $\frac{8(m+n)}{3(m-n)}$ D) $\frac{10(m+n)}{3(m-n)}$

✓ $\frac{3n^2+3mn+3n^2}{6n^3-6m^3}$ kasrni qisqartiring.

A) $-\frac{n-m}{2(n+m)}$ B) $\frac{m-n}{2(n+m)}$

C) $\frac{1}{2(n-m)}$ D) $\frac{n-m}{2(n+m)}$

Yechimi:

$$\frac{3n^2+3mn+3m^2}{6n^3-6m^3}=\frac{3\left(n^2+3mn+m^2\right)}{6\left(n^3-m^3\right)}=\frac{\left(n^2+3mn+m^2\right)}{2(n-m)\left(n^2+3mn+m^2\right)}=$$

$$=\frac{\cancel{\left(n^2+3mn+m^2\right)}}{2(n-m)\cancel{\left(n^2+3mn+m^2\right)}}=\frac{1}{2(n-m)}$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim.

1927. $\frac{a+b}{a^3+b^3}$ kasrni qisqartiring.

A) $\frac{1}{a^2-ab-b^2}$ B) $\frac{1}{a^2+ab+b^2}$

C) $-\frac{1}{a^2-ab+b^2}$ D) $\frac{1}{a^2-ab+b^2}$

1928. $\frac{a^3-27}{a-3}$ kasrni qisqartiring.

A) a^2+3a-9 B) a^2-3a+9

C) a^2+6a+9 D) a^2+3a+9

1929. $\frac{8c^3-1}{4c^2+2c+1}$ kasrni qisqartiring.

A) $\frac{1}{2c-1}$ B) $2c-1$ C) $-2c-1$ D) $2c+1$

1930. $\frac{2ab-b}{8a^3-1}$ kasrni qisqartiring.

A) $\frac{b}{4a^2+a+1}$ B) $\frac{b}{a^2+2a+1}$

C) $\frac{b}{4a^2+2a+1}$ D) $\frac{3b}{4a^2+2a+1}$

1931. $\frac{27a^3+b^3}{3ab+b^2}$ kasrni qisqartiring.

A) $\frac{9a^2-3ab+b^2}{b}$ B) $\frac{9a^2-3b+b^2}{b}$

C) $\frac{9a^2-3ab+b}{b}$ D) $\frac{9a^2+3ab+b^2}{b}$

1932. $\frac{4b^2-12bc+9c^2}{-2ab+3ac}$ kasrni qisqartiring.

A) $\frac{2c-3b}{a}$ B) $\frac{3c-2b}{a}$

C) $\frac{3c+2b}{a}$ D) $\frac{5c-2b}{a}$

1933. $\frac{2a^5-128a^2}{(2a^2+8a+32)(a^4-4a^3)}$ kasrni qisqartiring.

A) $-\frac{1}{a}$ B) a C) $\frac{1}{2a}$ D) $\frac{1}{a}$

✓ $\frac{8a^3+12a^2+6a+1}{4a^2+4a+1}$ kasrni qisqartiring.

A) $-2a+1$ B) $2a+1$ C) $\frac{1}{2a+1}$ D) $\frac{2a+1}{2}$

Yechimi:

$$\frac{8a^3+12a^2+6a+1}{4a^2+4a+1}=\frac{8a^3+1+12a^2+6a}{4a^2+4a+1}=$$

$$=\frac{(2a+1)\left(4a^2-2a+1\right)+6a(2a+1)}{4a^2+4a+1}=$$

$$=\frac{(2a+1)\left(4a^2-2a+1+6a\right)}{(2a+1)^2}=\frac{(2a+1)\left(4a^2+4a+1\right)}{(2a+1)^2}=$$

$$=\frac{(2a+1)(2a+1)^2}{(2a+1)^2}=\frac{(2a+1)\cancel{(2a+1)^2}}{\cancel{(2a+1)^2}}=2a+1$$

Izoh: avval ko'paytuvchilarga ajratib keyin qisqartirish lozim.

1934. $\frac{2a^4+3a^3+2a+3}{(a^2-a+1)(2a+3)}$ kasrni qisqartiring.

A) $\frac{1}{a+1}$ B) $-a+1$ C) $a+1$ D) $a-1$

1935. $\frac{3a^3+ab^2-6a^2b-2b^3}{9a^5-ab^4-18a^4b+2b^5}$ kasrni qisqartiring.

A) $\frac{1}{a^2-3b^2}$ B) $\frac{1}{3a^2-b^2}$

C) $\frac{1}{3a^2+b^2}$ D) $\frac{1}{3b^2-a^2}$

1936. $\frac{3ac^2+3bc^2-3ab^2-3b^3}{6ac^2+6bc^2-6ab^2-6b^3}$ kasrni qisqartiring.

A) $\frac{1}{2}$ B) 2 C) 4 D) $-\frac{1}{2}$

1937. $\frac{2a^7-128a^4}{(2a^2+8a+32)(a^4-4a^3)}$ kasrni qisqartiring.

A) $\frac{1}{a}$ B) $-a$ C) a D) $-\frac{1}{a}$

✓ $\frac{1}{y}$ va $\frac{2}{c}$ ni umumiy maxrajini toping.

A) y B)c C) yc D) y^2c

Yechimi:
umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim.

$\frac{1}{7}$ va $\frac{2}{11} \Rightarrow 77$ $\frac{1}{y}$ va $\frac{2}{c} \Rightarrow yc$

Izoh: Mahraj har xil bo'lsa, ko'paytmasi olinadi.

1938. $\frac{6}{m}$ va $\frac{2}{n}$ kasrni umumiy maxrajini toping.

A) n B) m C) n^2m D) nm

1939. $\frac{24}{a}$ va $\frac{5}{b}$ kasrni umumiy maxrajini toping.

A) a B) ab C) b D) ab^2

1940. $\frac{5}{x}$ va $\frac{3}{y}$ kasrni umumiy maxrajini toping.

A) xy^3 B) x C) xy D) y

✓ $\frac{1}{c}$ va $\frac{2}{c}$ ni umumiy maxrajini toping.

A) y B) c C) yc D) y^2c

Yechimi:
umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim.

$\frac{1}{7}$ va $\frac{2}{7} \Rightarrow 7$ $\frac{1}{c}$ va $\frac{2}{c} \Rightarrow c$

Izoh: Mahraj bir xil bo'lsa, maxrajdagi son "c" olinadi.

1941. $\frac{a}{b}$ va $\frac{2a}{b}$ kasrni umumiy maxrajini toping.

A) b B) b^2 C) $2b$ D) ab

1942. $\frac{2x}{y}$ va $\frac{3x}{y}$ kasrni umumiy maxrajini toping.

A) $6y$ B) y C) y^2 D) $2y$

1943. $\frac{8}{d}$ va $\frac{5}{d}$ kasrni umumiy maxrajini toping.

A) $2d$ B) d^2 C) d D) $8d$

✓ $\frac{1}{3c}$ va $\frac{2}{4c}$ ni umumiy maxrajini toping.

A) y B) c C) yc D) y^2c

Yechimi:
umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim.

$\frac{1}{3c}$ va $\frac{2}{4c} \Rightarrow 12c$

Izoh: avval sonlarga umumiy Mahraj topiladi 3 va $4 \Rightarrow 12$ keyin harflarga, bir xil bo'lsa, maxrajdagi son c olinadi.

1944. $\frac{a}{20b}$ va $\frac{2a}{15b}$ kasrni umumiy maxrajini toping.

A) $60b$ B) b^2 C) $2b$ D) ab

1945. $\frac{2x}{21y}$ va $\frac{3x}{35y}$ kasrni umumiy maxrajini toping.

A) $70y$ B) $105y$ C) y^2 D) $210y$

1946. $\frac{8}{27d}$ va $\frac{5}{18d}$ kasrni umumiy maxrajini toping.

A) $81d$ B) d^2 C) $54d$ D) $90d$

✓ $\frac{9}{10y}, \frac{1}{3c}$ va $\frac{2}{4cy}$ ni umumiy maxrajini toping.

A) y B) c C) $60yc$ D) y^2c

Yechimi:
umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim.

$\frac{9}{10y}, \frac{1}{3c}$ va $\frac{2}{4cy} \Rightarrow 60cy$

Izoh: avval sonlarga umumiy Mahraj topiladi 10, 3 va $4 \Rightarrow 60$ keyin harflarga y, c va $cy \Rightarrow cy$

1947. $\frac{11}{12c}, \frac{8}{cd}$ va $\frac{5}{18d}$ kasrni umumiy maxrajini toping.

A) $60cd$ B) $36d$ C) $36cd$ D) $90d$

1948. $\frac{3}{4a}, \frac{1}{5b}$ va $\frac{7}{20ab}$ kasrni umumiy maxrajini toping.

A) $24ab$ B) $12ab$ C) $55ab$ D) $20ab$

1949. $\frac{3x}{4y}, \frac{6}{xy}$ va $\frac{4y}{3x}$ kasrni umumiy maxrajini toping.

A) $12xy$ B) $24xy$ C) $48xy$ D) $72xy$

✓ $\frac{9}{y^3}, \frac{1}{y^2}$ va $\frac{2}{y^5}$ ni umumiy maxrajini toping.

A) y^5 B) c C) yc D) y^2c

Yechimi:

umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim. $\frac{9}{y^3}, \frac{1}{y^2}$ va $\frac{2}{y^5} \Rightarrow y^5$

Izoh: maxrajda qatnashgan harflarning eng katta y^3, y^2 va $y^5 \Rightarrow y^5$ darajasi olinadi.

1950. $\frac{7}{a^2}$ va $\frac{8}{a^3}$ kasrni umumiy maxrajini toping.

A) a^4 B) a^3 C) a^2 D) a^5

1951. $\frac{7}{y}$ va $\frac{2018}{y^5}$ kasrni umumiy maxrajini toping.

A) y^4 B) y^5 C) y^2 D) y

1952. $\frac{745}{n^2}$ va $\frac{8b}{n^4}$ kasrni umumiy maxrajini toping.

A) n^6 B) n^4 C) n D) n^5

✓ $\frac{9}{10y^3}, \frac{1}{5y^2}$ va $\frac{2}{15y^5}$ ni umumiy maxrajini toping.

A) y B) $30y^5$ C) yc D) y^2c

Yechimi:

umumiy maxraji har bir kasrning maxrajiga bo'linishi lozim.

$\frac{9}{10y^3}, \frac{1}{5y^2}$ va $\frac{2}{15y^5} \Rightarrow 30y^5$

Izoh: avval sonlarga keyin harflarga umumiy mahraj topamiz.

1953. $\frac{7}{6a^2}$ va $\frac{8}{4a^3}$ kasrni umumiy maxrajini toping.

A) $24a^4$ B) $12a^3$ C) $10a^2$ D) a^5

1954. $\frac{7}{11y}$ va $\frac{2018}{7y^5}$ kasrni umumiy maxrajini toping.

A) $14y^4$ B) $77y^5$ C) $22y^2$ D) y

1955. $\frac{745}{56n^2}$ va $\frac{5b}{14n^4}$ kasrni umumiy maxrajini toping.

A) $28n^6$ B) $15n^4$ C) $58n$ D) n^5

✓ m va $\frac{5c}{b}$ ni umumiy maxrajini toping.

A) $6ab$ B) b C) $12ab$ D) $6abnk$

Yechimi:

m va $\frac{5c}{b} \Rightarrow b$ **Izoh:** maxrajga qarash lozim.

1956. b va $\frac{c}{a^3}$ kasrni umumiy maxrajini toping.

A) ab B) a^3b C) a^3 D) a^3bc

1957. a^2 va $\frac{d}{2ab}$ kasrni umumiy maxrajini toping.

A) $2abc$ B) $2ab$ C) $2a^2$ D) ab

1958. $3b$ va $\frac{5}{2b}$ kasrni umumiy maxrajini toping.

A) $3b$ B) $6ab$ C) $12ab$ D) $2b$

1959. $\frac{b}{3a}, \frac{3c}{2b}$ va ab kasrni umumiy maxrajini toping.

A) $3b$ B) $6ab$ C) $12ab$ D) $2b$

✓ $\frac{1}{15p^4n}, \frac{31}{10pn^3}$ va $\frac{4}{3p^2n^4}$ ni umumiy maxrajini toping.

A) $30p^4n^4$ B) $60p^4n^4$ C) $30p^4n$ D) $15p^4n$

Yechimi:

$\frac{1}{15p^4n}, \frac{31}{10pn^3}$ va $\frac{4}{3p^2n^4} \Rightarrow 30p^4n^4$

Izoh: p ning katta darajasini p^4 keyin, n ning katta darajasini n^4 qarash lozim.

1960. $\frac{1}{2p^2}, \frac{1}{6k^2}$ va $\frac{1}{3pk}$ kasrni umumiy maxrajini toping.

A) $2p^2k^2$ B) $6p^2k$ C) $6p^2k^2$ D) $12p^2k^2$

1961. $\frac{2a}{b^2}, \frac{4}{15a^2b}$ va $\frac{3}{20a^3b^4}$ kasrni umumiy maxrajini toping.

A) $60a^3b^4$ B) $60a^4b^4$ C) $30a^4b^4$ D) $30a^4b$

1962. $\frac{1}{6b^2}, \frac{a^2+b^2}{9a^2b^2}$ va $\frac{3-a^2}{18ab^2}$ kasrni umumiy maxrajini toping.

A) $18a^4b^4$ B) $6ab$ C) $18ab$ D) $18a^2b^2$

1963. $\frac{7}{20x^4y}, \frac{31}{6xy^3}$ va $\frac{4}{3x^2y^4}$ kasrni umumiy maxrajini toping.

A) $60x^4y^2$ B) $60x^4y^4$ C) $30x^4y^4$ D) $30x^4y^3$

✓ $\frac{3}{10-n^3}$ va $\frac{4}{p^2}$ ni umumiy maxrajini toping.

A) $p^2(10-n^3)$ B) p^2 C) $10-n^3$ D) $p^2(10+n^3)$

Yechimi:

$\frac{3}{10-n^3}$ va $\frac{4}{p^2} \Rightarrow p^2(10-n^3)$

Izoh: Mahraj har xil bo'lsa, ko'paytmasi olinadi.

1964. $\frac{1}{x+y}$ va $\frac{5}{x}$ kasrni umumiy maxrajini toping.

A) $x(x+y)$ B) $x(x-y)$ C) x D) $x+y$

1965. $\frac{6}{a-1}$ va $\frac{2}{a}$ kasrni umumiy maxrajini toping.

A) $a(a-1)$ B) $a(a+1)$ C) $a(-a+1)$ D) $a-1$

1966. $\frac{a^2+b^2}{6-b^2}$ va $\frac{3-a^2}{b}$ kasrni umumiy maxrajini toping.

A) $b(6+b^2)$ B) $b(6-b^2)$ C) b D) $6-b^2$

1967. $\frac{7}{x^4}, \frac{31}{y^4}$ va $\frac{4}{z^4}$ kasrni umumiy maxrajini toping.

A) $z^4x^4y^2$ B) x^4y^4z C) $x^4y^4z^4$ D) $z^4x^4y^3$

✓ $\frac{3}{14(m-n)}$ va $\frac{n^2}{21(m-n)}$ ni umumiy maxrajini toping.

A) $42(m-n)$ B) $n-m$ C) 42 D) $42(n-m)$

Yechimi:

$\frac{3}{14y}$ va $\frac{n^2}{21y} \Rightarrow 42y$ | $\frac{3}{14(m-n)}$ va $\frac{n^2}{21(m-n)} \Rightarrow 42(m-n)$

Izoh: chap tomonda sodda ko'rinishini qanday topgan bo'lsak, o'ng tomoni ham shunday topamiz.

1968. $\frac{1}{8(x-y)}$ va $\frac{5}{12(x-y)}$ kasrni umumiy maxrajini toping.

A) $24(x-y)$ B) $48(x-y)$ C) $(x-y)$ D) 24

1969. $\frac{6}{12(a-1)}$ va $\frac{2}{15(a-1)}$ kasrni umumiy maxrajini toping.

A) $60(a-1)$ B) $24(a-1)$ C) $30(-a+1)$ D) $(a-1)$

1970. $\frac{a^2+b^2}{14(a-b)}$ va $\frac{3-a^2}{35(a-b)}$ kasrni umumiy maxrajini toping.

A) $a-b$ B) $70(a-b)$ C) 140 D) $28(a-b)$

1971. $\frac{2a^2}{3(a+1)}$ va $\frac{5a^2}{4(a+1)}$ kasrni umumiy maxrajini toping.

A) $12(a-1)$ B) 12 C) $(a+1)$ D) $12(a+1)$

✓ $\frac{3}{14m-14n}$ va $\frac{n^2}{21m-21n}$ ni umumiy maxrajini toping.

A) $42(m+n)$ B) $n-m$ C) 42 D) $42(m-n)$

Yechimi: 14 va 21 ni qavsdan tashqariga chiqarib:

$\frac{3}{14m-14n}$ va $\frac{n^2}{21m-21n}$ | $\frac{3}{14(m-n)}$ va $\frac{n^2}{21(m-n)} \Rightarrow 42(m-n)$

Izoh: Avval ko'paytuvchilarga ajratib keyin umumiy mahraj bering.

1972. $\frac{2a^2}{3a+3}$ va $\frac{5a^2}{4a+4}$ kasrni umumiy maxrajini toping.

A) $12(a-1)$ B) 12 C) $a+1$ D) $12(a+1)$

1973. $\frac{5}{2x-2}$ va $\frac{3}{4x-4}$ kasrni umumiy maxrajini toping.

A) 4 B) $8(x-1)$ C) $4(x-1)$ D) $4(x+1)$

1974. $\frac{3x}{4x+4y}$ va $\frac{x}{8x+8y}$ kasrni umumiy maxrajini toping.

A) $x+y$ B) $8(x+y)$ C) $16(x+y)$ D) 8

1975. $\frac{1}{8x+8y}$ va $\frac{5}{12x+12y}$ kasrni umumiy maxrajini toping.

A) $24(x+y)$ B) $48(x+y)$ C) $x+y$ D) 24

1976. $\frac{6}{12a+12}$ va $\frac{2}{15a+15}$ kasrni umumiy maxrajini toping.

A) $60(a+1)$ B) $24(a+1)$ C) $30(-a+1)$ D) $a+1$

1977. $\frac{a^2+b^2}{14a-14b}$ va $\frac{3-a^2}{35a-35b}$ kasrni umumiy maxrajini toping.

A) 70 B) $70(a-b)$ C) 140 D) $28(a-b)$

✓ $\frac{y^3}{n-m}$ va $\frac{n^2}{m+n}$ ni umumiy maxrajini toping.

A) $42(n^2-m^2)$ B) n^2-m^2 C) 42 D) n^2+m^2

Yechimi: **J:B**

$\frac{y^3}{x}$ va $\frac{n^2}{y} \Rightarrow xy$ | $\frac{y^3}{n-m}$ va $\frac{n^2}{m+n} \Rightarrow (n-m)(m+n)=n^2-m^2$

1978. $\frac{2a^2}{a+5}$ va $\frac{5a^2}{a-5}$ kasrni umumiy maxrajini toping.

A) $a+5$ B) a^2-5 C) $a-25$ D) a^2-25

1979. $\frac{1}{x-y}$ va $\frac{1}{x+y}$ kasrni umumiy maxrajini toping.

A) x^2-y^2 B) $x-y$ C) x^2+y^2 D) x^2-y

1980. $\frac{7a}{3x-y}$ va $\frac{6b}{3x+y}$ kasrni umumiy maxrajini toping.

A) $9x^2-y$ B) $9-y^2$ C) $9x^2-y^2$ D) $9x^2+y^2$

✓ $\frac{m}{2m+2n}, \frac{n}{8m-8n}$ va $\frac{mn}{6m^2-6n^2}$ ni umumiy maxrajini toping.

A) $42(m+n)$ B) 24 C) $24(m^2-n^2)$ D) $42(m-n)$

Yechimi: **J:C**

$\frac{m}{2m+2n}; \frac{n}{8m-8n}$ va $\frac{mn}{6m^2-6n^2}$

$\frac{m}{2(m+n)}; \frac{n}{8(m-n)}$ va $\frac{mn}{6(m^2-n^2)} \Rightarrow 24(m^2-n^2)$

Izoh: formulaga tushishiga e'tibor qarating.

1981. $\frac{a-b}{5a+5b}$ va $\frac{a+b}{a^2-b^2}$ kasrni umumiy maxrajini toping.

A) $5(a^2+b^2)$ B) $5(a+b)$ C) a^2-b^2 D) $5(a^2-b^2)$

1982. $\frac{7}{(x-y)^2}$ va $\frac{5}{x-y}$ kasrni umumiy maxrajini toping.

A) $x-y$ B) $(x-y)^2$ C) $y-x$ D) $(x+y)^2$

1983. $\frac{5c}{c^2-4c+4}$ va $\frac{6}{c-2}$ kasrni umumiy maxrajini toping.

A) c^2-4c B) $(c-2)^2$ C) $(c+2)^2$ D) $c-2$

1984. $\frac{2c}{5b-5c}, \frac{3a^3}{35b^2-35c^2}$ va $\frac{7b}{14b+14c}$ kasrni umumiy maxrajini toping.

A) $70(b^2+c^2)$ B) $70(b^2-c^2)$

C) $25(b^2-c^2)$ D) b^2-c^2

✓ $\frac{8c}{b}-\frac{7a}{b}$ ni ayirmasini toping.

A) $\frac{8c+7a}{b}$ B) $8c+7a$ C) $\frac{8c-7a}{b}$ D) $\frac{15a}{b}$

Yechimi: $\frac{8c}{b}-\frac{7a}{b}=\frac{8c-7a}{b}$

1985. $\frac{2}{b}+\frac{7c}{b}$ kasrning yig'indisini toping.

A) $\frac{2+c}{b}$ B) $\frac{2+7c}{b}$ C) $\frac{b}{2+7c}$ D) $\frac{7+2c}{b}$

1986. $\frac{m}{x^2}+\frac{n}{x^2}$ kasrni yig'indisi toping.

A) $\frac{n-m}{x^2}$ B) $n+m$ C) $\frac{1}{x^2}$ D) $\frac{n+m}{x^2}$

1987. $\frac{a}{a+b}-\frac{c}{a+b}$ kasrni ayirmasini toping.

A) $\frac{a-c}{a+b}$ B) $\frac{a+c}{a+b}$ C) $y-x$ D) $(x+y)^2$

1988. $\frac{x}{n+b}+\frac{y}{n+b}$ kasrni yig'indisini toping.

A) $\frac{x+y}{n+b}$ B) $\frac{x-y}{n+b}$ C) $\frac{y}{n+b}$ D) $x+y$

✓ $\frac{a+2b}{3c^2}+\frac{5a-2b}{3c^2}$ kasrning yig'indisini toping.

A) $\frac{2a}{c^2}$ B) $\frac{-4a+4b}{3c^2}$ C) $\frac{4a+4b}{3c^2}$ D) $-\frac{2a}{c^2}$

Yechimi:

$\frac{a+2b}{3c^2}-\frac{5a-2b}{3c^2}=\frac{a+2b-(5a-2b)}{3c^2}=\frac{a+2b-5a+2b}{3c^2}=$

$=\frac{-4a+4b}{3c^2}$

1989. $\frac{a+b}{2c}-\frac{a-b}{2c}$ kasrning ayirmasini toping.

A) $\frac{b}{2c}$ B) $\frac{2b}{c}$ C) $-\frac{b}{c}$ D) $\frac{b}{c}$

1990. $\frac{10a-b}{a^3}-\frac{3a-b}{a^3}$ kasrning ayirmasini toping.

A) $\frac{7a}{a^2}$ B) $-\frac{7}{a^2}$ C) $\frac{7}{a^2}$ D) $\frac{a^2}{7}$

1991. $\frac{(1+b)^2}{5d}+\frac{(1-b)^2}{5d}$ kasrning yig'indisini toping.

A) $\frac{2+2b^2}{5d}$ B) $\frac{2+b^2}{d}$ C) $\frac{1+2b^2}{5d}$ D) $\frac{2+2b^2}{d}$

1992. $\frac{(2+a)^2}{a^2b}-\frac{(2-a)^2}{a^2b}$ kasrning ayirmasini toping.

A) $-\frac{8}{ab}$ B) $\frac{8a}{ab}$ C) $\frac{ab}{8}$ D) $\frac{8}{ab}$

✓ $\frac{2}{3c}+\frac{4}{c}$ kasrning yig'indisini toping.

A) $\frac{14}{3c}$ B) $-\frac{14}{3c}$ C) $\frac{14}{c}$ D) $-\frac{2a}{c^2}$

Yechimi: $\frac{2}{3c}+\frac{4}{c}=\frac{{}^{1/}2}{3c}+\frac{{}^{3/}4}{c}=\frac{2+12}{3c}=\frac{14}{3c}$

1993. $\frac{2}{7y}-\frac{3}{y}$ kasrning ayirmasini toping.

A) $\frac{19}{7y}$ B) $-\frac{18}{7y}$ C) $\frac{1}{7y}$ D) $-\frac{19}{7y}$

1994. $\frac{6}{b}-\frac{2}{5b}$ kasrning ayirmasini toping.

A) $\frac{27}{5b}$ B) $-\frac{28}{5b}$ C) $\frac{28}{5b}$ D) $\frac{28}{b}$

1995. $\frac{2}{7b}+\frac{3}{8b}$ kasrning yig'indisini toping.

A) $\frac{37}{56d}$ B) $\frac{5}{56d}$ C) $\frac{1+2b^2}{56d}$ D) $\frac{27}{56d}$

1996. $\frac{5}{4a^2}-\frac{2}{3a^2}$ kasrning ayirmasini toping.

A) $\frac{22}{12a^2}$ B) $\frac{7}{12a}$ C) $\frac{a}{8}$ D) $\frac{7}{12a^2}$

✓ $\frac{c}{15a}+\frac{d}{3}$ kasrning yig'indisini toping.

A) $\frac{c+5ad}{15a}$ B) $\frac{c-5d}{15a}$ C) $\frac{c+d}{15a}$ D) $\frac{c+5d}{a}$

Yechimi: $\frac{c}{15a}+\frac{d}{3}=\frac{{}^{1/}c}{15a}+\frac{{}^{5a/}d}{3}=\frac{c+5ad}{15a}$

1997. $\frac{a}{4}-\frac{b}{12d}$ kasrning ayirmasini toping.

A) $\frac{3a-b}{2d}$ B) $\frac{3ad+b}{12d}$ C) $\frac{3ad-b}{12d}$ D) $\frac{3ad-b}{d}$

1998. $\frac{m}{2}-\frac{1}{n}$ kasrning ayirmasini toping.

A) $\frac{mn+2}{2n}$ B) $\frac{n-2}{2n}$ C) $\frac{2-mn}{2n}$ D) $\frac{mn-2}{2n}$

1999. $\frac{3}{a}+\frac{b}{5}$ kasrning yig'indisini toping.

A) $\frac{15+ab}{5a}$ B) $\frac{5a+b}{5a}$ C) $\frac{15a+b}{5a}$ D) $\frac{8+ab}{5a}$

✓ $k+\frac{3}{p}$ kasrning yig'indisini toping.

A) $\frac{k+3p}{p}$ B) $\frac{k}{p}$ C) $\frac{kp+3}{p}$ D) $\frac{k+p}{p}$

Yechimi: $k+\frac{3}{p}=\frac{p}{p}k+\frac{1}{p}3=\frac{kp+3}{p}$

2000. $5-\frac{1}{a}$ kasrning ayirmasini toping.

A) $\frac{1}{a}$ B) $\frac{5a-1}{a}$ C) $\frac{5}{a}$ D) $\frac{a-1}{a}$

2001. $\frac{2}{b}+7$ kasrning yig'indisini toping.

A) $\frac{2-7b}{b}$ B) $\frac{7+2b}{b}$ C) $\frac{2+7b}{b}$ D) $\frac{2+b}{7b}$

2002. $\frac{2}{c}+4$ kasrning yig'indisini toping.

A) $\frac{2+4c}{c}$ B) $\frac{2-4c}{c}$ C) $\frac{4-2c}{c}$ D) $\frac{2-c}{c}$

2003. $d-\frac{c}{d}+\frac{c^2}{d^2}$ kasrning yig'indisini toping.

A) $\frac{d^3-cd+c^2}{d^2}$ B) $\frac{d^2-cd+c^2}{d^2}$

C) $\frac{d^2-cd-c^3}{d^2}$ D) $\frac{d^3-cd+c^3}{d^2}$

2004. $\frac{m}{n}-k+\frac{m^2}{n^2}$ kasrning yig'indisini toping.

A) $\frac{-mn-kn^2-m^2}{n^2}$ B) $\frac{mn-kn^2-m^2}{n^2}$

C) $\frac{mn+kn^2-m^2}{n^2}$ D) $\frac{mn-kn^2+m^2}{n^2}$

2005. $\frac{2}{c}+4-\frac{3}{c^2}$ kasrning yig'indisini toping.

A) $\frac{2c^2+4c-3}{c^2}$ B) $\frac{2c+4c^2-3}{c^2}$

C) $\frac{2c-4c^2+3}{c^2}$ D) $\frac{2c+4c-3}{c^2}$

✓ $\frac{3c}{4a^3b}+\frac{5d}{6ab^3}$ kasrning yig'indisini toping.

A) $\frac{9c+10a^2d}{12a^3b^3}$ B) $\frac{9b^2c+10a^2d}{12a^3b^3}$

C) $\frac{9b^2c+5a^2d}{12a^3b^3}$ D) $\frac{9b^2c+10a^2d}{6a^3b^3}$

Yechimi: **J:B**

$\frac{3c}{4a^3b}+\frac{5d}{6ab^3}=\frac{3b^2/3c}{4a^3b}+\frac{2a^2/5d}{6ab^3}=\frac{9b^2c+10a^2d}{12a^3b^3}$

2006. $\frac{2a}{9b^4}-\frac{7c}{6a^3b}$ kasrning ayirmasini toping.

A) $\frac{4a^4-2cb^3}{18a^3b^4}$ B) $\frac{4a^4-5cb^3}{18a^3b^4}$

C) $\frac{4a-21cb^3}{18a^3b^4}$ D) $\frac{4a^4-21cb^3}{18a^3b^4}$

2007. $\frac{2}{3y^3}-\frac{1}{6x^2y}+\frac{5}{12xy^2}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{8x^2-2y^2+5xy}{12x^2y^3}$ B) $\frac{8x^2-2y^2+xy}{12x^2y^3}$

C) $\frac{8x^2-y^2+5xy}{12x^2y^3}$ D) $\frac{8x^2-2y^2+5xy}{23}$

2008. $\frac{b}{c}+\frac{b}{c^2d}+\frac{b}{cd^2}$ kasrning yig'indisini toping.

A) $\frac{b(cd+d+c)}{c^2d^2}$ B) $\frac{b(cd^2+d+c^2)}{c^2d^2}$

C) $\frac{b(cd^2+d+c)}{c^2d^2}$ D) $\frac{b(cd^2+d+c)}{c^2d^3}$

2009. $\frac{a}{b^2}+\frac{b}{c^2}+\frac{c}{a^2}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{a^3c^2+b^3a^2+c^2b^2}{a^2b^2c^2}$ B) $\frac{a^3c^2+b^3a^2+c^3b^2}{a^2b^2c^2}$

C) $\frac{a^3c^2+b^2a^2+c^3b^2}{a^2b^2c^2}$ D) $\frac{a^3c^2+b^3a^2+c^3b^2}{a^2b^2c}$

2010. $\frac{5}{7x^2y}-\frac{3}{4xy^2}+\frac{11}{14x^2y^2}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{20y-21x+2}{28x^2y^2}$ B) $\frac{20y-11x+22}{28x^2y^2}$

C) $\frac{20y-21x+22}{14x^2y^2}$ D) $\frac{20y-21x+22}{28x^2y^2}$

✓ $\frac{4y}{5(y-3)}-\frac{5y}{2(y-3)}$ kasrning yig'indisini toping.

A) $-\frac{17y}{10(y-3)}$ B) $\frac{17y}{10(y-3)}$ C) 1 D) $\frac{8y}{10(y-3)}$

Yechimi: **J:A**

$\frac{4y}{5(y-3)}-\frac{5y}{2(y-3)}=\frac{2/4y}{5(y-3)}-\frac{5/5y}{2(y-3)}=$

$=\frac{8y-25y}{10(y-3)}=-\frac{17y}{10(y-3)}$.

2011. $\frac{7x}{2(x-1)}-\frac{5x}{x-1}$ kasrning ayirmasini toping.

A) $-\frac{3x}{2(x-1)}$ B) $\frac{3x}{2(x-1)}$ C) $\frac{3x}{x-1}$ D) $\frac{9x}{2(x-1)}$

2012. $\frac{2a^2}{3(a+1)}+\frac{5a^2}{4(a+1)}$ kasrning ayirmasini toping.

A) $-\frac{6a^2}{3(a+1)}$ B) $\frac{7a^2}{3(a+1)}$

C) $\frac{23a^2}{12(a+1)}$ D) $-\frac{7a^2}{3(a+1)}$

2013. $\frac{2x}{3(a-b)}+\frac{x}{a-b}$ kasrning yig'indisini toping.

A) $-\frac{5x}{3(a-b)}$ B) $\frac{3x}{3(a-b)}$

C) $\frac{5x}{3(a-b)}$ D) $\frac{11x}{3(a-b)}$

✓ $\frac{5}{2x-2}+\frac{3}{4x-4}$ kasrning yig'indisini toping.

A) $-\frac{13}{4(x-1)}$ B) $\frac{1}{4(x-1)}$ C) $\frac{13}{4(x+1)}$ D) $\frac{13}{4(x-1)}$

Yechimi: **J:D**

$$\frac{5}{2x-2}+\frac{3}{4x-4}=\frac{{}^{2}/_{5}}{2(x-1)}+\frac{{}^{1}/_{3}}{4(x-1)}=\frac{10+3}{4(x-1)}=\frac{13}{4(x-1)}$$

2014. $\frac{3x}{4x+4y}-\frac{x}{8x+8y}$ kasrning ayirmasini toping.

A) $-\frac{5x}{8(x+y)}$ B) $\frac{7x}{8(x+y)}$ C) $\frac{15x}{8(x+y)}$ D) $\frac{5x}{8(x+y)}$

2015. $\frac{7}{5b+5}-\frac{3}{10b+10}$ kasrning ayirmasini toping.

A) $\frac{11}{10(b+1)}$ B) $\frac{11}{10(b-1)}$ C) $\frac{17}{10(b+1)}$ D) $\frac{7}{10(b+1)}$

2016. $\frac{a}{3a+3b}-\frac{2a}{6a+6b}$ kasrning ayirmasini toping.

A) $-\frac{5x}{6(a-b)}$ B) $\frac{1}{3(a-b)}$ C) 1 D) 0

✓ $\frac{y-b}{a^2-ab}-\frac{y-a}{ab-b^2}$ kasrning yig'indisini toping.

A) $-\frac{a+b-y}{ab}$ B) $\frac{a+b+y}{ab}$

C) $\frac{a+b-y}{ab}$ D) $\frac{a-b-y}{ab}$

Yechimi: **J:C**

$$\frac{y-b}{a^2-ab}-\frac{y-a}{ab-b^2}=\frac{{}^{b/}y-b}{a(a-b)}-\frac{{}^{a/}y-a}{b(a-b)}=$$

$$=\frac{by-b^2-ay+a^2}{ab(a-b)}=\frac{a^2-b^2+by-ay}{ab(a-b)}=$$

$$=\frac{(a-b)(a+b)-y(a-b)}{ab(a-b)}=$$

$$=\frac{(a-b)(a+b-y)}{ab(a-b)}=\frac{\cancel{(a-b)}(a+b-y)}{ab\cancel{(a-b)}}=$$

$$=\frac{a+b-y}{ab}$$

2017. $\frac{3b}{a^2+a}+\frac{5a}{ab+b}$ kasrning yig'indisini toping.

A) $\frac{3b^2+5a^2}{ab(a-1)}$ B) $\frac{5b^2+aa^2}{ab(a+1)}$

C) $\frac{3b^2+2a^2}{ab(a+1)}$ D) $\frac{3b^2+5a^2}{ab(a+1)}$

2018. $\frac{5b}{ax+ay}-\frac{2a}{bx+by}$ kasrning ayirmasini toping.

A) $\frac{5b^2-2a^2}{ab(x+y)}$ B) $\frac{2b^2-5a^2}{ab(x+y)}$

C) $\frac{b^2-a^2}{ab(x+y)}$ D) $\frac{5b-a^2}{ab(x+y)}$

2019. $\frac{y-b}{b^2+ba}-\frac{y-a}{ab+a^2}$ kasrning ayirmasini toping.

A) $-\frac{y(a-b)}{ab(a+b)}$ B) $\frac{y}{ab(a+b)}$

C) $\frac{a-b}{ab(a+b)}$ D) $\frac{y(a-b)}{ab(a+b)}$

✓ $\frac{a}{1-b^2}+\frac{1}{1+b}$ kasrning yig'indisini toping.

A) $-\frac{a+1-b}{1-b^2}$ B) $\frac{1-b}{1-b^2}$

C) $\frac{a-1-b}{1-b^2}$ D) $\frac{a+1-b}{1-b^2}$

Yechimi: **J:D**

$$\frac{a}{1-b^2}+\frac{1}{1+b}=\frac{{}^{1/}a}{(1-b)(1+b)}+\frac{{}^{1-b/}1}{1+b}=\frac{a+1-b}{(1-b)(1+b)}=\frac{a-b+1}{1-b^2}$$

2020. $\frac{5+p^2}{p^2-36}-\frac{p}{6+p}$ kasrning ayirmasini toping.

A) $\frac{5-6p}{p^2-36}$ B) $\frac{1+6p}{p^2-36}$ C) $\frac{5+6p}{p^2-36}$ D) $\frac{5+p}{p^2-36}$

2021. $\frac{2}{x^2-9}-\frac{1}{x+3}$ kasrning ayirmasini toping.

A) $-\frac{x-1}{x^2-9}$ B) $\frac{5-x}{x^2-9}$ C) $\frac{x}{x^2-9}$ D) $\frac{x-2}{x^2-9}$

2022. $\frac{2x}{x-4}-\frac{5x-2}{x^2-16}$ kasrning ayirmasini toping.

A) $\frac{2x^2+x+2}{x^2-16}$ B) $\frac{2x^2+2}{x^2-16}$

C) $\frac{2x^2+3x+2}{x^2-16}$ D) $\frac{2x^2+x}{x^2-16}$

✓ $\frac{2x}{x-4}+\frac{5x-2}{16-x^2}$ kasrning yig'indisini toping.

A) $-\frac{3x+2x^2+2}{x^2-16}$ B) $\frac{x+2x^2+2}{x^2-16}$

C) $\frac{3x+2x^2+2}{x^2-16}$ D) $\frac{3x+2x^2+1}{x^2-16}$

Yechimi: **J:C**

$$\frac{2x}{x-4}+\frac{5x-2}{16-x^2}=-\frac{2x}{4-x}+\frac{5x-2}{16-x^2}=$$

$$=-\frac{{}^{4+x/}2x}{4-x}+\frac{{}^{1/}5x-2}{(4-x)(4+x)}=$$

$$=\frac{-8x-2x^2+5x-2}{16-x^2}=\frac{-3x-2x^2-2}{16-x^2}=$$

$$=\frac{-(3x+2x^2+2)}{-(x^2-16)}=\frac{3x+2x^2+2}{x^2-16}$$

2023. $\frac{c^2-8}{2c+3}-\frac{16c-2c^3}{9-4c^2}$ kasrning ayirmasini toping.

A) $-\frac{24-3c^2}{4c^2-9}$ B) $\frac{24+3c^2}{4c^2-9}$ C) $\frac{24-3c^2}{4c^2-9}$ D) $\frac{3-24c^2}{4c^2-9}$

2024. $\frac{12n-5}{n^2-49}+\frac{6}{7-n}$ kasrning ayirmasini toping.

A) $-\frac{6n-47}{n^2-49}$ B) $\frac{6n-47}{n^2-49}$ C) $\frac{6n-37}{n^2-49}$ D) $\frac{6n-4}{n^2-49}$

2025. $\frac{21y^2}{1-9y^2}-\frac{y}{3y-1}$ kasrning ayirmasini toping.

A) $\frac{24y^2+y+1}{1-9y^2}$ B) $\frac{24y^2-y+1}{1-9y^2}$

C) $\frac{24y^2+y-1}{1-9y^2}$ D) $\frac{24y^2-y-1}{1-9y^2}$

✓ $\frac{3}{a+2}+\frac{2a}{(a+2)^2}$ kasrning yig'indisini toping.

A) $-\frac{5a+6}{(a+2)^2}$ B) $\frac{5a-6}{(a+2)^2}$ C) $\frac{6a+5}{(a+2)^2}$ D) $\frac{5a+6}{(a+2)^2}$

Yechimi:

$$\frac{3}{a+2}+\frac{2a}{(a+2)^2}=\frac{a+2/}{a+2}3+\frac{{}^{1/}2a}{(a+2)^2}=$$

$$=\frac{3a+6+2a}{(a+2)^2}=\frac{5a+6}{(a+2)^2}$$

2026. $\frac{a}{(3a+1)^2}-\frac{4}{3a+1}$ kasrning ayirmasini toping.

A) $-\frac{13a+4}{(3a+1)^2}$ B) $\frac{4a+13}{(3a+1)^2}$ C) $-\frac{11a+4}{(3a+1)^2}$ D) $\frac{13a-4}{(3a+1)^2}$

2027. $\frac{2y+8}{y^2-4y+4}-\frac{7}{y-2}$ kasrning ayirmasini toping.

A) $\frac{5-22y}{(y-2)^2}$ B) $\frac{22-5y}{(y-2)^2}$ C) $\frac{22+5y}{(y-2)^2}$ D) $-\frac{22-5y}{(y-2)^2}$

2028. $\frac{4}{(n-m)^2}-\frac{7}{m-n}$ kasrning ayirmasini toping.

A) $\frac{4-7m+7n}{(n-m)^2}$ B) $-\frac{4-7m+7n}{(n-m)^2}$

C) $\frac{4-7m-7n}{(n-m)^2}$ D) $\frac{4-7m+7n}{(n+m)^2}$

✓ $a+\frac{a}{a-1}$ kasrning yig'indisini toping.

A) $-\frac{a^2}{a-1}$ B) $\frac{a^2+1}{a-1}$ C) $\frac{a^2+2}{a-1}$ D) $\frac{a^2}{a-1}$

Yechimi: $a+\frac{a}{a-1}=\frac{a-1/}{a+\frac{a}{a-1}}=\frac{a^2-a+a}{a-1}=\frac{a^2}{a-1}$

2029. $b-\frac{b}{b-2}$ kasrning ayirmasini toping.

A) $-\frac{b^2-3b}{b-2}$ B) $\frac{b^2}{b-2}$ C) $\frac{b^2-3b}{b-2}$ D) $\frac{b^2+3b}{b-2}$

2030. $c+1-\frac{c^2}{c-1}$ kasrning ayirmasini toping.

A) $\frac{1}{c^2-1}$ B) $-\frac{1}{c-1}$ C) $\frac{c+2}{c-1}$ D) $\frac{2c^2-1}{c^2-1}$

2031. $\frac{a^2}{a+1}-a+1$ kasrning ayirmasini toping.

A) $\frac{1}{a+1}$ B) $-\frac{1}{a+1}$ C) $\frac{1}{a-1}$ D) $\frac{2a^2-1}{a+1}$

2032. $\frac{(2x-y)^2}{6x}-\frac{(2x+2y)^2}{9y}+1$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{3y^3-8x^3-4x^2y-2xy^2+18xy}{18xy}$

B) $\frac{3y^3-8x^3-x^2y-20xy^2+18xy}{18xy}$

C) $\frac{3y^3-8x^3-4x^2y-20xy^2+xy}{18xy}$

D) $\frac{3y^3-8x^3-4x^2y-20xy^2+18xy}{18xy}$

2033. $2x-\frac{2(x+2y)}{5}+\frac{3(x-y)}{2}-3y$ kasrningyig'indisini (ayirmasini) toping.

A) $\frac{53x-31y}{10}$ B) $\frac{31x-35y}{10}$

C) $\frac{31x-53y}{10}$ D) $\frac{31x+53y}{10}$

2034. $\frac{2x^2-m^2}{2mx}+1-\frac{2x-m}{x}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{2x^2-mx+m^2}{2mx}$ B) $\frac{2x^2-2mx+m^2}{2x}$

C) $\frac{2x^2-2mx+m^2}{2mx}$ D) $\frac{2x^2-2mx-m^2}{2mx}$

2035. $1+a-\frac{a-1}{a}+\frac{a^2-1}{2a}-\frac{3a}{2}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{1}{a}$ B) $\frac{1}{2a}$ C) $\frac{3}{2a}$ D) $\frac{5}{2a}$

2036. $\frac{(x+y)^2}{6}+\frac{(x-y)^2}{12}-\frac{x^2-y^2}{4}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{3y^2+xy}{6}$ B) $\frac{3y^2+y}{6}$ C) $\frac{y^2+3xy}{6}$ D) $\frac{3y^2+x}{6}$

✓ $\frac{3}{a+3}+\frac{2}{3-a}-\frac{6}{a^2-9}$ kasrning yig'indisini toping.

A) $-\frac{a^2}{a-3}$ B) $\frac{a^2+1}{a-1}$ C) $\frac{a-21}{a^2-9}$ D) $\frac{a-1}{a^2-9}$

Yechimi: **J:C**

$$\frac{3}{a-3}+\frac{2}{3-a}-\frac{6}{a^2-9}=\frac{a-3/3}{a+3}-\frac{a+3/2}{a-3}-\frac{1/6}{(a-3)(a+3)}=$$

$$=\frac{3(a-3)-2(a+3)-6}{(a-3)(a+3)}=\frac{3a-9-2a-6-6}{(a-3)(a+3)}=\frac{a-21}{(a-3)(a+3)}$$

2037. $\frac{7}{a+b}+\frac{8}{a-b}-\frac{16b}{a^2-b^2}$ kasrning yig'indisini (ayirmasini) toping.

A) $-\frac{15}{a+b}$ B) $\frac{a+5}{a+b}$ C) $\frac{15a-15b}{a+b}$ D) $\frac{15}{a+b}$

2038. $\frac{6x}{x^2-y^2}-\frac{3}{x-y}-\frac{4}{x+y}$ kasrning ayirmasini toping.

A) $\frac{1}{x+y}$ B) $\frac{3x-3y}{x+y}$ C) $-\frac{1}{x+y}$ D) $\frac{31x+53y}{x-y}$

2039. $\frac{3}{4a^2-9}-\frac{8}{2a+3}-\frac{7}{3-2a}$ kasrning ayirmasini toping.

A) $\frac{2a+48}{4a^2-9}$ B) $-\frac{-2a+48}{4a^2-9}$ C) $\frac{-2a+48}{4a^2-9}$ D) $\frac{24-a}{4a^2-9}$

✓ $\frac{6a}{9a^2-1}+\frac{3a+1}{3-9a}+\frac{3a-1}{6a+2}$ kasrning yig'indisini toping.

A) $\frac{3a+1}{6(3a-1)}$ B) $\frac{2a+1}{6(3a-1)}$ C) $\frac{a-21}{a^2-9}$ D) $\frac{a-1}{a^2-9}$

Yechimi: **J:A**

$$\frac{6a}{9a^2-1}+\frac{3a+1}{3-9a}+\frac{3a-1}{6a+2}=$$

$$=\frac{6a}{9a^2-1}+\frac{3a+1}{3(1-3a)}+\frac{3a-1}{2(3a+1)}=$$

$$=\frac{6/6a}{9a^2-1}-\frac{2(3a+1)/3a+1}{3(3a-1)}+\frac{3(3a-1)/3a-1}{2(3a+1)}=$$

$$=\frac{36a-2(3a+1)^2+3(3a-1)^2}{6(9a^2-1)}=$$

$$=\frac{36a-2(9a^2+6a+1)+3(9a^2-6a+1)}{6(9a^2-1)}=$$

$$=\frac{36a-18a^2-12a-2+27a^2-18a+3}{6(9a^2-1)}=$$

$$=\frac{9a^2+6a+1}{6(9a^2-1)}=\frac{(3a+1)^2}{6(3a+1)(3a-1)}=\frac{(3a+1)}{6(3a-1)}$$

2040. $\frac{a+b}{a}-\frac{a}{a-b}-\frac{b}{a^2-ab}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{-b^2-b}{a(a-b)}$ B) $\frac{b^2-b}{a(a-b)}$ C) $\frac{15a-15b}{a-b}$ D) $\frac{15}{a-b}$

2041. $\frac{7}{m}-\frac{4}{m-2n}-\frac{m-n}{4n^2-m^2}$ kasrning yig'indisini (ayirmasini) toping.

A) $\frac{-4m^2+9mn+27n^2}{m(4n^2-m^2)}$ B) $\frac{-4m^2+9mn+28n^2}{m(4n^2-m^2)}$

C) $\frac{4m^2+9mn+28n^2}{m(4n^2-m^2)}$ D) $\frac{-4m^2-9mn+28n^2}{m(4n^2-m^2)}$

2042. $\frac{5b-1}{3b^2-3}+\frac{b+2}{2b+2}-\frac{b+1}{b-1}$ kasrning yig'indisini (ayirmasini) toping.

A) $-\frac{3b^2+b-14}{6(b^2-1)}$ B) $\frac{3b^2+b+14}{6(b^2-1)}$

C) $\frac{3b^2+b-14}{6(b^2-1)}$ D) $\frac{-3b^2+b-14}{6(b^2-1)}$

2043. $x-\frac{xy}{x+y}-\frac{x^3}{x^2-y^2}$ ni soddalashtiring.

A) $-\frac{x^2y}{x^2-y^2}$ B) $\frac{x^2y}{x^2-y^2}$ C) $\frac{x^2}{x^2-y^2}$ D) $\frac{x^2y}{x-y}$

2044. $a-2+\frac{4a}{2+a}-\frac{a^3+b}{a^2+2a}$ ni soddalashtiring.

A) $\frac{4a^2-b}{a(a+2)}$ B) $\frac{4a-b}{a(a+2)}$

C) $\frac{4a^2-4a}{a(a+2)}$ D) $\frac{4a^2-4a-b}{a(a+2)}$

✓ $a=2$ bo'lsa, $\frac{a+1}{a^3-1}-\frac{1}{a^2+a+1}$ ning son qiymatini toping.

A) $\frac{4}{7}$ B) $-\frac{2}{7}$ C) $\frac{1}{7}$ D) $\frac{2}{7}$

Yechimi: **J:D**

$$\frac{1/a+1}{a^3-1}-\frac{a-1/1}{a^2+a+1}=\frac{a+1-a+1}{(a-1)(a^2+a+1)}=\frac{2}{a^3-1}$$

$(a-1)(a^2+a+1)$

$$a=2\Rightarrow\ \frac{2}{a^3-1}=\frac{2}{2^3-1}=\frac{2}{7}$$

2045. $a=2^{-1}$ bo'lsa, $\frac{a^2+4}{a^3+8}-\frac{1}{a+2}$ ning son qiymatini toping.

A) $\frac{1}{8}$ B) $\frac{8}{65}$ C) $\frac{65}{8}$ D) $8\frac{1}{8}$

2046. $a=1, b=\frac{1}{3}$ bo'lsa, $\frac{a+b}{a^2-ab+b^2}-\frac{1}{a+b}$ ning son qiymatini toping.

A) $\frac{1}{27}$ B) $1\frac{1}{27}$ C) $\frac{27}{28}$ D) $\frac{28}{27}$

2047. $m=2018^{2019}$ bo'lsa, $\frac{m^2+3m+9}{m^3-27}-\frac{1}{m-3}$ ning son qiymatini toping.

A) 0 B) 1 C) $\frac{1}{201812358^{21321}}$ D) -1

✓ $\frac{8}{3x}\cdot\frac{x^3}{4y^2}$ kasrni ko'paytiring.

A) $-\frac{2x^2}{3y^2}$ B) $\frac{x^2}{3y^2}$ C) $\frac{2x^2}{3y^2}$ D) $\frac{x^2}{y^2}$

Yechimi: **J:C**

$$\frac{8}{3x}\cdot\frac{x^3}{4y^2}=\frac{\overset{2}{\cancel{8}}}{3\cancel{x}}\cdot\frac{x\cancel{x^2}}{\cancel{4}y^2}=\frac{2x^2}{3y^2}$$

Izoh: Avval sonlarni keyin harflarni qisqartiramiz.

2048. $\frac{x}{y}\cdot\frac{y}{x}$ kasrni ko'paytiring.

A) $\frac{y}{x}$ B) $\frac{x}{y}$ C) 1 D) 0

2049. $\frac{2a}{5c}\cdot\frac{a}{3c}$ kasrni ko'paytiring.

A) $\frac{2a^2}{15c^2}$ B) $\frac{2a^2}{15c}$ C) $\frac{2a^2}{c^2}$ D) $\frac{a^2}{15c^2}$

2050. $\frac{5b}{m}\cdot\frac{m^2}{10b}$ kasrni ko'paytiring.

A) $\frac{5m}{2}$ B) $-\frac{m}{2}$ C) $\frac{m}{10}$ D) $\frac{m}{2}$

2051. $\frac{4c}{b}\cdot\frac{2n}{5p}$ kasrni ko'paytiring.

A) $\frac{8n}{5pb}$ B) $\frac{8nc}{pb}$ C) $\frac{8nc}{5pb}$ D) $\frac{8nc}{pb}$

2052. $\frac{m^2n^2}{k}\cdot\frac{k^3}{m^3n^3}$ kasrni ko'paytiring.

A) $\frac{k^2}{mn}$ B) $\frac{k^2}{m}$ C) $\frac{k}{mn}$ D) $\frac{k^2}{m}$

2053. $\frac{6a}{5b}\cdot\frac{15c}{2d}$ kasrni ko'paytiring.

A) $\frac{9c}{bd}$ B) $\frac{9a}{bd}$ C) $\frac{9}{bd}$ D) $\frac{9ca}{bd}$

2054. $\frac{4m}{9n}\cdot\frac{27k}{16d}$ kasrni ko'paytiring.

A) $\frac{mk}{4nd}$ B) $\frac{3mk}{4nd}$ C) $\frac{3}{4nd}$ D) $\frac{3k}{4nd}$

2055. $\frac{2a}{3b}\cdot 6c$ kasrni ko'paytiring.

A) $\frac{4ac}{b}$ B) $\frac{4a}{b}$ C) $\frac{4}{b}$ D) $\frac{4ac}{3b}$

2056. $14a^2\cdot\frac{b^2}{7c^3}$ kasrni ko'paytiring.

A) $\frac{2a^2}{c^3}$ B) $\frac{2ab^2}{c^3}$ C) $\frac{2a^2b^2}{c^3}$ D) $\frac{a^2b^2}{2c^3}$

2057. $\frac{m^3n^2}{k}\cdot\frac{k^3}{m^2n^4}$ kasrni ko'paytiring.

A) $\frac{n^2}{mk^2}$ B) $\frac{1}{n^2}$ C) $\frac{k^2}{mn^2}$ D) $\frac{mk^2}{n^2}$

2058. $\frac{3x^2y}{4a^3b}\cdot 4a^2b$ kasrni ko'paytiring.

A) $3x^2y$ B) $\frac{3x^2y}{a}$ C) $\frac{3x^2}{a}$ D) $\frac{3x^2y}{a^2}$

2059. $\frac{5a^2b}{7xy}\cdot 14xy^2$ kasrni ko'paytiring.

A) $\frac{5a^2b}{xy}$ B) $5a^2b$ C) $10a^2b$ D) $\frac{10a^2b}{y}$

✓ $\left(\frac{2}{3x}\right)^3\cdot\frac{x^3}{4y^2}$ kasrni ko'paytiring.

A) $\frac{2x^2}{3y^2}$ B) $\frac{2}{27y^2}$ C) $\frac{2x^2}{y^2}$ D) $\frac{x^2}{y^2}$

Yechimi: $\left(\frac{2}{3x}\right)^3\cdot\frac{x^3}{4y^2}=\frac{2^3}{3^3x^3}\cdot\frac{x^3}{4y^2}=\frac{\cancel{x^3}}{3^3\cancel{x^3}}\cdot\frac{\cancel{x^3}}{\cancel{4}y^2}=\frac{2}{27y^2}$

2060. $\left(\frac{5a}{7b}\right)^2\cdot\frac{14b^2}{25a^3}$ kasrni ko'paytiring.

A) $\frac{2}{7}$ B) $\frac{2}{7a}$ C) $\frac{2b}{7a}$ D) $\frac{4}{7a}$

2061. $\left(\frac{3a^2}{2b}\right)^3\cdot\frac{16b^3}{21a^4}$ kasrni ko'paytiring.

A) $\frac{18a^2}{7}$ B) $\frac{18a}{7}$ C) $\frac{8a^2}{7}$ D) $\frac{9a^2}{7}$

2062. $\frac{c+d}{c}\cdot\frac{d-c}{c^2+d^2}$ amallarni bajaring.

A) $\frac{d^2-c^2}{c\left(d^2+c^2\right)}$ B) $\frac{d^2-c^2}{c}$

C) $\frac{d^2-c}{c\left(d^2+c^2\right)}$ D) $\frac{d^2-c^2}{d^2+c^2}$

✓ $\frac{7b^4}{9c^5y}:\frac{35b^4c^2}{18c^4y^2}$ kasrni bo'ling.

A) $\frac{2y}{c^3}$ B) $\frac{y}{5c^3}$ C) $\frac{2y}{c^2}$ D) $\frac{2y}{5c^3}$

Yechimi: **J:D**

$$\frac{7b^4}{9c^5y}:\frac{35b^4c^2}{18c^4y^2}=\frac{7b^4}{9c^5y}\cdot\frac{18c^4y^2}{35b^4c^2}=\frac{\cancel{7}\cancel{b^4}}{\cancel{9}\cancel{c^5}y}\cdot\frac{\cancel{18}^{2}\cancel{c^4}\cancel{y^2}}{\cancel{35}\cancel{b^4}\cancel{c^2}}=\frac{2y}{5c^3}$$

Izoh: o'ng tomoninni aylantirib, ko'paytrish qo'yib olamiz. Avval sonlarni keyin harflarni qisqartiramiz.

2063. $\frac{16x^2y}{7z}:\frac{20xy^3}{21z^2}$ kasrni bo'ling.

A) $\frac{6xz}{5y^2}$ B) $\frac{12xz}{5y^2}$ C) $\frac{12z}{5y^2}$ D) $\frac{12x}{5y^2}$

2064. $\frac{46d^3c}{15a}:\frac{23dc^2}{5a^3}$ kasrni bo'ling.

A) $\frac{2d^2}{3c}$ B) $\frac{2d^2a^2}{3c}$ C) $\frac{2a^2}{3c}$ D) $\frac{2d^2a^2}{3}$

2065. $\frac{a}{b}:c$ kasrni bo'ling.

A) $\frac{1}{bc}$ B) $\frac{a}{bc}$ C) $\frac{1}{abc}$ D) $\frac{ac}{b}$

2066. $a:\frac{b}{c}$ kasrni bo'ling.

A) $\frac{ac}{b}$ B) $\frac{a}{bc}$ C) ac D $\frac{b}{ac}$

2067. $\frac{18m^3n^3}{7k}:\left(9n^2\right)$ kasrni bo'ling.

A) $\frac{2m^3n^3}{7k}$ B) $\frac{2n^3}{7k}$ C) $\frac{2mn^3}{8k}$ D) $\frac{2m^3n}{7k}$

2068. $24k^2:\frac{12m^4k^2}{11p^3n}$ kasrni bo'ling.

A) $\frac{11p^3n}{m^4}$ B) $\frac{22p^3n}{m^4}$ C) $\frac{22p^2n}{m^4}$ D) $\frac{44p^3n}{m^4}$

✓ $\frac{a-b}{2b}:\frac{a-b}{6b^2}$ kasrni bo'ling.

A) $\frac{2}{b^3}$ B) $\frac{1}{3b}$ C) $3b$ D) $\frac{2}{3b}$

Yechimi:

$$\frac{a-b}{2b}:\frac{a-b}{6b^2}=\frac{\cancel{a-b}}{2b}\cdot\frac{6b^2}{\cancel{a-b}}=3b$$

Izoh: o'ng tomoninni aylantirib, ko'paytrish qo'yib olamiz. Avval sonlarni keyin harflarni qisqartiramiz.

2069. $\frac{7-x}{a+b}\cdot\frac{a-b}{7-x}$ kasrni ko'paytiring.

A) $\frac{a-b}{a+b}$ B) $\frac{a+b}{a-b}$ C) $\frac{a}{a+b}$ D) $\frac{1}{a+b}$

2070. $\frac{x-y}{2a}\cdot\frac{4b}{x-y}$ kasrni ko'paytiring.

A) $\frac{2b}{a}$ B) $\frac{2a}{b}$ C) $\frac{2}{a}$ D) $\frac{b}{a}$

2071. $\frac{c+d}{c-d}:\frac{c}{c-d}$ kasrni bo'ling.

A) $\frac{c+d}{c}$ B) $\frac{1}{c+d}$ C) $c+d$ D) $\frac{c}{c+d}$

2072. $\frac{a-b}{2b}:\frac{a-b}{6b^2}$ kasrni bo'ling.

A) $3b$ B) $\frac{1}{3b}$ C) $6b$ D) $\frac{1}{a+b}$

2073. $\frac{a^2-ab}{b}\cdot\frac{b}{a}$ kasrni ko'paytiring.

A) $a-b$ B) $\frac{a-b}{b}$ C) $\frac{a-b}{a}$ D) $\frac{a-b}{ab}$

2074. $\frac{ab+b^2}{9}:\frac{b^2}{3a}$ kasrni bo'ling.

A) $\frac{a(a+b)}{3b}$ B) $\frac{b(a+b)}{3a}$ C) $\frac{a+b}{3b}$ D) $\frac{a+b}{3a}$

✓ $\frac{5m}{m^2-n^2}:\frac{15m^3}{m-n}$ kasrni bo'ling.

A) $\frac{1}{3m^2(m+n)}$ B) $\frac{1}{m^2}$ C) $\frac{m+n}{m^2}$ D) $\frac{1}{m+n}$

Yechimi:

$$\frac{5m}{m^2-n^2}:\frac{15m^3}{m-n}=\frac{5m}{m^2-n^2}:\frac{m-n}{15m^3}=\frac{\cancel{5}m}{\cancel{(m-n)}(m+n)}\cdot\frac{\cancel{m-n}}{\cancel{15}m^3}=$$

$$=\frac{1}{3m^2(m+n)}$$

Izoh: o'ng tomoninni aylantirib, ko'paytrish qo'yib olamiz. Avval sonlarni keyin harflarni qisqartiramiz.

2075. $\frac{a+1}{b}\cdot\frac{4b^2}{a^2-1}$ kasrni ko'paytiring.

A) $\frac{2b}{a-1}$ B) $\frac{b}{a-1}$ C) $\frac{4b}{a-1}$ D) $\frac{4}{a-1}$

2076. $\frac{1-a}{3b^2}\cdot\frac{b^3}{1-a^2}$ kasrni ko'paytiring.

A) $\frac{1}{3(1+a)}$ B) $\frac{b}{3(1+a)}$

C) $-\frac{b}{3(1+a)}$ D) $\frac{3(1+a)}{b}$

2077. $\frac{a^2-b^2}{9b^2}:\frac{a+b}{3b}$ kasrni bo'ling.

A) $\frac{a-b}{3b}$ B) $\frac{a-b}{b}$ C) $\frac{a-b}{3}$ D) $\frac{3b}{a-b}$

2078. $\frac{3(x+y)}{4y^2(x^2+y^2)}\cdot\frac{x^2+y^2}{x^2-y^2}$ kasrni ko'paytiring.

A) $\frac{3}{x-y}$ B) $\frac{3}{4y(x-y)}$

C) $\frac{4y^2(x-y)}{3}$ D) $\frac{3}{4y^2(x-y)}$

2079. $\frac{5(a-b)}{3(a^2+b^2)}:\frac{(a-b)^2}{a^2+b^2}$ kasrni bo'ling.

A) $\frac{5}{3(a-b)}$ B) $\frac{3}{5(a-b)}$ C) $\frac{5}{3(a+b)}$ D) $\frac{5(a-b)}{3}$

2080. $\frac{a-5}{a^2+6a+9}\cdot\frac{(a+3)^2}{a^2-25}$ amallarni bajaring.

A) $-\frac{1}{a+5}$ B) $\frac{1}{a-5}$ C) $\frac{1}{2a+5}$ D) $\frac{1}{a+5}$

2081. $\frac{b^2 8b+16}{b+3}:\frac{(b-4)^2}{b^2-9}$ amallarni bajaring.

A) $b-3$ B) $\frac{1}{b-3}$ C) $b+3$ D) $b-2$

2082. $\frac{a^2-49}{a^2+2ab+b^2}\cdot\frac{a+b}{a-7}$ amallarni bajaring.

A) $\frac{a-7}{a+b}$ B) $\frac{a+7}{a-b}$ C) $\frac{a+7}{a+b}$ D) $-\frac{a+7}{a+b}$

2083. $\frac{a^2 2a+1}{2a+1}:\frac{a-1}{4a^2-1}$ amallarni bajaring.

A) $(a-1)(2a+1)$ B) $(a-1)(2a-1)$

C) $-(a-1)(2a-1)$ D) $(a+1)(2a-1)$

✓ $\frac{a-b}{a+b}\left(\frac{a}{5}+\frac{b}{5}\right)$ kasrni bo'ling.

A) $\frac{a-b}{5}$ B) $\frac{1}{a-b}$ C) $a-b$ D) $\frac{5}{a-b}$

Yechimi:

$\frac{a-b}{a+b}\left(\frac{a}{5}+\frac{b}{5}\right)=\frac{a-b}{a+b}\cdot\frac{a+b}{5}=\frac{a-b}{\cancel{a+b}}\cdot\frac{\cancel{a+b}}{5}=\frac{a-b}{5}$

Izoh: avval qavsni ichini keyin ko'paytiramiz.

2084. $\left(\frac{a}{2}-\frac{a}{3}\right)\cdot\frac{1}{a^2}$ amallarni bajaring.

A) $\frac{1}{6b}$ B) $6a$ C) $\frac{a}{6}$ D) $\frac{1}{6}$

2085. $\frac{a^2}{3}\cdot\left(\frac{2}{a}+\frac{2}{a^2}\right)$ amallarni bajaring.

A) $-\frac{2a+2}{3}$ B) $\frac{a+2}{3a^2}$ C) $\frac{3a^2}{2a+2}$ D) $\frac{2a+2}{3}$

2086. $\frac{ab}{a-b}\left(\frac{1}{b}-\frac{1}{a}\right)$ amallarni bajaring.

A) $\frac{1}{ab}$ B) -1 C) $\frac{a-b}{a}$ D) 1

2087. $\frac{ab}{a-b}\left(\frac{1}{a}-\frac{1}{b}\right)$ amallarni bajaring.

A) $\frac{1}{ab}$ B) -1 C) $\frac{a-b}{a}$ D) 1

✓ $1:\left(1+a^{-1}\right)$ kasrni bo'ling.

A) $\frac{5}{a-b}$ B) $\frac{a-b}{5}$ C) $a-b$ D) $\frac{a}{a+b}$

Yechimi:

$1:\left(1+a^{-1}\right)=1:\left(1+\frac{1}{a}\right)=1:\frac{a+1}{a}=1\cdot\frac{a}{a+1}=\frac{a}{a+1}$

2088. $b:\left(b+b^{-1}\right)$ amallarni bajaring.

A) $\frac{b^2}{b^2+1}$ B) $\frac{b}{b^2+1}$ C) $\frac{b+1}{b^2}$ D) $\frac{4b}{1-b^2}$

2089. $\left(1+a^{-1}\right):\left(1-a^{-1}\right)$ amallarni bajaring.

A) $\frac{1}{a+1}$ B) $\frac{1}{a+1}$ C) $\frac{a-1}{a+1}$ D) $\frac{a+1}{a-1}$

2090. $\left(\frac{b}{a}+\frac{a}{b}-2\right):\left(b^{-1}-a^{-1}\right)$ amallarni bajaring.

A) $\frac{1}{a+b}$ B) $\frac{1}{a-b}$ C) $\frac{1}{2(a+b)}$ D) $a-b$

2091. $\left(\frac{m}{n}+\frac{n}{m}+2\right)\left(1+\frac{m-n}{m+n}\right)$ amallarni bajaring.

A) $\frac{2m^2+4n}{n}$ B) $\frac{2n^2+4nm}{n(m-n)}$

C) $\frac{2m^2+2nm^2}{n(m+n)}$ D) $\frac{2(m+n)}{n}$

2092. $\left(1+\frac{a+b}{a-b}\right)\left(2-\frac{2a}{a+b}\right)$ amallarni bajaring.

A) $\frac{4ab}{a^2-b^2}$ B) $\frac{4}{a^2-b^2}$ C) $\frac{4ab}{a-b}$ D) $\frac{4b}{a^2-b^2}$

2093. $\left(\frac{6}{a-b}-\frac{5}{a+b}\right)\cdot\frac{a-b}{a+11b}$ amallarni bajaring.

A) $\frac{1}{a-b}$ B) $a+b$ C) $\frac{1}{a^2-b^2}$ D) $\frac{1}{a+b}$

2094. $\left(\frac{3}{c}+\frac{3}{c+d}\right)\cdot\frac{c}{18(2c+d)}$ amallarni bajaring.

A) $\frac{1}{6(c-d)}$ B) $6(c+d)$ C) $\frac{1}{c+d}$ D) $\frac{1}{6(c+d)}$

2095. $\frac{ab-b^2}{a^2+b^2}\left(\frac{a}{a+b}+\frac{b}{a-b}\right)$ amallarni bajaring.

A) $\frac{a+b}{a}$ B) $a+b$ C) $\frac{a}{a+b}$ D) $\frac{b}{a+b}$

2096. $\left(\frac{2c}{c+d}+\frac{d-c}{c+d}\right)\frac{c+d}{c^2+d^2}$ amallarni bajaring.

A) $\frac{c}{c^2+d^2}$ B) $\frac{c-d}{c^2+d^2}$ C) $\frac{d}{c^2+d^2}$ D) $\frac{c+d}{c^2+d^2}$

2097. $\frac{a^2-2a+1}{b-2}:\frac{a^2-1}{b^2-4}-\frac{2a-b}{a+1}$ amallarni bajaring.

A) $\frac{b-2}{a+1}$ B) $\frac{a-2}{a+1}$ C) $\frac{ab-2}{a+1}$ D) $\frac{ab}{a+1}$

2098. $\left(\frac{(a+1)^2}{a^2-1}-1\right)\left(1-\frac{a}{a+1}\right)$ amallarni bajaring.

A) $\frac{2}{a+1}$ B) $\frac{2}{a^2-1}$ C) $\frac{1}{a^2-1}$ D) $\frac{a}{a^2-1}$

2099. $\left(\frac{x^2}{x+y}-\frac{x^3}{x^2+2xy+y^2}\right):\left(\frac{x}{x+y}-\frac{x^2}{x^2-y^2}\right)$ amallarni bajaring.

A) $-\frac{x(x-y)}{y+x}$ B) $\frac{x}{y+x}$ C) $\frac{x(y-x)}{y-x}$ D) $\frac{x(x-y)}{y+x}$

2100. $\left(\frac{x^2}{y^2}+\frac{x}{y}\right):\left(\frac{x}{y^3}-\frac{1}{y^2}+\frac{1}{xy}\right)$ amallarni bajaring.

A) y B) xy C) $x+y$ D) $y(x+y)$

2101. $\left(1+\frac{a}{b}+\frac{a^2}{b^2}\right)\left(1-\frac{a}{b}\right)\cdot\frac{b^3}{a^3-b^3}$ amallarni bajaring.

A) 1 B) $a-b$ C) -1 D) ab

2102. $\left(\frac{a^2+b^2}{a}+b\right):\left(\left(\frac{1}{a^2}+\frac{1}{b^2}\right)\left(\frac{a^3-b^3}{a^2+b^2}\right)\right)$ amallarni bajaring.

A) $\frac{a-b^2}{a-b}$ B) $\frac{a^2}{a-b}$ C) $\frac{ab^2}{a-b}$ D) $\frac{b^2}{a-b}$

✓ $\frac{3(x-11)}{4}=\frac{3(x+1)}{5}-\frac{2(2x-5)}{11}$ tenglamani yeching.

A) 19 B) 20 C) 16 D) 21

Yechimi:

$\frac{3(x-11)}{4}=\frac{3(x+1)}{5}-\frac{2(2x-5)}{11}$ $(\cdot 220)$

$\frac{^{55/}3(x-11)}{4}=\frac{^{44/}3(x+1)}{5}-\frac{^{20/}2(2x-5)}{11}$

$165(x-11)=132(x+1)-40(2x-5)$

$165x-1815=132x+132-80x+200$

$165x-132x+80x=132+200+1815$

$113x=2147$

$x=2147:113$

$x=19$

2103. $\frac{2(5x+2)}{9}-1=\frac{4(33+2x)}{5}-\frac{5(1-11x)}{9}$ tenglamani yeching.

A) 4 B) 5 C) -4 D) 8

2104. $\frac{8(x+10)}{15}-24\frac{1}{2}=\frac{7x}{10}-\frac{2(11x-5)}{5}$ tenglamani yeching.

A) 4 B) 3 C) 10 D) 5

2105. $\frac{2(x-4)}{3}+\frac{3x+13}{3}=\frac{3(2x-3)}{5}-7$ tenglamani yeching.

A) $-22\frac{3}{7}$ B) $-12\frac{3}{7}$ C) $-32\frac{3}{7}$ D) $22\frac{3}{7}$

✓ $\frac{53^2-27^2}{79^2-51^2}$ ni hisoblang.

A) $\frac{5}{7}$ B) $\frac{4}{7}$ C) $\frac{8}{91}$ D) $-\frac{5}{7}$

Yechimi:

$a^2-b^2=$
$=(a-b)(a+b)$

$\frac{53^2-27^2}{79^2-51^2}=\frac{(53-27)(53+27)}{(79-51)(79+51)}=$

$=\frac{26\cdot 80}{28\cdot 130}=\frac{^{2/}26\cdot 8}{_{7}28\cdot 13}=\frac{4}{7}$

Izoh: avval formulaga ko'ra yoyamiz va sonlarini hisoblaymiz.

2106. $\frac{38^2-17^2}{47^2-19^2}$ ni hisoblang.

A) $\frac{5}{8}$ B) $\frac{8}{5}$ C) 5 D) 8

2107. $\frac{53^2-32^2}{61^2-44^2}$ ni hisoblang.

A) -1 B) 10 C) 1785 D) 1

2108. $\frac{49^2-2\cdot 49\cdot 29+29^2}{49^2-19^2}$ ni hisoblang.

A) $\frac{11}{39}$ B) 39 C) $\frac{51}{10}$ D) $\frac{10}{51}$

2109. $\frac{47^2-3^2}{27^2+2\cdot 27\cdot 13+13^2}$ ni hisoblang.

A) 0,375 B) 50 C) 0,25 D) 1,375

2110. $\frac{258^3-147^3}{258^2+258\cdot 147+147^2}$ ni hisoblang.

A) 111 B) $\frac{1}{111}$ C) 121 D) 131

2111. $\frac{17{,}98^2-17{,}98\cdot 32{,}02+32{,}02^2}{17{,}98^3+32{,}02^3}$ ni hisoblang.

A) 0,2 B) 0,02 C) 50 D) 2

✓ $(3x^2-1)^{20}(4x+1)^{15}-x^{20}+15$ ko'phadning ozod hadini toping.

A) 13 B) 17 C) 16 D) 14

Yechimi: $(3x^2-1)^{20}(4x+1)^{15}-x^{20}+15$ $x=0$ *ni qo'yamiz:*

$(3\cdot 0^2-1)^{20}(4\cdot 0+1)^{15}-0^{20}+15=1\cdot 1-0+15=16$

Izoh: Berilgan ifodagi harfning o'rniga "0" qo'yib hisoblaymiz.

2112. $(3x-4)^2(13x-1)^{16}+x^{17}-15$ ko'phadning ozod hadini toping?

A) 16 B) 12 C) 1 D) 15

2113. $(2x+1)^{15}(3x^2+2)^4+(x-2)^2+17$ ko'phadning ozod hadini toping?

A) 47 B) 27 C) 16 D) 37

2114. $(6x+1)^{222}(5x+3)^3+(x-1)^{20}+20$ ko'phadning ozod hadini toping?

A) 48 B) 58 C) 21 D) 27

✓ $7x^3+2x^2+ax+2$ ko'phadning koeffitsiyentlarining yig'indisi 5 ga teng a ni toping.

A) 6 B) –6 C) 1 D) 4

Yechimi:

$7x^3+2x^2+ax+2$

$x=1$ *ni qo'yib* "5" *ga tenglaymiz.*

$7\cdot1^3+2\cdot1^2+a\cdot1+2=5$

$7+2+a+2=5$

$a=5-7-2-2$

$a=-6$

Izoh: Berilgan ifodagi harfning o'rniga "1" qo'yib aytilgan "5" songa tengladik.

2115. x^3+ax^2+3x+1 ning koeffitsiyentlarining yig'indisi 4 ga teng a ni toping.

A) 1 B) –2 C) –1 D) 5

2116. $12x^4+2x^3+ax^2+1$ ning koeffitsiyentlarining yig'indisi 12 ga teng a ni toping.

A) 3 B) –3 C) 4 D) –4

2117. ax^2-4x^4-8x-1 ning koeffitsiyentlarining yig'indisi –4 ga teng a ni toping.

A) –9 B) 9 C) 1 D) 5

✓ x^3+5x^2+5x+3 ni x^2+4x+1 ga bo'lgandagi qoldiqni toping.

A) 6 B) –6 C) 1 D) 2

Yechimi:

$$\begin{array}{r|l} x^3+5x^2+5x+3 & x^2+4x+1 \\ \hline -x^3+4x^2+x & x+1 \\ \hline x^2+4x+3 & \\ -x^2+4x+1 & \\ \hline 2 & \end{array}$$

qoldiq $\Rightarrow 2$

$$\begin{array}{r|l} 3x^3-4x^2+3x-1 & x^2-x \\ \hline -3x^3-3x^2 & 3x-1 \\ \hline -x^2+3x & \\ -x^2+x & \\ \hline 2x-1 & \end{array}$$

qoldiq $\Rightarrow 2x-1$

Izoh: 1–"x" berilgani sababi x^3 ni hosil qilish uchun nima berish kerak deb o'ylab berildi. qoldiq har doim ham son bo'lavermaydi.(2x-1)

2118. x^3+5x^2+5x+6 ni $x+1$ ga bo'lgandagi qoldiqni toping.

A) 5 B) $x+6$ C) $5x+4$ D) 1

2119. $x^4+5x^3+9x^2+11x+6$ ni x^2+3x+1 ga bo'lgandagi qoldiqni toping.

A) $3x+4$ B) $x+4$ C) $15x+4$ D) 4

2120. $3x^5+2x^4-10x^3+5x^2+x+10$ ni x^3-x^2-x- ga bo'lgandagi qoldiqni toping.

A) $5x^2+14x+2$ B) $14x+2$

C) $-5x^2+14x+2$ D) $11x^2+14x+18$

2121. $4x^4+5x^2+6x+11$ ni x^2+5x-4 ga bo'lgandag qoldiqni toping.

A) $679x+495$ B) $-679x+495$

C) $533x-473$ D) 4

2122. $4x^6+3x^5-15x^2+4x+5$ ni x^4-4x+2 ga bo'lgandagi qoldiqni toping.

A) $16x^3+28x^2$ B) $x+4$

C) $16x^3-11x^2-2x+5$ D) 5

✓ $\frac{12-3n}{n}$ ifoda n ning nechta natural qiymatlarida natural son bo'ladi?

A) 3 B) 7 C) 5 D) 4

Yechimi:

$$\frac{12-3n}{n}=\frac{12}{n}-\frac{3n}{n}=\frac{12}{n}-\frac{3\not{n}}{\not{n}}=\frac{12}{n}-3$$

$n=1,2,3,4,6,12$ {

$\frac{12}{n}-3=\frac{12}{1}-3=9$

$\frac{12}{n}-3=\frac{12}{2}-3=3$

$\frac{12}{n}-3=\frac{12}{3}-3=1$

$\frac{12}{n}-3=\frac{12}{4}-3=0$

$\frac{12}{n}-3=\frac{12}{6}-3=-1$

$\frac{12}{n}-3=\frac{12}{12}-3=-2$

$n=1,2,3,\not4,\not6,\not{12} \Rightarrow 3\ ta$

Izoh: $n=4,6,12$ ni olinmaganining sababi javobi natural son bo'lmadi. Sanashda ishlatiladigan sonlar natural sonlardir. $N=1,2,3,4,5,6,7,8,9,10,11\ldots$

2123. $\frac{25n-100}{n}$ ifoda n ning nechta natural qiymatlarida natural son bo'ladi?

A) 6 B) 2 C) 5 D) 7

2124. $\frac{n-120}{n}$ ifoda n ning nechta natural qiymatlarida natural son bo'ladi?

A) 0 B) 1 C) 2 D) 5

2125. $\frac{4n^2-625}{n^2}$ ifoda n ning nechta natural qiymatlarida natural son bo'ladi?

A) 4 B) 1 C) 3 D) 2

✓ $\frac{12-3n}{n}$ ifoda n ning nechta natural qiymatlarida butun son bo'ladi?

A) 3 B) 6 C) 5 D) 4

Yechimi:

$$\frac{12-3n}{n}=\frac{12}{n}-\frac{3n}{n}=\frac{12}{n}-\frac{3\not{n}}{\not{n}}=\frac{12}{n}-3$$

$$n=1,2,3,4,6,12\begin{cases}\frac{12}{n}-3=\frac{12}{1}-3=9\\ \frac{12}{n}-3=\frac{12}{2}-3=3\\ \frac{12}{n}-3=\frac{12}{3}-3=1\\ \frac{12}{n}-3=\frac{12}{4}-3=0\\ \frac{12}{n}-3=\frac{12}{6}-3=-1\\ \frac{12}{n}-3=\frac{12}{12}-3=-2\end{cases}$$

$n=1,2,3,4,6,12\Rightarrow 6\ ta$

Izoh: Butun sonlarga "–" li sonlar ham kiradi ya'ni $Z=0,\pm1,\pm2,\pm3,\pm4,\pm5....$

2126. $\frac{2n-100}{n}$ ifoda n ning nechta natural qiymatlarida butun son bo'ladi?

A) 8 B) 5 C) 9 D) 7

2127. $\frac{n-120}{n}$ ifoda n ning nechta natural qiymatlarida butun son bo'ladi?

A) 16 B) 14 C) 13 D) 15

2128. $\frac{4n^2-625}{n^2}$ ifoda n ning nechta natural qiymatlarida butun son bo'ladi?

A) 4 B) 1 C) 3 D) 2

✓ $\frac{11n-3}{n+1}$ ifoda n ning nechta butun qiymatlarida natural son bo'ladi?

A) 3 B) 7 C) 5 D) 4

Yechim i:

$$\frac{11n-3}{n+1}=?+\frac{??}{n+1}$$

$$\begin{array}{r|l}11n-3 & n+1\\ \hline -11n+11 & 11\\ \hline -14 & \end{array}\Rightarrow 11+\frac{-14}{n+1}$$

$$\frac{11n-3}{n+1}=11-\frac{14}{n+1}$$

$n=0,1,6,13,-2,-3,-8,-15$

$n=\not{0},1,6,13,-2,-3,-8,-15\Rightarrow 7\ ta$

$$11-\frac{14}{0+1}=11-14=-3$$

Izoh: Butun sonlarga "–" li sonlar ham kiradi ya'ni $Z=0,\pm1,\pm2,\pm3,\pm4,\pm5....$

2129. $\frac{4n-8}{n+1}$ ifoda n ning nechta butun qiymatlarida natural son bo'ladi?

A) 8 B) 5 C) 9 D) 7

2130. $\frac{4n-12}{2n+1}$ ifoda n ning nechta butun qiymatlarida natural son bo'ladi?

A) 2 B) 4 C) 3 D) 5

2131. $\frac{4n-24}{n-2}$ ifoda n ning nechta butun qiymatlarida natural son bo'ladi?

A) 8 B) 6 C) 7 D) 9

✓ $x^4+x^3+3x^2-4x-1$ va x^3+x^2-x-1 ni eng katta umumiy bo'luvchisini toping.

A) 5 B) $x+6$ C) $x-1$ D) 1

Yechimi:

$$\begin{array}{r|l}x^4+x^3+3x^2-4x-1 & x^3+x^2-x-1\\ \hline -x^4+x^3-x^2-x & x\\ \hline 4x^2-3x-1 & \end{array}$$

$$\begin{array}{r|l}x^3+x^2-x-1 & 4x^2-3x-1\\ \hline -x^3-\frac{3}{4}x^2-\frac{1}{4}x & \frac{1}{4}x+\frac{7}{16}\\ \hline \frac{7}{4}x^2-\frac{3}{4}x-1 & \\ -\frac{7}{4}x^2-\frac{21}{16}x-\frac{7}{16} & \\ \hline \frac{9}{16}x-\frac{9}{16} & \end{array}$$

$$\begin{array}{r|l}4x^2-3x-1 & \frac{9}{16}x-\frac{9}{16}\\ \hline -4x^2-4x & \frac{64}{9}x+\frac{16}{9}\\ \hline x-1 & \\ -x-1 & \\ \hline 0 & \end{array}$$

$$EKUB=\frac{9}{16}x-\frac{9}{16}$$

Izoh: Qoldiq no'l bo'lginga qadar davom etadi. No'ldan oldingi qoldiq EKUB bo'ladi. agar qoldiq son chiqsa **o'zaro tub(EKUB = 1)** bo'ladi.

2132. $4x^3-8x^2+3x$ va $4x^2-1$ ni eng katta umumiy bo'luvchisini toping.

A) $4x-2$ B) $x-1$ C) $2x-1$ D) $x+1$

2133. x^3-3x^2+3x-1 va x^2-x ni eng katta umumiy bo'luvchisini toping.

A) $2x-1$ B) $x-1$ C) o'zaro tub D) $x+1$

2134. $x^8+x^4-2x^2+6$ va x^4+2x^2+3 ni eng katta umumiy bo'luvchisini toping.

A) x^4-2x^2+2 B) 0 C) x^4+2x^2+3 D) 1

2135. x^4-2x^2+6 va x^2+3 ni eng katta umumiy bo'luvchisini toping.

A) x^4-2x^2+2 B) 0 C) $2x^2+3$ D) o'zaro tub

✓Quyidagi keltirilgan tengliklardan qaysi biri ayniyat.

1) $(x+a)(x-b)=x^2+(a-b)x-ab$

2) $(x-c)(x-d)=x^2-(c+d)x+cd$

3) $(x-e)(x-b)=x^2+(e-d)x-ed$

4) $5a^2-3b^2-\left(\left(a^2-2ab-b^2\right)-\left(5a^2-2ab-b^2\right)\right)=$

$=9a^2-3b^2$

A) 1; 2; 4 B) 1; 2; 3 C) 2; 3; 4 D) 1; 3; 4

Yechimi:
Ayniyat 2 ta tomoni teng ifodalardir.

$1)(x+a)(x-b)=x^2+(a-b)x-ab$

chap tomonini qavsini ochamiz.

$(x+a)(x-b)=x^2+(a-b)x-ab=$

$=x^2+ax-bx-ab=$

$=x^2+(a-b)x-ab \Rightarrow$ *ayniyat*

$2)(x-c)(x-d)=x^2-(c+d)x+cd$

chap tomonini qavsini ochamiz.

$(x-c)(x-d)=x^2-xd-cx+cd=$

$=x^2-(c+d)x+cd \Rightarrow$ *ayniyat*

$3)(x-e)(x-b)=x^2+(e-d)x-ed$

chap tomonini qavsini ochamiz.

$(x-e)(x-b)=x^2-dx-ex+ed=$

$=x^2-(d+e)x+ed \Rightarrow$ *ayniyat*

$4)5a^2-3b^2-\left(\left(a^2-2ab-b^2\right)-\left(5a^2-2ab-b^2\right)\right)=$

$=9a^2-3b^2$

chap tomonini qavsini ochamiz.

$5a^2-3b^2-\left(a^2-2ab-b^2\right)+\left(5a^2-2ab-b^2\right)=$

$=5a^2-3b^2-a^2+\cancel{2ab}+\cancel{b^2}+5a^2-\cancel{2ab}-\cancel{b^2}=$

$=9a^2-3b^2 \Rightarrow$ *ayniyat*

Javob: 1;2;4

Izoh: Ayniyatning 2 ta tomoni teng, bo'lishi lozim.

2136. Quyidagi keltirilgan tengliklardan qaysi biri ayniyat.

$1)(x+a)(x-b)=x^2-(a-b)x-ab$

$2)(x-c)(x-d)=x^2-(c+d)x+cd$

$3)(x-e)(x+d)=x^2-(e-d)x-ed$

$4)6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$

A) 1; 2; 4 B) 1; 2; 3 C) 2; 3; 4 D) 1; 3; 4

2137. Quyidagi keltirilgan tengliklardan qaysi biri ayniyat.

$1)(x-c)(x-b)=x^2-(c+b)x+cb$

$2)(x-e)(x+d)=x^2-(e-d)x-ed$

$3)12x^2+y^2-(8x^2-5y^2-(-10x^2+5x^2-6y^2)))=-x^2+12y^2$

$4)3a-(2c-(6a-(c-b)+c+(a+8b)-6c))=10a+9b-8c$

A) 1; 2; 4 B) 1; 2; 3 C) 2; 3; 4 D) 1; 3; 4

2138. Quyidagi keltirilgan tengliklardan qaysi biri ayniyat.

$1)(x-e)(x+d)=x^2-(e-d)x-ed$

$2)12x^2+y^2-(8x^2-5y^2-(-10x^2+5x^2-6y^2))=-x^2$

$3)6ab+(2a^3+b^3-(3ab^2-(a^3+2ab^2-b^3)))=3a^3-ab^2+6ab$

$4)5a^2-3b^2-((a^2-2ab-b^2)-(5a^2-2ab-b^2))=9a^2+4ab-3b^2$

A) 1; 2; 4 B) 1; 2; 3 C) 2; 3; 4 D) 1; 3; 4

2139. Quyidagi keltirilgan tengliklardan qaysi biri ayniyat.

$1)(x-c)(x-b)=x^2-(c+b)x+cd$

$2)(x-e)(x+d)=x^2-(e-d)x-ed$

$3)12x^2+y^2-(8x^2-5y^2-(-10x^2+5x^2-6y^2))=-x^2$

$4)5a^2-3b^2-((a^2-2b-b^2)-(5a^2-2ab-b^2))=9a^2-3b^2$

A) 1; 2; 4 B) 1; 2; 3 C) 2; 3; 4 D) 1; 3; 4

✓ $\frac{4^{k+1}+6\cdot4^2}{8^{k+1}+2\cdot8^k}$ ni soddalashtiring.

A) 5 B) 2^{-k} C) 2^k D) 1

Yechimi:

$\frac{4^{k+1}+6\cdot4^k}{8^{k+1}+2\cdot8^k}=\frac{4^k\cdot4+6\cdot4^k}{8^k\cdot8+2\cdot8^k}=\frac{4^k(4+6)}{8^k(8+2)}=\frac{4^k\cdot\cancel{10}}{8^k\cdot\cancel{10}}=\frac{2^{2k}}{2^{3k}}=2^{-k}$

Izoh: Darajani yoyish lozim ya'ni $4^{k+1}=4^k\cdot4$ qilib. Quyidagi vaziyat ham bor. $4^{k-1}=\frac{4^k}{4}$

2140. $\frac{\left(4^{k+1}+6\cdot4^k\right)^3}{\left(8^{k+1}+2\cdot8^k\right)^2}$ ni soddalashtiring.

A) 10 B) 2^{-2k} C) 2^{-3k} D) 100

2141. $\frac{\left(8^{k+1}+8^k\right)^2}{\left(4^k-4^{k-1}\right)^3}$ ni soddalashtiring.

A) 10 B) 2^{-2k} C) 2^{-3k} D) 192

2142. $\frac{4^{a+1}-2^{2a-1}}{2^{2a}}$ ni soddalashtiring.

A) 5,5 B) 2^{-2a} C) 2^{-a} D) 3,5

✓ $\frac{1}{2\cdot5}+\frac{1}{5\cdot8}+\frac{1}{11\cdot8}+\frac{1}{11\cdot14}+\frac{1}{14\cdot17}$ ni hisoblang.

A) 5 B) $\frac{5}{34}$ C) $\frac{15}{34}$ D) 1

Yechimi:

$\frac{1}{2\cdot5}+\frac{1}{5\cdot8}+\frac{1}{11\cdot8}+\frac{1}{11\cdot14}+\frac{1}{14\cdot17}=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\frac{1}{5}\right)+\frac{1}{3}\cdot\left(\frac{1}{5}-\frac{1}{8}\right)+\frac{1}{3}\cdot\left(\frac{1}{8}-\frac{1}{11}\right)+\frac{1}{3}\cdot\left(\frac{1}{11}-\frac{1}{14}\right)+$

$+\frac{1}{3}\cdot\left(\frac{1}{14}-\frac{1}{17}\right)=\frac{1}{3}\cdot(\frac{1}{2}-\frac{1}{5}+\frac{1}{5}-\frac{1}{8}+\frac{1}{5}-\frac{1}{8}+$

$+\frac{1}{8}-\frac{1}{11}+\frac{1}{11}-\frac{1}{14}+\frac{1}{14}-\frac{1}{17})=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\frac{\cancel{1}}{\cancel{5}}+\frac{\cancel{1}}{\cancel{5}}-\frac{\cancel{1}}{\cancel{8}}+\frac{\cancel{1}}{\cancel{8}}-\frac{\cancel{1}}{\cancel{11}}+\frac{\cancel{1}}{\cancel{11}}-\frac{\cancel{1}}{\cancel{14}}+\frac{\cancel{1}}{\cancel{14}}-\frac{\cancel{1}}{\cancel{17}}\right)=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\frac{1}{17}\right)=\frac{1}{3}\cdot\left(\frac{17-2}{34}\right)=\frac{1}{3}\cdot\frac{15}{34}=\frac{1}{\cancel{3}}\cdot\frac{\cancel{15}}{34}=\frac{5}{34}$

Izoh: Berilgan sonlar orasidagi farq nechi bo'lsa, shuni qavsdan tashqariga chiqaring.

$\frac{1}{5\cdot7}+\frac{1}{7\cdot9}+\frac{1}{9\cdot11}+\ldots+\frac{1}{71\cdot73}+\frac{1}{73\cdot75}=$

$=\frac{1}{2}\left(\frac{1}{5}-\frac{1}{7}+\frac{1}{7}-\frac{1}{9}+\frac{1}{9}-\frac{1}{11}+\ldots+\frac{1}{71}-\frac{1}{73}+\frac{1}{73}-\frac{1}{75}\right)=$

$=\frac{1}{2}\left(\frac{1}{5}-\frac{\cancel{1}}{\cancel{7}}+\frac{\cancel{1}}{\cancel{7}}-\frac{\cancel{1}}{\cancel{9}}+\frac{\cancel{1}}{\cancel{9}}-\frac{\cancel{1}}{\cancel{11}}+\ldots+\frac{\cancel{1}}{\cancel{71}}-\frac{\cancel{1}}{\cancel{73}}+\frac{\cancel{1}}{\cancel{73}}-\frac{1}{75}\right)=\frac{1}{2}\left(\frac{1}{5}-\frac{1}{75}\right)=\frac{7}{75}$

2143. $\frac{1}{3\cdot5}+\frac{1}{5\cdot7}+\frac{1}{7\cdot9}+\frac{1}{9\cdot11}+\frac{1}{11\cdot13}$ ni hisoblang.

A) $\frac{5}{33}$ B) $\frac{5}{78}$ C) $\frac{5}{34}$ D) $\frac{5}{39}$

2144. $\frac{1}{3\cdot7}+\frac{1}{7\cdot11}+\frac{1}{11\cdot15}+\frac{1}{15\cdot19}+\frac{1}{19\cdot23}$ ni hisoblang.

A) $\frac{1}{12}$ B) $\frac{5}{69}$ C) $\frac{7}{96}$ D) $\frac{7}{94}$

2145. $\frac{1}{1\cdot3}+\frac{1}{3\cdot5}+\frac{1}{5\cdot7}+...+\frac{1}{13\cdot15}$ ni hisoblang.

A) $\frac{11}{15}$ B) $\frac{7}{30}$ C) $\frac{8}{15}$ D) $\frac{7}{15}$

✓ $\frac{1}{10}+\frac{1}{40}+\frac{1}{88}+\frac{1}{154}+\frac{1}{238}$ ni hisoblang.

A) 5 B) $\frac{5}{34}$ C) $\frac{15}{34}$ D) 1

Yechimi:

$\frac{1}{10}+\frac{1}{40}+\frac{1}{88}+\frac{1}{154}+\frac{1}{238}=$

$=\frac{1}{2\cdot5}+\frac{1}{5\cdot8}+\frac{1}{8\cdot11}+\frac{1}{11\cdot14}+\frac{1}{14\cdot17}=$

$=\frac{1}{3}\left(\frac{1}{2}-\frac{1}{5}\right)+\frac{1}{3}\left(\frac{1}{5}-\frac{1}{8}\right)+\frac{1}{3}\left(\frac{1}{8}-\frac{1}{11}\right)+\frac{1}{3}\left(\frac{1}{11}-\frac{1}{14}\right)+\frac{1}{3}\left(\frac{1}{14}-\frac{1}{17}\right)=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\frac{1}{5}+\frac{1}{5}-\frac{1}{8}+\frac{1}{8}-\frac{1}{11}+\frac{1}{11}-\frac{1}{14}+\frac{1}{14}-\frac{1}{17}\right)=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\cancel{\frac{1}{5}}+\cancel{\frac{1}{5}}-\cancel{\frac{1}{8}}+\cancel{\frac{1}{8}}-\cancel{\frac{1}{11}}+\cancel{\frac{1}{11}}-\cancel{\frac{1}{14}}+\cancel{\frac{1}{14}}-\frac{1}{17}\right)=$

$=\frac{1}{3}\cdot\left(\frac{1}{2}-\frac{1}{17}\right)=\frac{1}{3}\cdot\left(\frac{17-2}{34}\right)=\frac{1}{\cancel{3}}\cdot\frac{\cancel{15}}{34}=\frac{5}{34}$

Izoh: Nechchi karra nechchi ekanini toppish lozim.

$\frac{1}{10}+\frac{1}{40}+\frac{1}{88}+\frac{1}{154}+\frac{1}{238}=\frac{1}{2\cdot5}+\frac{1}{5\cdot8}+\frac{1}{8\cdot11}+\frac{1}{11\cdot14}+\frac{1}{14\cdot17}$

2146. $\frac{1}{8}+\frac{1}{24}+\frac{1}{48}+\frac{1}{80}$ ni hisoblang.

A) 0,1 B) 0,3 C) 0,2 D) 0,4

2147. $\frac{1}{15}+\frac{1}{35}+\frac{1}{63}+\frac{1}{99}+\frac{1}{143}+\frac{1}{195}$ ni hisoblang.

A) $\frac{4}{15}$ B) $\frac{7}{15}$ C) $\frac{2}{15}$ D) $\frac{17}{45}$

2148. $\frac{1}{12}+\frac{1}{20}+\frac{1}{30}+\frac{1}{42}+...+\frac{1}{182}$ ni hisoblang.

A) $\frac{12}{35}$ B) $\frac{11}{42}$ C) $\frac{1}{4}$ D) $\frac{10}{33}$

Chiziqli Tenglamalar Sistemasi

✓ $\begin{cases}y=11-2x\\5x-4y=8\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (4;5) B) (4;4) C) (4;3) D) (3;4)

Yechimi:

$$\begin{cases}y=11-2x\\5x-4y=8\end{cases}\quad\begin{cases}5x-4y=8\\5x-4(11-2x)=8\\5x-44+8x=8\\5x+8x=8+44\\13x=52\\x=52:13\\x=4\end{cases}$$

$y=11-2x\Rightarrow x=4$ *ni qo'yamiz*

$y=11-2\cdot4=3$

javob: (4;3)

Izoh: javob yozilganda 1-"x" 2-"y" ya'ni $(x;y)$ qilib yozish lozim.

2149. $\begin{cases}x+8y=11\\y=2x-5\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (3;1) B) (−3;1) C) (1;3) D) (1;−3)

2150. $\begin{cases}x=2+y\\3x-2y=9\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (3;5) B) (5;3) C) (5;−3) D) (−5;3)

✓**2151.** $\begin{cases}5x+y=4\\x=3+2y\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (−1;1) B) (−1;−1) C) (1;−1) D) (1;1)

2152. $\begin{cases}y=2-4x\\8x=5-3y\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $\left(\frac{1}{4};1\right)$ B) $\left(1;\frac{1}{4}\right)$ C) $\left(\frac{1}{4};-1\right)$ D) $\left(\frac{1}{8};1\right)$

✓**2153.** $\begin{cases}3x-5y=8\\x=-y\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (−1;1) B) (−1;−1) C) (1;−1) D) (1;1)

2154. $\begin{cases}y=x-1\\5x+2y=16\end{cases}$ tenglamalar sistemasini yeching.

A) $\left(\frac{18}{7};\frac{7}{11}\right)$ B) $\left(\frac{7}{18};\frac{11}{7}\right)$ C) $\left(\frac{18}{7};\frac{11}{7}\right)$ D) $\left(\frac{11}{7};\frac{18}{7}\right)$

2155. $\begin{cases}x=2-y\\3x-2y-11=0\end{cases}$ tenglamalar sistemasini yeching.

A) (−1;3) B) (−3;−1) C) (3;1) D) (3;−1)

✓ $\begin{cases}y+2x=11\\5x-4y=8\end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) (4;5) B) (4;4) C) (4;3) D) (3;4)

Yechimi:

$\begin{cases} y+2x=11 \\ 5x-4y=8 \end{cases} \Leftrightarrow \begin{cases} y=11-2x \\ 5x-4y=8 \end{cases}$

$\begin{cases} y=11-2x \\ 5x-4y=8 \end{cases}$

$5x-4y=8$
$5x-4(11-2x)=8$
$5x-44+8x=8$
$5x+8x=8+44$
$13x=52$
$x=52:13$
$x=4$

$y=11-2x \Rightarrow x=4$ *ni qo'yamiz*
$y=11-2\cdot 4=3$
javob: $(4;3)$

Izoh: Berilgan ifodadan x ni (yoki y ni) yakkalab keyin o'rniga qo'yish lozim.

2156. $\begin{cases} 2x+y=12 \\ 7x-2y=31 \end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $(2;5)$ B) $(5;2)$ C) $(5;5)$ D) $(2;2)$

2157. $\begin{cases} y-2x=4 \\ 7x-y=1 \end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $(6;1)$ B) $(1;6)$ C) $(1;1)$ D) $(1;-6)$

2158. $\begin{cases} x+5y=7 \\ 3x-2y=4 \end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $(2;1)$ B) $(1;2)$ C) $(5;2)$ D) $(2;2)$

2159. $\begin{cases} x-3y=17 \\ x-2y=-13 \end{cases}$ tenglamalar sistemasidan x ni toping.

A) -30 B) 30 C) -73 D) 73

2160. $\begin{cases} x+12y=11 \\ 5x-3y=3 \end{cases}$ tenglamalar sistemasidan y ni toping.

A) $\frac{23}{21}$ B) $\frac{21}{23}$ C) $\frac{63}{52}$ D) $\frac{52}{63}$

2161. $\begin{cases} y-3x=4 \\ x+2y=23 \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $x-y=?$

A) $-8\frac{2}{7}$ B) $\frac{2}{7}$ C) $\frac{73}{7}$ D) $8\frac{2}{7}$

2162. $\begin{cases} 2x-3y=10 \\ 3x-2y=5 \end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $(4;5)$ B) $(4;4)$ C) $(-1;-4)$ D) $(3;4)$

Yechimi:

$\begin{cases} 2x-3y=10 \\ 3x-2y=5 \end{cases} \Leftrightarrow \begin{cases} 2x-3y=10 \\ 3x-2y=5 \end{cases} \Leftrightarrow$

$\Leftrightarrow \begin{cases} x=\frac{10+3y}{2} \\ 3x-2y=5 \end{cases}$

$\begin{cases} x=\frac{10+3y}{2} \\ 3x-2y=5 \end{cases}$

$3x-2y=5$
$\frac{3(10+3y)}{2}-2y=5$
$30+9y-4y=10$
$5y=-20$
$y=-4$

$x=\frac{3y+10}{2} \Rightarrow y=-4$ *ni qo'yamiz*
$x=\frac{3(-4)+10}{2}=\frac{-12+10}{2}=-1$
javob: $(-1;-4)$

Izoh: Berilgan ifodadan x ni (yoki y ni) yakkalab keyin o'rniga qo'yish lozim.

2163. $\begin{cases} 2x=y+0,5 \\ 3x-5y=13 \end{cases}$ tenglamalar sistemasini o'rniga qo'yish usuli bilan yeching.

A) $(-1,5;-3,5)$ B) $(-3,5;-1,5)$
C) $(1,5;3,5)$ D) $(-1,5;3,5)$

2164. $\begin{cases} 2u+5v=0 \\ -8u+15v=7 \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(u;v)$ juftlikdan $10v-2u=?$

A) 2 B) 4 C) 5 D) 3

2165. $\begin{cases} 5x-2y=6 \\ 7x+2y=6 \end{cases}$ tenglamalar sistemasini qo'shish usuli bilan yeching.

A) $(4;5)$ B) $(4;4)$ C) $(1;-0,5)$ D) $(3;4)$

Yechimi:

$+\begin{cases} 5x-2y=6 \\ 7x+2y=6 \end{cases}$

$12x=12$
$x=1$

$7x+2y=6$
$7\cdot 1+2y=6$
$7+2y=6$
$2y=-1$
$y=-\frac{1}{2}$
$y=-0,5$

javob: $(1;-0,5)$

Izoh: Tenglamalar Sistemani qo'shish usuliga tushishini bir xil va "–" "+" $\begin{cases} \overline{5x-2y}=6 \\ 7x+2y=6 \end{cases}$ bo'lishidan bilish lozim.

2165. $\begin{cases} 2x+11y=15 \\ 10x-11y=9 \end{cases}$ tenglamalar sistemasini qo'shish usuli bilan yeching.

A) $(1;2)$ B) $(-2;1)$ C) $(2;1)$ D) $(-2;-1)$

2166. $\begin{cases}8x-17y=4\\-8x+15y=4\end{cases}$ tenglamalar sistemasini qo'shish usuli bilan yeching.

A) $(8;4)$ B) $(-8;-4)$ C) $(-4;-8)$ D) $(-8;4)$

2167. $\begin{cases}4x-7y=30\\-4x+5y=-90\end{cases}$ tenglamalar sistemasini qo'shish usuli bilan yeching.

A) $(30;60)$ B) $(40;60)$ C) $(20;30)$ D) $(60;30)$

2168. $\begin{cases}4u+3v=14\\5u-3v=25\end{cases}$ tenglamalar sistemasini qo'shish usuli bilan yeching.

A) $u=\frac{13}{3};\ v=-\frac{10}{9}$ B) $v=\frac{13}{3};\ u=-\frac{10}{9}$

C) $u=-\frac{13}{3};\ v=-\frac{10}{9}$ D) $u=\frac{13}{3};\ v=\frac{10}{9}$

✓ $\begin{cases}y-2x=1\\y-6x=-7\end{cases}$ tenglamalar sistemasini ayrish usuli bilan yeching.

A) $(4;5)$ B) $(2;5)$ C) $(-1;-4)$ D) $(3;4)$

Yechimi:

$$-\begin{cases}y-2x=1\\y-6x=-7\end{cases}$$

$$-2x-(-6x)=1-(-7)$$
$$4x=8$$
$$x=2$$

$$y-2x=1$$
$$y-2\cdot 2=1$$
$$y-4=1$$
$$y=1+4$$
$$y=5$$

javob: $(2;5)$

Izoh: Tenglamalar sistemani ayrish usuliga tushishini bir xil $\begin{cases}\overline{y}-2x=1\\\underline{y}-6x=-7\end{cases}$ bo'lishidan bilish lozim.

2169. $\begin{cases}x-6y=17\\-5x-6y=-13\end{cases}$ tenglamalar sistemasini ayrish usuli bilan yeching.

A) $(-2;5)$ B) $(5;2)$ C) $(-5;-2)$ D) $(5;-2)$

2170. $\begin{cases}3x+2y=5\\-5x+2y=45\end{cases}$ tenglamalar sistemasini ayrish usuli bilan yeching.

A) $(-5;-10)$ B) $(5;10)$ C) $(-5;10)$ D) $(10;-5)$

2171. $\begin{cases}9x-4y=-13\\9x-2y=-20\end{cases}$ tenglamalar sistemasini x ni toping.

A) -3 B) $-3,5$ C) $3,5$ D) 3

2172. $\begin{cases}-4x+7y=12\\-4x+3y=12\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $x^2-y^2=?$.

A) 0 B) 9 C) -3 D) 6

2173. $\begin{cases}13x-8y=28\\11x-8y=24\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $x-4y=?$.

A) 3 B) 2 C) 5 D) 6

✓ $\begin{cases}10p+7q=-2\\2p-22=5q\end{cases}$ tenglamalar sistemasini yeching.

A) $q=2,25;\ p=-3,5;$ B) $p=2,25;\ q=-3,5;$

C) $p=2,25;\ q=3,5;$ D) $p=-2,25;\ q=-3,5;$

Yechimi:

$\begin{cases}10p+7q=-2\\2p-\underline{22}=\underline{5q}\end{cases}\Leftrightarrow\begin{cases}10p+7q=-2\\2p-\underline{5q}=\underline{\underline{22}}\end{cases}$ qo'shish (yoki ayrish) usuliga keltiramiz

Tenglamalar Sistemani qo'shish usuliga keltirish lozim. Buning uchun bir xil son xosil qilishni o'ylang.

$$\begin{cases}10p+\overline{7q}=-2(\cdot 5)\\2p-\underline{5q}=22(\cdot 7)\end{cases}\Leftrightarrow\begin{cases}\overline{50p+\overline{35q}}=-10\\14p-\underline{35q}=154\end{cases}$$

$$\begin{cases}\overline{50p+\overline{35q}}=-10\\14p-\underline{35q}=154\end{cases}$$

$$64p=144$$
$$p=\frac{144}{64}$$
$$p=\frac{9}{4}$$
$$p=2,5$$

$$10p+7q=-2$$
$$10\cdot 2,5+7q=-2$$
$$22,5+7q=-2$$
$$7q=-24,5$$
$$q=-3,5$$

javob: $p=2,25;\ q=-3,5;$

2174. $\begin{cases}3x+4y=0\\2x+3y=1\end{cases}$ tenglamalar sistemasini yeching.

A) $(-4;-3)$ B) $(3;-4)$ C) $(-4;3)$ D) $(-3;-3)$

2175. $\begin{cases}7x+2y=0\\4y+9x=10\end{cases}$ tenglamalar sistemasini yeching.

A) $(7;-2)$ B) $(-7;2)$ C) $(2;-7)$ D) $(-2;7)$

2176. $\begin{cases}5p-3q=0\\3p+4q=29\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(p;q)$ juftlikdan $q:p=?$

A) $\frac{2}{3}$ B) $\frac{3}{5}$ C) $1\frac{2}{3}$ D) $1\frac{1}{3}$

2177. $\begin{cases}5x+6y=-20\\9y+2x=25\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $\frac{y^2}{x}-?$

A) $-2,5$ B) $2,5$ C) $0,25$ D) $-0,25$

2178. $\begin{cases}3x+1=8y\\11y-3x=-11\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan x ga teskari sonni toping.

A) $\frac{1}{11}$ B) -11 C) $-\frac{1}{11}$ D) 11

2179. $\begin{cases}7x-3y=13\\x-2y=5\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $\frac{x^4-1}{y}-?$

A)15 B) 0 C) 4 D) 1

2180. $\begin{cases}x+y=6\\3x-5y=2\end{cases}$ tenglamalar sistemasini yeching.

A) $(2;4)$ B)$(4;2)$ C) $(1;2)$ D) $(4;1)$

✓ $\begin{cases}3(x-5)-1=6-2x\\3(x-y)-7y=-4\end{cases}$ tenglamalar sistemasini yeching.

A) $(4,4;1,72)$ B) $(2;5)$ C) $(-1;-4)$ D)$(3;4)$

Yechimi:

$$\begin{array}{l}3(x-5)-1=6-2x\\3x-15-1=6-2x\\3x+2x=6+15+1\\5x=22\\x=\frac{22}{5}=4,4\end{array}\Leftrightarrow\begin{array}{l}3(x-y)-7y=-4\\3x-3y-7y=-4\\3x-10y=-4\end{array}$$

$$3x-10y=-4$$
$$3\cdot4,4-10y=-4$$
$$-10y=-17,2$$
$$y=1,72$$

$$\begin{cases}3(x-5)-1=6-2x\\3(x-y)-7y=-4\end{cases}\Leftrightarrow\begin{cases}x=4,4\\3x-10y=-4\end{cases}$$

Izoh: Qavslarni ochib noma'lumlarni chap, ma'lumlarni o'ng tomonga to'plab, o'xshash hadlarni ixchamlab keyin sistemani yechish lozim.

2181. $\begin{cases}6(x+y)-y=-1\\7(y+4)-(y-2)=0\end{cases}$ sistemani qanoatlantiruvchi $(x;y)$ juftlikdan $x+y=?$

A) 1 B) 2 C) -3 D) -1

2182. $\begin{cases}2(3x-2y)+1=7x\\12(x+y)-15=7x+12y\end{cases}$ sistemani qanoatlantiruvchi $(x;y)$ juftlikdan $x+2y=?$

A) 1 B) 3 C) 4 D) 2

2183. $\begin{cases}3(x+y)-7=12x+y\\6(y-2x)-1=-45x\end{cases}$ sistemani qanoatlantiruvchi $(x;y)$ juftlikdan $3x+y=?$

A) 2 B) 3 C) 1 D) 0,5

2184. $\begin{cases}6(x+y)=8+2x-3y\\5(y-x)=5+3x+2y\end{cases}$ sistemani qanoatlantiruvchi $(x;y)$ juftlikdan $y-x=?$

A) $\frac{21}{28}$ B) $\frac{28}{35}$ C) $1\frac{7}{28}$ D) $\frac{7}{28}$

2185. $\begin{cases}-2(2x+1)+1,5=3(y-2)-6x\\11,5-4(3-x)=2y-(5-x)\end{cases}$ sistemaniqanoatlantiruvchi $(x;y)$ juftlikdan $x+y=?$

A) 3,4 B) 1 C) 2 D) 3

✓ $\begin{cases}\frac{2m}{5}+\frac{n}{3}=1\\\frac{m}{10}-\frac{7n}{6}=4\end{cases}$ tenglamalar sistemasini yeching.

A) $m=5;\ n=-3$ B) $m=-5;\ n=-3$

C) $m=5;\ n=3$ D) $m=-5;\ n=3$

Yechimi:

$$\begin{cases}\frac{2m}{5}+\frac{n}{3}=1\ (\cdot15)\\\frac{m}{10}-\frac{7n}{6}=4\ (\cdot30)\end{cases}\Leftrightarrow\begin{cases}\frac{2m}{5}+\frac{5n}{3}=15\\\frac{m}{10}-\frac{7n}{6}=120\end{cases}$$

$$\Leftrightarrow\begin{cases}6m+5n=15\\3m-35n=120\end{cases}$$

qo'shish (yoki ayirish) usuliga keltiramiz.

$$\begin{cases}6m+5n=15\ (\cdot7)\\3m-35n=120\end{cases}\Leftrightarrow\begin{cases}42m+35n=105\\3m-35n=120\end{cases}$$

$$+\begin{cases}42m+35n=105\\3m-35n=120\end{cases}\quad\begin{array}{l}3m-35n=120\\3\cdot5-35n=120\\15-35n=120\\-35n=105\\n=-3\end{array}$$

$$45m=225$$
$$m=5$$

Izoh: Sistema kasr ko'rinishdan oddiy ko'rinishga umumiy maxraj berib o'tkazamiz.

2186. $\begin{cases}\frac{x}{3}-\frac{y}{2}=-4\\\frac{x}{2}+\frac{y}{4}=-2\end{cases}$ tenglamalar sistemasini yeching.

A)$(-6;4)$ B) $(-6;-4)$ C) $(4;-6)$ D) $(-4;4)$

2187. $\begin{cases}\frac{a}{6}-2b=6\\-3a+\frac{b}{2}=-37\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(a;b)$ juftlikdan $\frac{a}{b^2}-?$

A) 4 B) 3 C) 5 D) 1

2188. $\begin{cases}7x-\frac{3y}{5}=-4\\x+\frac{2y}{5}=-3\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y)$ juftlikdan $x+y=?$

A)-6 B) 6 C)-4 D) 4

✓ $\begin{cases}2x-4y=10\\-x+2y=8\end{cases}$ tenglamalar sistemasini yeching.

A) $x\in R$ B) 1 C) (1;1) D)∅

Yechimi:

$\begin{cases}2x-4y=10\\-x+2y=8\end{cases}$

qo'shish (yoki ayirish) usuliga keltiramiz.

$\begin{cases}2x-4y=10\\-x+2y=8\,(\cdot 2)\end{cases}\Leftrightarrow\begin{cases}2x-4y=10\\-2x+4y=16\end{cases}$

$+\begin{cases}2x-4y=10\\-2x+4y=16\end{cases}$

$0=26$

$\varnothing$

Izoh: Agar noma'lumlar yo'q bo'lib ketsa, $\Rightarrow\varnothing$ $0=0$ da $x\in R$

2189. $\begin{cases}x+2y=3\\y=-0{,}5x\end{cases}$ sistemasini yeching.

A) $x\in R$ B) 1 C) (1;1) D) ∅

2190. $\begin{cases}2x=11-3y\\6y=22-4x\end{cases}$ sistemasini yeching.

A) ∅ B) $x\in R$ C) (1;3) D) 1

2191. $\begin{cases}2x-4y=7\\\frac{1}{2}x=\frac{9}{4}+y\end{cases}$ sistemasini yeching.

A) $x\in R$ B)1 C) (1;1) D)∅

2192. $\begin{cases}x=4y-3\\\frac{x}{8}-\frac{1}{2}y+\frac{3}{8}=0\end{cases}$ sistema yechimga egami va nechta yechimga ega.

A) ∅ B) $x\in R$ C) (1;3) D) 1

✓ $\begin{cases}x-y=-1\\x+z=13\\z-y=4\end{cases}$ tenglamalar sistemasini yeching.

A) (4;5;9) B) ∅ C) (1;1) D)(5;4;9)

Yechimi:

$\begin{cases}x-y=-1\\x+z=13\\z-y=4\end{cases}\Leftrightarrow\begin{cases}x=-1+y\\x+z=13\\z-y=4\end{cases}\Rightarrow\begin{cases}-1+y+z=13\\z-y=4\end{cases}$

$\begin{cases}y+z=13+1\\z-y=4\end{cases}\Rightarrow\begin{cases}y+z=14\\z-y=4\end{cases}$

$+\begin{cases}y+z=14\\z-y=4\end{cases}$ | $y+z=14$ | $x=-1+y$

$2z=18$ | $y+9=14$ | $x=-1+5$

$z=9$ | $y=14-9$ | $x=4$

$y=5$

javob: (4;5;9)

Izoh: Avval biror harfni yakkalash lozim, $x=-1+y$ keyin qolganlarini o'rniga qo'ysak, oddiy tenglamalar sistemasiga keladi:

$\begin{cases}x-y=-1\\x+z=13\\z-y=4\end{cases}\Leftrightarrow\begin{cases}x=-1+y\\x+z=13\\z-y=4\end{cases}\Rightarrow\begin{cases}-1+y+z=13\\z-y=4\end{cases}$

2193. $\begin{cases}x+y=-3\\y+z=6\\z+x=1\end{cases}$ tenglamalar sistemasini yeching.

A)(−4;1;5) B) (1;4;5) C) (−1;4;5) D)(1;−4;5)

2194. $\begin{cases}x-y=-1\\y-z=-1\\z+x=8\end{cases}$ tenglamalar sistemasini yeching.

A) (4;3;5) B) (5;4;3) C)(3;4;5) D) (3;5;4)

2195. $\begin{cases}4x+3y=-2\\x+3z=10\\z+2y=-1\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y;z)$ juftlikdan $x+y+z-?$.

A)−2 B) 2 C) 5 D) 4

2196. $\begin{cases}11x+3y=-1\\2x+z=-4\\z+2y=14\end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y;z)$ juftlikdan $x^2+y^2+z^2-?$

A)55 B) 53 C) 63 D) 49

✓ $\begin{cases}x+y+z=125\\x=6y\\z=x-5y+5\end{cases}$ tenglamalar sistemasini yeching.

A) (90;15;20) B) ∅ C) (1;1) D)(5;4;9)

Yechimi:

$\begin{cases}x+y+z=125\\\boxed{x=6y}\\z=x-5y+5\end{cases}\Rightarrow\begin{cases}z=\boxed{x}-5y+5\\z=6y-5y+5\\z=y+5\end{cases}$

$x+y+z=125$

$6y+y+y+5=125$

$8y=125-5$

$8y=120$

$y=15$

$x=6y\Rightarrow x=6\cdot 15=90$

$z=y+5\Rightarrow z=15+5=20$

javob: (90;15;20)

Izoh: Avval berilgan ifodani istalgan 2 tasini bir xil harf bilan belgilab oling $\begin{cases}x=6y\\z=y+5\end{cases}$.

keyin umumiyga olib borib qo'ying.

$x+\ y+\ z=125$

$\Downarrow\ \ \Downarrow\ \ \Downarrow$

$6y+\ y+y+5=125$

2197. $\begin{cases} a+b+c=210 \\ b=2a \\ c=a+b \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(a;b;c)$ juftlikdan $(b-?)$

A) 70 B) 35 C) 40 D) 120

2198. $\begin{cases} x+y+z=195 \\ x=y-30 \\ z=\dfrac{x+y}{2} \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(x;y;z)$ juftlikdan $z-?$

A) 50 B) 80 C) 65 D) 130

2199. $\begin{cases} a+b+225 \\ b=a-45 \\ c=\dfrac{b+45}{2} \end{cases}$ tenglamalar sistemasini qanoatlantiruvchi $(a;b;c)$ juftlikdan $c-?$

A) 75 B) 60 C) 30 D) 120

✓ $(x+y+2)^2$ ni ko'phad ko'rinishida yozing.

A) $x^2+y^2+4+2xy+4x+4y$

B) $x^2+y^2+4+2xy+2x+4y$

C) $x^2+y^2+4+2xy+4x+2y$

D) $x^2+y^2+2+2xy+4x+4y$

Yechimi:

$(a+b+c)^2=a^2+b^2+c^2+2ab+2ac+2bc$;

$(a-b-c)^2=a^2+b^2+c^2-2ab-2ac+2bc$;

$(a+b+c)^3=a^3+b^3+c^3+3(a^2b+a^2c+b^2a+b^2c+c^2a+c^2b)+6abc$

$(x+y+2)^2=x^2+y^2+4+2xy+4x+4y$

Izoh: yuqoridagi formulalarni yodlab olamiz.

2200. $(n+3+z)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+z^2+6+2nz+6n+6z$

B) $n^2+z^2+9+2nz+6n+6z$

C) $n^2+z^2+9+2nz+2n+2z$

D) $n^2+z^2+9+2z+6n+6z$

2201. $(n-3+4z)^2$ ni ko'phad ko'rinishini toping.

A) $n^2+16z^2-9+8nz-24z-6n$

B) $n^2+16z^2+9+8nz-24z+6n$

C) $n^2+16z^2+9+4nz-24z-6n$

D) $n^2+16z^2+9+8nz-24z-6n$

2202. $(5a-3b-2c)^2$ ni ko'phad ko'rinishini toping.

A) $25a^2+9b^2+4c^2-30ab+20ac-12bc$

B) $25a^2+9b^2+4c^2-30ab+20ac+12bc$

C) $25a^2-9b^2-4c^2-30ab+20ac+12bc$

D) $25a^2+9b^2+4c^2-30ab+20ac-12bc$

✓ $(3x+y+z)^8$ ni qavs ochilganda $mx^2y^2z^4$ hadidagi m qanchaga teng?

A) 3780 B) 2880 C) 3440 D) 3110

Yechimi:

$$(a_1+a_2+...+a_p)^n=...\frac{n!}{k_1!k_2!...k_p!}a_1^{k_1}a_2^{k_2}...a_p^{k_p}$$

$$\Downarrow$$

$$mx^2y^2z^4$$

$$(3x+y+z)^8=\frac{8!}{2!\cdot 2!\cdot 4!}9x^2y^2z^4$$

$$\Downarrow$$

$$380x^2y^2z^4 \qquad m=3780$$

Izoh: nomalumlarning darajalarini faktarial qilib yozish lozim $\dfrac{8!}{2!\cdot 2!\cdot 4!}9x^2y^2z^4$

2203. $(n+2b+z)^5$ ni qavs ochilganda mn^2b^2z hadidagi m qanchaga teng.

A) 180 B) 120 C) 140 D) 110

2204. $(n+3y+2z)^7$ ni qavs ochilganda mny^2z^4 hadidagi m qanchaga teng.

A) 15120 B) 15210 C) 1050 D) 2110

2205. $(a+5b+2c)^7$ ni qavs ochilganda ma^5bc hadidagi m qanchaga teng.

A) 480 B) 520 C) 420 D) 320

✓ $a=4b$ va $c+3b=0$ bo'lsa, $\dfrac{a}{c}$ ni toping.

A) $-\dfrac{4}{3}$ B) $\dfrac{4}{3}$ C) $-\dfrac{3}{4}$ D) $\dfrac{3}{4}$

Yechimi:

$a=4b$ va $c+3b=0$

$\Downarrow$ $\Downarrow$

$a=4b$ $c=-3b$

$$\frac{a}{c}=\frac{4b}{-3b}=\frac{4\cancel{b}}{-3\cancel{b}}=-\frac{4}{3}$$

Izoh: qaysi harflarni bo'ling. desa, shu harflarni yakkalansin ya'ni $\begin{cases} a=4b \\ c=-3b \end{cases} \Rightarrow \dfrac{a}{c}=\dfrac{4b}{-3b}=\dfrac{4\cancel{b}}{-3\cancel{b}}=-\dfrac{4}{3}$

2206. $n+2m=0$ va $c=7m$ bo'lsa, $\dfrac{c}{n}$ ni toping.

A) $-\dfrac{2}{7}$ B) $-3,5$ C) $\dfrac{2}{7}$ D) $3,5$

2207. $d-5k=0$ va $b=9k$ bo'lsa, $\dfrac{b}{d}$ ni toping.

A) $-\dfrac{5}{9}$ B) $-1,8$ C) $\dfrac{5}{9}$ D) $1,8$

2208. $t+2m=0$ va $p+5m=0$ bo'lsa, $\dfrac{t}{p}$ ni toping.

A) $-\dfrac{5}{2}$ B) $-0,4$ C) $\dfrac{5}{2}$ D) $0,4$

✓ $2m+t=4,\ 2t+n=7$ *va* $m+2n=1$ bo'lsa, $m+n+t$ ni toping?

A) 4 B) 3 C) 8 D)1

Yechimi:

$2m+t=4;\ 2t+n=7$ *va* $m+2n=1$

$$\Downarrow$$

$$\begin{cases}2m+t=4\\2t+n=7\\m+2n=1\end{cases} \quad + \begin{cases}2m+t=4\\2t+n=7\\m+2n=1\end{cases}$$

$$3m+3n+3t=12$$

$$3(m+n+t)=12$$

$$m+n+t=4$$

Izoh: Berilgan ifodani sistema ko'rinishiga keltirib, qo'shib yuborish lozim.

2209. $c+3d=0,\ d+3k=13$ *va* $3c+k=-3$ bo'lsa, $c+d+k$ ni toping.

A) $-\frac{2}{5}$ B) $-2,5$ C) $\frac{2}{7}$ D) 2,5

2210. $n+2m=4,\ m+2k=11$ *va* $2n+k=-3$ bo'lsa, $n+m+k$ ni toping.

A) 4 B) -12 C) $\frac{1}{4}$ D) 12

2211. $a+3b=0,\ n+4a=13$ *va* $2b+4n=7$ bo'lsa, $a+b+n$ ni toping.

A) 4 B) $-2,5$ C) $\frac{1}{4}$ D) 20

✓ $2m+t=4,\ -4t-3n=7$ bo'lsa, $8m-3n$ ni toping?

A) 23 B) 16 C) 33 D) 28

Yechimi: berilganlarni sistema qilib yozib oling.

$$\begin{cases}2m+t=4\\-4t-3n=7\end{cases} \quad \begin{cases}2m+t=4\,(\cdot 4)\\-4t-3n=7\end{cases} \Leftrightarrow + \begin{cases}8m+4t=16\\-4t-3n=7\end{cases}$$

$$8m-3n=23$$

Izoh: $8m-3n$ .toping deganda "$8m$" ga e'tibor qaratib ($\cdot 4$) ga ko'paytirdim va qo'shib yubordim.

2212. $-c+3d=11,\ 3c+5k=13$ bo'lsa, $9d+5k$ ni toping.

A) 46 B) 56 C) 33 D) 76

2213. $n-2m=4,\ m+2k=11$ bo'lsa, $2n+8k$ ni toping.

A) 44 B) 52 C) 56 D) 62

2214. $k+4a=8,\ n-4a=13$ bo'lsa, $3k+3n$ ni toping.

A) 21 B) -63 C) 16 D) 63

✓ $n^2+6n+z^2+10z+34=0$ bo'lsa, $(n+z)^2$ ni toping.

A) 23 B) 16 C) 33 D) 64

Yechimi:

$$n^2+6n+z^2+10z+34=0$$

$$n^2+6n+9-9+$$

$$+z^2+10z+25-25+34=0$$

$$(n+3)^2+(z+5)^2+34-9-25=0$$

$$(n+3)^2+(z+5)^2=0$$

qavslarni "0"ga tenglab yechamiz.

$$n+3=0 \qquad z+5=0$$

$$n=-3 \qquad z=-5$$

$$(n+z)^2=(-3-5)^2=64$$

Izoh: Bu turdagi misollani yechishda formulaga tushirib, qavslarni ichini no'lga tenglab toping.

2215. $m^2+4m+x^2+14x+53=0$ bo'lsa, $n+x$ ni toping.

A) -9 B) -11 C) 3 D) 9

2216. $n^2-2n+k^2+16k+65=0$ bo'lsa, $(n+k)^2$ ni toping.

A) 44 B) 49 C) 36 D) 81

2217. $a^2+18a+n^2-22n+202=0$ bo'lsa, $(a+n)^2$ ni toping.

A) 400 B) -4 C) 20 D) 4

✓ nechta natural sonlar jufti $n^2-z^2=165$ ni qanoatlantiradi?

A) 2 B) 6 C) 3 D) 4

Yechimi:

$$n^2-z^2=165$$

$$(n-z)(n+z)=165$$

$$(n-z)(n+z)=11\cdot 3\cdot 5$$

$$\begin{cases}n-z=11\\n+z=15\end{cases} \begin{cases}n-z=3\\n+z=55\end{cases} \begin{cases}n-z=5\\n+z=33\end{cases} \begin{cases}n-z=1\\n+z=165\end{cases}$$

$(13;2)$ $(29;26)$ $(19;14)$ $(83;82)$

1 2 3 4

oson yo'li:

$$165=3\cdot 5\cdot 11 \quad \frac{NBS(165)}{2}=\frac{(1+1)(1+1)(1+1)}{2}=4$$

Izoh: Oson yo'lini eslab qoling NBS ni topib "2" ga bo'lish lozim.

2218. nechta natural sonlar jufti $x^2-y^2=260$ ni qanoatlantiradi?

A) 7 B) 12 C) 3 D) 6

2219. nechta natural sonlar jufti $a^2-n^2=460$ ni qanoatlantiradi?

A) 7 B) 12 C) 3 D) 6

2220. nechta natural sonlar jufti $b^2 - y^2 = 612$ ni qanoatlantiradi?

A) 9 B) 18 C) 33 D) 12

Matnli masalalar

✓ 5 soat 24 minut 9 sekund necha sekund bo'ladi?

A) 24653 B) 16449 C) 34663 D) 19449

Yechimi:

$1\ minut = 60 sekund$
$1\ soat = 60\ minut$
$1\ soat = 3600\ sekund$

$1\ sutka = 24\ soat$
$1\ sutka = 86400\ sekund$

$5 soat\ 24 minut\ 9 sekund \rightarrow ...?\ sekund$

$5 soat = 5 \cdot 3600 = 18000 sekund$

$24\ minut = 24 \cdot 60 = 1440\ sekund$

$5 soat\ 24 minut\ 9 sekund = 18000$

$+1440$

$+\ \ 9$

$19449\ sekund$

Izoh: Berilganlarni sekundga o'tkazib keyin barchasini qo'shamiz.

2221. 12 soat 34 minut 17 sekund necha sekund bo'ladi?

A) 45267 B) 45157 C) 45257 D) 44257

2222. 21 soat 18 minut 3 sekund necha sekund bo'ladi?

A) 76683 B) 76483 C) 76983 D) 79683

2223. 17 sutka 12 soat 49 minut 19 sekund necha sekund bo'ladi?

A) 1512049 B) 1514959 C) 1412049 D) 1514549

✓ $5m^2\ 3dm^2\ 6sm^2$ necha sm^2 ga teng?

A) 24653 B) 50306 C) 51306 D) 50366

Yechimi:

$1 dm = 10 sm \Rightarrow \boxed{(1\ dm)^2 = (10 sm)^2,\ 1\ dm^2 = 100\ sm^2}$

$1\ m = 100\ sm \Rightarrow \boxed{(1\ m)^2 = (100\ sm)^2,\ 1\ m^2 = 10000\ sm^2}$

$1\ km = 100000\ sm \Rightarrow \boxed{(1\ km)^2 = (100000\ sm)^2,\ 1\ km^2 = 10^{10}\ sm^2}$

$5\ m^2\ 3\ dm^2\ 6\ sm^2 \Rightarrow 5 \cdot 10000 + 3 \cdot 100 + 6 = 50306\ sm^2$

Izoh: berilganlarning hammasini sm^2 ga o'tkazib keyin qo'shamiz.

2224. $9\ m^2\ 11\ dm^2\ 25\ sm^2$ necha sm^2 ga teng?

A) 91125 B) 92125 C) 92215 D) 91325

2225. $3\ m^2\ 12\ dm^2\ 8\ sm^2$ necha sm^2 ga teng?

A) 31108 B) 31218 C) 31208 D) 34258

2226. $31\ m^2\ 19\ dm^2\ 5\ sm^2$ necha sm^2 ga teng?

A) 311305 B) 321205 C) 311905 D) 324255

✓ 22 kishi bir–biri bilan salomlashganda, qo'l berib ko'rishishlar soni qancha bo'ladi?

A) 53 B) 506 C) 306 D) 231

Yechimi:

$\boxed{\text{qo'l berib ko'rishishlar soni}} \Rightarrow \boxed{\frac{n(n-1)}{2} \Rightarrow \frac{22(22-1)}{2} = 231}$

Izoh: qo'l berib ko'rishishlar soni formulasi $\frac{n(n-1)}{2}$ ekanini bilib oling.

2227. 12 kishi bir–biri bilan salomlashganda, qo'l berib ko'rishishlar soni qancha bo'ladi?

A) 66 B) 88 C) 65 D) 76

2228. 25 kishi bir–biri bilan salomlashganda, qo'l berib ko'rishishlar soni qancha bo'ladi?

A) 300 B) 625 C) 400 D) 125

2229. 31 kishi bir–biri bilan salomlashganda, qo'l berib ko'rishishlar soni qancha bo'ladi?

A) 925 B) 565 C) 365 D) 465

✓Proporsiyaning chetki hadlari 8 va 15 ga, o'rta hadlaridan biri 10 ga teng. Proporsiyaning ikkinchi o'rta hadini toping?

A) 24 B) 50 C) 30 D) 12

Yechimi:

$a : b = m : n$

$\boxed{\text{Proporsiyaning chetki hadlari } 8 \text{ va } 15 \text{ ga}} \Rightarrow \boxed{8 : b = m : 15}$

$\boxed{\text{o'rta hadlaridan biri } 10 \text{ ga teng}} \Rightarrow \boxed{\begin{array}{l} 8 : x = 10 : 15 \\ 10x = 8 \cdot 15 \\ x = 12 \end{array}}$

Izoh: Proporsiyaning aytilgan joyiga sonlarini qo'yib, proporsiyani yeching.

2230. Proporsiyaning o'rta hadlari 28 va 10 ga, chetki hadlaridan biri 35 ga teng. Proporsiyaning ikkinchi chetki hadini toping?

A) 4 B) 8 C) 6 D) 7

2231. Proporsiyaning chetki hadlari 63 va 24 ga, o'rta hadlaridan biri 27 ga teng. Proporsiyaning ikkinchi o'rta hadini toping?

A) 56 B) 66 C) 40 D) 26

2232. Proporsiyaning o'rta hadlari 12 va 60 ga, chetki hadlaridan biri 24 ga teng. Proporsiyaning ikkinchi chetki hadini toping?

A) 20 B) 50 C) 36 D) 30

✓ Chumoli 8 minutda 16 m yuradi. U 4 minutda necha metr yuradi?

A) 8 B) 3 C) 5 D) 6

Yechimi:

8 min → 16 *m*
4 min → *x m*
$\Rightarrow \begin{vmatrix} 8x = 4 \cdot 16 \\ 8x = 64 \\ x = 8 \end{vmatrix}$

Javob: 8*m*

Izoh: chap tomondagi birliklar bir xil (min deb yozilgan), o'ng tomondagi birliklar (*m* deb yozilgan) ham bir xil, bo'lsa uni kres (iks) qilib (proporsiya qilib) ko'paytiring.

2233. Toshbaqa 6 minutda 150 sm yo'l bosadi. U 25 sm masofani qancha minutda o'tadi?
A) 5 B) 2 C) 1 D) 7

2234. G'ildirak 3 minutda 4,5 marta aylanadi. U 2 minutda necha marta aylanadi?
A) 3 B) 2 C) 1 D) 7

2235. Tiko avtomashinasida 60 km yo'lni 2,3 *l* yonilg'i sarflaydi. 6,9 *l* yonilg'i bilan bu avtomashina necha km yo'l yurishi mumkin?
A) 300 B) 180 C) 120 D) 70

2236. Piyoda kishi 2 km yo'lni 0,4 soatda o'tadi. U $1\frac{2}{3}$ km yo'lni qancha soatda bosib o'tadi?
A) 0,04 B) 0,(3) C) 0,3 D) 2/3

✓ 24 minut necha soat bo'ladi?
A) $\frac{2}{3}$ B) $\frac{2}{5}$ C) 0,7 D) 0,3

Yechimi:

1 *minut* = 60 *sekund*
1 *soat* = 60 *minut*
1 *soat* = 3600 *sekund*
1 *sutka* = 24 *soat*
1 *sutka* = 86400 *sekund*
$\Rightarrow \begin{vmatrix} 1sek = \frac{1}{60}\ \text{min} \\ 1\ \text{min} = \frac{1}{60}\ soat \\ 1sek = \frac{1}{3600}\ soat \end{vmatrix}$

$1\ \text{min} = \frac{1}{60}\ soat$
$\Rightarrow \begin{vmatrix} 24\ \text{min} = \frac{24}{60}\ soat \\ \Downarrow \\ 24\ \text{min} = \frac{2}{5}\ soat \end{vmatrix}$

Izoh: kichikdan kattaga o'tishda bo'lish lozim.

2237. 12 minut necha soat bo'ladi?
A) 4,7 B) 0,4 C) 0,2 D) 0,5

2238. 21 sekund necha minut bo'ladi?
A) 0,35 B) $\frac{20}{7}$ C) 0,7 D) $\frac{7}{25}$

2239. 90 sekund necha soat bo'ladi?
A) 0,4 B) $\frac{20}{7}$ C) 0,7 D) $\frac{1}{40}$

✓ Chumoli 24 minutda 16 m yuradi. U 2 soatda necha metr yuradi?
A) 24 B) 50 C) 90 D) 80

Yechimi:
2 soat=2•60 min= 120 minut

24 min → 16 *m*
4 min → *x m*
$\Rightarrow \begin{vmatrix} 24x = 120 \cdot 16 \\ 24x = 1920 \\ x = 80 \end{vmatrix}$

Javob: 80

Izoh: chap tomondagi birliklar bir xilga (min deb yozilgan) keltirib,keyin uni kres (iks) qilib (proporsiya qilib) ko'paytiring.

2240. Toshbaqa 30 minutda 15000 sm yo'l bosadi. U 2,5 km masofani qancha minutda o'tadi?
A) 500 B) 250 C) 100 D) 700

2241. Toshbaqa 48 minutda 1600 sm yo'l bosadi. U 1,8 km masofani qancha soatda o'tadi?
A) 50 B) 90 C) 110 D) 70

2242. G'ildirak 46 minutda $5\frac{1}{9}$ marta aylanadi. U 9 minutda necha marta aylanadi?
A) 3 B) 2 C) 1 D) 7

2243. Xaritada 0,42 dm uzunlikdagi kesmaga 24 km masofa mos keladi. Agar xaritada ikki shahar orasidagi masofa 12,6 sm bo'sa, ular orasidagi masofa necha km?
A) 36 B) 62 C) 72 D) 82

✓ Agar 10 dirham (pul birligi) 2 oyda 5 dirham foyda keltirsa, 8 dirham 3 oyda qancha foyda keltiradi?
A) 4 B) 5 C) 3 D) 6

Yechimi:

dirham	10	8	*dirham*
oy	2	3	*oy*
foyda	5	*x*	*foyda*

$\Rightarrow \begin{vmatrix} 10 \cdot 2 \cdot x = 8 \cdot 3 \cdot 5 \\ 20x = 120 \\ x = 6 \end{vmatrix}$

Javob: 6

Izoh: e'tibor bering to'g'rima–to'g'ri turibdi (oy–oy va foyda–foyda), keyin uni quyidagicha:

↓	↓	10	8
↖	↗	2	3
↙	↘	5	*x*

$\Rightarrow \begin{vmatrix} 10 \cdot 2 \rightarrow 8 \cdot 3 \\ 5 \rightarrow x \end{vmatrix}$

$10 \cdot 2 \cdot x = 8 \cdot 3 \cdot 5$

2244. 3 tovuq 3 kunda 9 ta tuxum qo'yadi. 6 ta tovuq 6 kunda nechta tuxum qo'yadi?
A) 36 B) 27 C) 9 D) 18

2245. 5 ta nasos 3 soat davomida 27 m^3 suvni kanaldan tortib chiqardi. 4 ta shunday nasos 5 soatda necha m^3 suvni tortib chiqaradi?
A) 15 B) 36 C) 27 D) 28

2246. 7 ta ot 8 kunda 64 kg yem yeydi, 5 ta shunday ot uchun 3 kunga qancha kg yem kerak?
A) $7\frac{1}{7}$ B) $\frac{121}{7}$ C) $17\frac{1}{7}$ D) 7

2247. 18 ta sigirga 35 kunga 7,56 t pichan kerak bo'ladi. shunday kunlik meyyor bilan 12 ta sigirga 45 kunga qancha t (tonna) pichan kerak?
A) 5,48 B) 1,08 C) 6,48 D) 7

✓ $5\ m^3$ necha l ga teng?

A) 54653 B) 50306 C) 5000 D) 5030

Yechimi:

$1dm = 10\ sm$

$1\ m = 10dm = 100\ sm$

$1\ km = 1000m = 10000\ dm = 100000\ sm$

$1l = 1\ dm^3$

$1\ dm = 10\ sm \mid (1\ dm)^3 = (10\ sm)^3 \mid 1\ dm^3 = 1000\ sm^3$

$1\ m = 10dm \mid (1m)^3 = (10\ dm)^3 \mid 1\ m^3 = 1000\ dm^3$

$1\ km = 10000\ dm \mid (1\ km)^3 = (10000\ dm)^3 \mid 1\ km^3 = 10^{12}\ dm^3 \Rightarrow \boxed{1\ m^3 = 1000\ l} \quad \boxed{1\ km^3 = 10^{12}\ l}$

$5\ m^3 = 5 \cdot 1000l = 5000l$

Izoh: $l(litr)$ ni toppish uchun berilganlarning hammasini dm^3 ga o'tkazib oling.

2248. $11m^3$ necha l ga teng?

A) 11000 B) 1100 C) 110000 D) 110

2249. $3\ km^3$ necha l ga teng?

A) $3 \cdot 10^{14}$ B) $12 \cdot 10^3$ C) $3 \cdot 10^{12}$ D) $3 \cdot 10^6$

2250. $9\ m^3$ $11\ dm^3$ necha l ga teng?

A) 9011 B) 91100 C) 9110 D) 91011

2251. $31\ m^3$ $19\ dm^3$ necha l ga teng?

A) 3119 B) 31219 C) 31019 D) 310019

✓ $4\ l$ dengiz suvida o'rtacha 0,01 mg oltin bor. $0,04\ m^3$ dengiz suvida necha mg oltin bor?

A) 2,3 B) 0,06 C) 0,106 D) 0,1

Yechimi:

$1\ kg = 1000\ g$

$1g = 1000\ mg$

$1\ kg = 1000000\ mg = 10^6\ mg$

$4\ l \rightarrow 0,01\ mg$

$40\ l \rightarrow x\ mg$

$\Rightarrow \boxed{4x = 40 \cdot 0,01 \quad 4x = 0,4 \quad x = 0,1}$

2252. $5\ l$ dengiz suvida o'rtacha 0,02 mg oltin bor. $0,035m^3$ dengiz suvida necha mg oltin bor?

A) 0,14 B) 0,014 C) 0,07 D) 1,4

2253. $9\ l$ dengiz suvida o'rtacha 0,004 mg oltin bor. $0,045m^3$ dengiz suvida necha mg oltin bor?

A) 0,2 B) 0,05 C) 0,5 D) 0,02

✓ 30 ning $\frac{5}{6}$ qismini toping.

A) 25 B) 50 C) 51 D) 36

Yechimi:

$30 ning \frac{5}{6} qismi \Rightarrow 30 \cdot \frac{5}{6} = \overset{5}{\cancel{30}} \cdot \frac{5}{\cancel{6}} = 25$

Izoh: qismini deganda doim ko'paytirish lozim.

2254. 70 ning $\frac{9}{10}$ qismini toping.

A) 63 B) 16 C) 7 D) 54

2255. 110 ning $\frac{13}{11}$ qismini toping.

A) 100 B) 13 C) 11 D) 130

2256. $5\frac{1}{25}$ ning $\frac{25}{42}$ qismini toping.

A) 26 B) 12 C) 126 D) 3

2257. $3\frac{2}{3}$ ning $1\frac{1}{11}$ qismini toping.

A) 10 B) 4 C) 3 D) 12

2258. $2\frac{5}{8}$ va $3\frac{9}{16}$ sonlar yegindisining $\frac{1}{11}$ qismini toping.

A) $\frac{9}{16}$ B) $\frac{5}{16}$ C) $\frac{99}{16}$ D) $\frac{9}{10}$

2259. $7\frac{5}{9}$ va $4\frac{11}{18}$ sonlar yegindisining $\frac{1}{73}$ qismini toping.

A) $\frac{73}{6}$ B) $\frac{1}{6}$ C) 3 D) 6

✓ 5 km li yo'lning $\frac{2}{5}$ qismiga asfalt yotqizildi. Necha km yo'lga asfalt yotqizilgan?

A) 2 B) 6 C) 5 D) 3

Yechimi:

$5\ ning \frac{2}{5} qismi \Rightarrow 5 \cdot \frac{2}{5} = \overset{1}{\cancel{5}} \cdot \frac{2}{\cancel{5}} = 2$

Asfalt yotqizilgan qismi: "2"

Asfalt yotqizilmagan qismi: "3"

Izoh: Qismini deganda doim ko'paytirish lozim.

2260. Go'sht qaynatilganda massasining $\frac{2}{5}$ qismini yo'qotadi. 5 kg go'sht qaynatilganda uning massasi necha kilogrammga kamayadi?

A) 2 B) 4 C) 3 D) 1

2261. Go'sht qaynatilganda massasining $\frac{2}{5}$ qismini yo'qotadi. 5 kg go'sht qaynatilganda qancha go'sht qoladi.

A) 4 B) 2 C) 3 D) 1

2262. shirinliklarni tayyorlash uchun 12 kg shakarning $\frac{1}{4}$ qismi ishlatiladi. Qancha shakar ishlatilgan.

A) 10 B) 3 C) 4 D) 9

2263. Shirinliklarni tayyorlash uchun 12 kg shakarning 1/4 qismi ishlatiladi. Qancha shakar qolgan.

A) 10 B) 3 C) 4 D) 9

2264. O'ramda 28 m adras bor edi. Dastlab uning $\frac{3}{7}$ qismi, so'ngra qolgan matoning $\frac{3}{8}$ qismi qirqib olindi. Shundan so'ng o'ramda necha metr adras qolgan?
A) 10 B) 18 C) 16 D) 13

2265. Do'konga keltirilgan 600 kg unning $\frac{3}{8}$ qismi tushgacha, tushdan keyin esa qolgan unning $\frac{3}{5}$ qismi sotildi. Qancha un (kg) sotilgan.
A) 580 B) 450 C) 225 D) 60

2266. Bog'dan 75 kg gilos terib olindi. Birinchi savatga hamma gilosning $\frac{1}{3}$ qismi, ikkinchi savatga $\frac{2}{5}$ qismi joylandi. Uchinchi savatga qancha (kg) gilos joylangan?
A) 20 B) 30 C) 25 D) 12

✓ $\frac{1}{2}$ qismi 23 ga teng sonni toping.
A) 25 B) 50 C) 51 D) 46
Yechimi:

$\frac{1}{2}$ *qismi 23 ga teng sonni toping* $\Rightarrow$ $\frac{1}{2}x = 23$, $x = 23 : \frac{1}{2} = 23 \cdot \frac{2}{1} = 46$, $x = 46$

Izoh: Quyidagilarni ajratish lozim:

23 ning $\frac{1}{2}$ *qismini toping.* $23 \cdot \frac{1}{2}$

$\frac{1}{2}$ *qismi 23 ga teng sonni toping.* $\frac{1}{2}x = 23$

2267. $\frac{3}{4}$ qismi 18 ga teng sonni toping.
A) 12 B) 16 C) 24 D) 54

2268. $1\frac{3}{5}$ qismi 0,8 ga teng sonni toping.
A) 0,5 B) 0,6 C) 0,2 D) 0,4

2269. $\frac{5}{7}$ qismi 35 ga teng sonni toping.
A) 64 B) 14 C) 49 D) 7

2270. 0,25 qismi 0,8 ga teng sonni toping.
A) 32 B) 0,32 C) 2,4 D) 3,2

2271. 4800 ning $\frac{5}{16}$ qismidan $\frac{7}{11}$ qismi 490 bo'lgan sonni ayiring.
A) 730 B) 30 C) 770 D) 70

2272. $\frac{11}{17}$ qismi 968 bo'lgan sonni 484 ning $\frac{4}{11}$ qismiga bo'ling.
A) 1496 B) 3,2 C) 8,5 D) 85

✓Nimchoragi 12,5 ga teng sonni toping.
A) 25 B) 100 C) 51 D) 46
Yechimi:

yarim $= \frac{1}{2}$, *chorak* $= \frac{1}{4}$, *nimchorak* $= \frac{1}{8}$ $\Rightarrow$

Nimchoragi 12,5 ga teng son

$\Downarrow$

$\frac{1}{8}x = 12,5$

$x = 12,5 : \frac{1}{8} = 12,5 \cdot 8 = 100$

$x = 100$

2273. Yarmi 27 ga teng sonni toping.
A) 12 B) 16 C) 24 D) 54

2274. Choragi 600 ga teng sonni toping.
A) 6000 B) 4000 C) 2400 D) 200

2275. nimchoragi 0,48 ga teng sonni toping.
A) 3,84 B) 38,4 C) 8,2 D) 0,4

✓Abdurashid kitobning 36 betini o'qidi. Bu esa kitobning $\frac{2}{5}$ qismini tashkil qiladi. Shu kitob necha betli?
A) 90 B) 100 C) 51 D) 46
Yechimi: kitob jami necha betligi bizda yo'q uni "x" deb belgilaymiz.

$\frac{2}{5}x = 36$

$x = 36 : \frac{2}{5} = {}^{18}\cancel{36} \cdot \frac{5}{\cancel{2}} = 90$

$x = 90$

2276. "Oltin don" fermer xo'jaligi 480 ga yerdagi bug'doyni o'rib oldi. Bu esa butun yer maydonining $\frac{3}{4}$ qismini tashkil qiladi. Fermer xo'jaligining maydoni qancha?
A) 280 B) 160 C) 740 D) 640

2277. Xususiy tadbirkor Rasul ota Xo'jaligida bug'doy ekish uchun 180 ga yer ajratildi. Bu esa xo'jalik ekin maydonining $\frac{3}{4}$ qismini tashkil etadi. Xo'jalikning umumiy ekin maydoni necha gektar?
A) 40 B) 440 C) 160 D) 240

2278. Sayohatga chiqqan bolalar 4 km yo'l yurishdi. Shunda o'tilgan yo'l manzilgacha bo'lgan yo'lning $\frac{2}{3}$ qismiga teng. Bolalar jami necha km yo'l yurishni rejalashtirishgan.
A) 6 B) 4 C) 15 D) 2

✓Sayyohlar 1-kun belgilangan masofaning $\frac{2}{5}$ qismini o'tishdi. 2-kun $\frac{1}{3}$ qismini bosib o'tildi. Agar 3-kun 24

km yo'lni bosib o'tishgan bo'lsa, belgilangan masofa necha kilometr?

A) 90 B) 100 C) 51 D) 46

Yechimi: butun yo'l uzunligi bizda yo'q uni "x" deb belgilaymiz.

$$\underline{\textit{Sayyohlar 1-kun belgilangan masofaning } \frac{2}{5} \textit{ qismini o'tishdi.}} \Rightarrow \underline{\frac{2}{5}x}$$

$$\underline{2-\textit{kun} \frac{1}{3} \textit{ qismini bosib o'tildi.}} \Rightarrow \underline{\frac{1}{3}x}$$

$$\underline{\textit{Agar 3-kun 24 km yo'lni bosib o'tishgan bo'lsa}} \Rightarrow \underline{24}$$

$$\frac{2}{5}x+\frac{1}{3}x+24=x\ (\cdot 15)$$

$$\frac{{}^{3}2}{5}x+\frac{{}^{5}1}{3}x+24\cdot 15=15x$$

$$6x+5x+360=15x$$

$$6x+5x-15x=-360$$

$$-4x=-360$$

$$x=90$$

2279. Sayyohlar 1–kun belgilangan masofaning $\frac{1}{4}$ qismini o'tishdi. 2–kun $\frac{2}{3}$ qismini bosib o'tildi. Agar 3–kun 2 km yo'lni bosib o'tishgan bo'lsa, belgilangan masofa necha kilometr?

A) 24 B) 16 C) 74 D) 64

2280. Ona bir nechta daftar harid qildi va ularni o'quvchi farzandlariga Quyidagicha taqsimladi: 5–sinfda o'qiydigan Naimaga jami daftarlarning $\frac{1}{4}$ qismini, 7–sinfda o'qidigan Nozimaga jami daftarlarning $\frac{1}{3}$ qismini berdi. shundan so'ng 15 ta daftarlar qoldi. Ona nechta daftar olgan?

A) 40 B) 36 C) 16 D) 24

2281. Bog'dan uzilgan uzumlar 3 ta savatga joylandi. 1–savatga jami uzumning $\frac{1}{3}$ qismi, 2– savatga $\frac{2}{5}$ qismi, uchinchisiga esa qolgan 20 kg uzum joylandi. Bog'dan jami necha kilogram uzum uzililgan?

A) 75 B) 45 C) 35 D) 25

✓Sayyohlar 1–kun belgilangan masofaning $\frac{2}{5}$ qismini o'tishdi. 2–kun $\frac{1}{3}$ qismini bosib o'tildi. Agar 3–kun 24 km yo'lni bosib o'tishgan bo'lsa, 2–kun necha kilometr masofa bosib o'tilgan?

A) 90 B) 100 C) 51 D) 30

Yechimi: butun yo'l uzunligi bizda yo'q uni "x" deb belgilaymiz.

$$\underline{\textit{Sayyohlar 1-kun belgilangan masofaning } \frac{2}{5} \textit{ qismini o'tishdi.}} \Rightarrow \underline{\frac{2}{5}x}$$

$$\underline{2-\textit{kun} \frac{1}{3} \textit{ qismini bosib o'tildi.}} \Rightarrow \underline{\frac{1}{3}x}$$

$$\underline{\textit{Agar 3-kun 24 km yo'lni bosib o'tishgan bo'lsa}} \Rightarrow \underline{24}$$

$$\frac{2}{5}x+\frac{1}{3}x+24=x\ (\cdot 15)$$

$$\frac{{}^{3}2}{5}x+\frac{{}^{5}1}{3}x+24\cdot 15=15x$$

$$6x+5x+360=15x$$

$$6x+5x-15x=-360$$

$$-4x=-360$$

$$x=90$$

$$\underline{2-\textit{kun} \frac{1}{3} \textit{ qismini bosib o'tildi.}} \Rightarrow \underline{\frac{1}{3}x=\frac{1}{3}\cdot 90=30}$$

Javob: 30

Izoh: Butun yo'l uzunligini (qaysi kunni so'rasa) shu kunga $\frac{1}{3}x=\frac{1}{3}\cdot 90=30$ olib borib qo'yadi

2282. Sayyohlar 1–kun belgilangan masofaning $\frac{1}{3}$ qismini o'tishdi. 2–kun $\frac{1}{2}$ qismini bosib o'tildi. Agar 3–kun 1 km yo'lni bosib o'tishgan bo'lsa, 1–kun necha kilometr masofa bosib o'tildi?

A) 2 B) 16 C) 74 D) 64

2283. Ona bir nechta daftar harid qildi va ularni o'quvchi farzandlariga quyidagicha taqsimladi: 5–sinfda o'qiydigan Naimaga jami daftarlarning $\frac{1}{8}$ qismini, 7–sinfda o'qidigan Nozimaga jami daftarlarning $\frac{1}{3}$ qismini berdi. shundan so'ng 26 ta daftarlar qoldi. Nozima nechta daftar olgan?

A) 40 B) 36 C) 16 D) 24

2284. Bog'dan uzilgan uzumlar 3 ta savatga joylandi. 1–savatga jami uzumning $\frac{2}{3}$ qismi, 2– savatga $\frac{2}{15}$ qismi, uchinchisiga esa qolgan 20 kg uzum joylandi. 2–savatga necha kilogram uzum joylangan?

A) $\frac{40}{3}$ B) 100 C) 35 D) 25

✓Uchta sonning nisbati 2:3:8 kabi, ularning yig'indisi esa 66,3 ga teng. shu sonlardan eng kattasini toping.

A) 10,2 B) 15,3 C) 51 D) 40,8

Yechimi:

"nisbat" desa doim "x" qilib oling ya'ni sonlardan keyin "x" qo'yib chiqing.

$$\underline{\textit{Uchta sonning nisbati } 2:3:8 \textit{ kabi}} \Rightarrow \underline{2x;\ 3x;\ 8x}$$

$$\underline{\textit{ularning yig'indisi esa } 66,3 \textit{ ga teng}} \Rightarrow \underline{2x+3x+8x=66,3}$$

$2x+3x+8x=66{,}3$ *shu sonlardan*
$13x=66{,}3$ *eng kattasini*
$x=5{,}1$ *toping.*

$\Rightarrow \begin{cases} 2x=2\cdot 5{,}1=10{,}2 \\ 3x=3\cdot 5{,}1=15{,}3 \\ 8x=8\cdot 5{,}1=\boxed{40{,}8} \end{cases}$

Javob: 40,8

Izoh: chap tomondagi gapni o'ng tomonda matematik tilga tarjimasi yozilgan.

2285. 48 sonini 5 : 11 nisbatda bo'ling?
A) 16 va 32 B) 15 va 33 C) 40 va 8 D) 36 va 12

2286. 180 sonini 2 : 3 : 4 nisbatda bo'ling?
A) 10, 70 va 100 B) 15, 35 va 130
C) 40,60 va 80 D) 40, 70 va 70

2287. Sovg'ani o'rash uchun tasma 4 : 6 kabi nisbatda ikki bo'lakka bo'lindi. Tasmaning uzunligi 94 sm. Kichik bo'lak qancha sm?
A) 56,4 B) 27,6 C) 9,4 D) 37,6

2288. 80 g li konfetni 2 : 3 kabi nisbatda bo'lingan. Katta bo'lak qancha g (gramm)?
A) 48 B) 58 C) 16 D) 24

2289. Arqon 5 : 7 : 13 kabi nisbatda uchta qismga bo'lingan. Arqonning umumiy uzunligi 175 m ga teng. o'rtacha bo'lakning uzunlikni toping.
A) 49 B) 65 C) 35 D) 25

2290. To'qiladigan ip paxta va kaprondan iborat bo'lib, ularning massasi 6:4 kabi nisbatda. To'qiladigan ipning umumiy massasi 1 kg 200 g . Ipda qancha paxta bor?
A) 0,12 B) 0,48 C) 0,72 D) 7,2

2291. Sayohatchilar guruhida 28 ta sayyohlar bor. Sayohatchilar guruhidagi erkaklarning ayollar soniga nisbati 5 : 2 kabi. Guruhda nechta ayollar bor?
A) 20 B) 4 C) 8 D) 7

✓760 ni 3; 6; 10 sonlariga proporsional qilib 3 ta bo'lakka bo'lingan, bo'laklarning kattasini toping.
A) 100 B) 150 C) 510 D) 400

Yechimi:
"proporsional yoki to'gri proporsional" desa doim "x" qilib oling ya'ni sonlardan keyin "x" qo'yib chiqing.

760 ni 3; 6; 10 sonlariga proporsional qilib 3 ta bo'lakka bo'lingan

$\Downarrow$

$3x+6x+10x=760$

$3x+6x+10x=760$

$19x=760$

$x=40$

bo'laklarning kattasini toping $\Rightarrow \boxed{3x=120;\ 9x=360;\ 10x=400}$ **J: 400**

Izoh: chap tomondagi gapni o'ng tomonda matematik tilga tarjimasi yozilgan. Nisbat bilan o'xshash.

2292. 780 sonini 1,5; 0,75; 0,4; 1,25 sonlariga proporsional qilib 4 ta bo'lakka bo'ling.
A) 160, 280, 140, 200 B) 300, 150, 80, 250
C) 300, 150, 130, 200 D) 310, 140, 80, 250

2293. a va b sonlar 2 va 3 sonlariga proporsional. a va b sonlar yig'indisi 100 ga teng. Shu sonlarni toping.
A) 10 va 90 B) 15 va 85
C) 40 va 60 D) 30 va 70

2294. 798 ni $\frac{2}{3}, \frac{3}{4}$ *va* $\frac{4}{5}$ sonlariga to'g'ri proporsional qilib bo'ling.
A) 340, 170, 288 B) 240, 290, 258
C) 250, 270, 278 D) 240, 270, 288

2295. 107 ni $\frac{1}{8}, \frac{1}{27}$ *va* $\frac{1}{3}$ sonlariga to'g'ri proporsional qilib bo'ling.
A) 27, 8, 72 B) 17, 18, 72
C) 17, 20, 70 D) 15, 20, 72

✓540 ni 3; 4; 6 sonlariga teskari proporsional qilib 3 ta bo'lakka bo'lingan, bo'laklarning kichigini toping.
A) 100 B) 120 C) 510 D) 400

Yechimi:
"teskari proporsional" desa doim berilgan sonlarni teskarisini qilib oling va sonlardan keyin "x" qo'yib chiqing.

540 ni 3; 4; 6 sonlariga teskari proporsional qilib 3 ta bo'lakka bo'lingan

$\Downarrow$

$$\frac{1}{3}x+\frac{1}{4}x+\frac{1}{6}x=540$$

$$\frac{1}{3}x+\frac{1}{4}x+\frac{1}{6}x=540\ (\cdot 12)$$

$4x+3x+2x=540\cdot 12$ **Javob: B)**

$9x=540\cdot 12$

$x=720$

bo'laklarning kichigini toping $\Rightarrow \begin{cases} \frac{1}{3}x=\frac{1}{3}\cdot 720=240\ ;\ \frac{1}{4}x=\frac{1}{4}\cdot 720=180 \\ \frac{1}{6}x=\frac{1}{6}\cdot 720=\boxed{120} \end{cases}$

Izoh: Teskari proporsionalda berilgan sonlarning teskarisi topish lozim.

2296. 244 sonini 1; 2; 3; 5 sonlariga teskari proporsional qilib 4 ta bo'lakka bo'ling.
A) 120, 60, 50, 14 B) 120, 60, 40, 24
C) 110, 70, 40, 24 D) 100, 80, 40, 24

2297. a va b sonlar 4 va 5 sonlariga teskari proporsional. ularning yig'indisi 72 ga teng bo'lsa, Shu sonlarni toping.
A) 10 va 62 B) 15 va 57 C) 40 va 32 D) 30 va 40

2298. 765 ni $\frac{2}{3}$, 4 *va* $\frac{1}{2}$ sonlariga teskari proporsional qilib bo'ling.
A) 306, 41, 418 B) 206,151, 408
C) 306, 31, 428 D) 306, 51, 408

✓Uchta idishda jami 144 litr sut bor. 1–idishda y litr, 2–idishda 1–siga qaraganda 12 litr kam, 3–idishda esa 24 litr ko'p sut bor. 2– idishda necha litr sut bor?

A) 99 B) 32 C) 55 D) 88

Yechimi: 1–idishda y litr $\Rightarrow y$

2–idishda 1–siga qaraganda 12 litr kam $\Rightarrow y-12$

3–idishda esa 24 litr ko'p sut bor $\Rightarrow y+24$

Uchta idishda jami 144 litr sut bor $\Rightarrow y+y-12+y+24=144$

$y+y-12+y+24=144$

$3y=144+12-24$

$3y=132$

$y=44$

2– idishda necha litr sut bor? $\Rightarrow y-12=44-12=32$

Javob: 32

Izoh: "kam" desa "–"(ayrish), "ko'p" desa "+"(qo'shish) lozim.

2299. Plastik kartochkada 125500 so'm pul bor edi. Do'kondan 25950 so'mlik xarid amalga oshirildi. Kartochkada necha so'm pul qoldi?

A) 97550 B) 99550 C) 99400 D) 98500

2300. Amudaryoning uzunligi 2540 km. Sirdaryo unga qaraganda 479 km uzun. Sirdaryoning uzunligini (km) toping.

A) 3019 B) 2169 C) 3106 D) 2051

2301. Nurali cho'ponda 123 ta, Sherali cho'ponda esa undan 45 ta ko'p qo'y bor. ikkala cho'ponda jami nechta qo'y bor?

A) 248 B) 168 C) 291 D) 281

2302. G'altakda jami 329 m sim bor edi. Undan 129 m sim kesib olindi. g'altakda qancha sim qoldi?

A) 200 B) 458 C) 291 D) 210

2303. Xirmonda 4570 kg paxta bor edi. Avval 1322 kg, keyin unga yana 1567 kg paxta to'kildi. Xirmonda jami qancha paxta hosili bo'ldi?

A) 7449 B) 6459 C) 2889 D) 7459

2304. Asilbek va Shohruh pomidor terishdi. Asilbek 12 kg 750 g, Shohruh esa Aasilbekdan 8 kg 500 g ko'proq pomidor terdi. ular jami qancha kg pomidor terishdi?

A) 24 B) 34 C) 44 D) 74

2305. Qutiga 647 ta gugurt donasi solingandan so'ng undagi jami gugurt donalari soni 1121 ta donaga yetdi. Dastlab qutida nechta gugurt donasi bo'lgan?

A) 447 B) 454 C) 474 D) 749

2306. Bo'chkaga 214 litr suv solingandan so'ng, undagi suv miqdori 391 litrga yetdi. Dastlab idishda qancha suv bo'lgan?

A) 177 B) 187 C) 147 D) 149

2307. Hamdam bir son o'yladi. Agar unga 45 ni qo'shib, hosil bo'lgan yig'indiga yana 32 qo'shilsa, 84 hosil bo'ladi. Hamdam qaysi sonni o'ylagan?

A) 7 B) 8 C) 4 D) 9

2308. Munira bir son o'yladi. Agar unga 61 ni qo'shib, hosil bo'lgan yig'indidan 112 ayrilsa, 424 hosil bo'ladi. Munira qaysi sonni o'ylagan?

A) 375 B) 475 C) 465 D) 535

2309. Azizada x dona, Nargizada undan 8 dona ko'p, Dilnozada esa Azizadan 3 dona kam kitob bor. Jami opa–singillarda 38 ta kitob bor bo'lsa, Nargizada nechta kitob bor?

A) 11 B) 7 C) 19 D) 18

2310. Ilhomda x dona, Botirda undan 9 dona ko'p, Dilshodda esa Ilhomdan 5 dona kam daftar bor. Ularda jami 55 ta daftar bor bo'lsa, Dilshodda nechta daftar bor?

A) 27 B) 22 C) 31 D) 12

✓$\frac{1}{2}$ ni 3 marta oshiring.

A) 1,5 B) 3,5 C) 5,5 D) 8,8

Yechimi: Marta oshiring desa ko'paytiring.

$\frac{1}{2}\cdot 3=\frac{3}{2}=1,5$ **Javob: 1,5**

Izoh: Marta katta desa esa ko'paytiring.

2311. 14 ni 6 marta oshiring.

A) 64 B) 84 C) 74 D) 94

2312. $\frac{5}{6}$ ni 12 marta oshiring.

A) 10 B) 11 C) 20 D) 51

2313. $\frac{7}{16}$ ni 14 marta oshiring.

A) $6\frac{1}{8}$ B) $5\frac{1}{8}$ C) 49 D) $6\frac{3}{8}$

✓$\frac{44}{45}$ ni 88 marta kamaytiring.

A5) 1,5 B) 3,5 C) 5 D) 8,8

Yechimi: Marta kamaytiring desa ":" bo'lish lozim.

$\frac{44}{45}:88=\frac{44}{45}\cdot\frac{1}{88}=\frac{\cancel{44}}{45}\cdot\frac{1}{\cancel{88}_{2}}=\frac{1}{90}$ **Javob: 1,5**

2314. 23562 ni 231 marta kamaytiring.

A) 162 B) 103 C) 202 D) 102

2315. $\frac{8}{9}$ ni 4 marta kamaytiring.

A) $\frac{2}{9}$ B) 2 C) $\frac{4}{9}$ D) $\frac{8}{37}$

2316. $2\frac{2}{5}$ ni 12 marta kamaytiring.

A) 0,4 B) 0,5 C) 0,2 D) 0,6

✓12 soni $\frac{3}{4}$ dan necha marta katta?

A) 16 B) 15 C) 55 D) 18

Yechimi: Necha marta katta desa ":" bo'lish lozim.

$12\frac{3}{4}=12\frac{4}{3}=\cancel{12}\cdot\frac{4}{\cancel{3}}=16$ **Javob: 16**

2317. 90522 soni 423 dan necha marta katta?
A) 234 B) 214 C) 124 D) 204

2318. 35 soni $\frac{1}{5}$ dan necha marta katta?
A) 175 B) 165 C) 275 D) 515

2319. 480 soni $2\frac{2}{7}$ dan necha marta katta?
A) 110 B) 280 C) 210 D) 30

✓Agar $5\frac{5}{12}$ soni $1\frac{5}{13}$ marta oshirilgan bo'lsa, u qanchaga ko'paygan?
A) $1\frac{1}{12}$ B) $2\frac{1}{12}$ C) 5 D) 2

Yechimi: **Javob:B)**

Agar $5\frac{5}{12}$ soni $1\frac{5}{13}$ marta oshirilgan $\Rightarrow$ $5\frac{5}{12}\cdot 1\frac{5}{13}=\frac{65}{12}\cdot\frac{18}{13}=\frac{\cancel{65}^{5}}{\cancel{12}_{2}}\cdot\frac{\cancel{18}^{3}}{\cancel{13}}=\frac{15}{2}=7\frac{1}{2}$

u qanchaga ko'paygan? $\Rightarrow$ $7\frac{1}{2}-5\frac{5}{12}=2\frac{6-5}{12}=2\frac{1}{12}$

Izoh: Qanchaga ko'payganini bilish uchun ayrish ("–") lozim.

2320. Agar $2\frac{1}{4}$ soni $1\frac{1}{3}$ marta oshirilgan bo'lsa, u qanchaga ko'paygan?
A) 0,75 B) 0,25 C) 1,75 D) 0,5

2321. Agar $4\frac{3}{8}$ soni $1\frac{1}{7}$ marta oshirilgan bo'lsa, u qanchaga ko'paygan?
A) 0,125 B) 0,375 C) 0,625 D) 0,25

2322. Agar $4\frac{9}{10}$ soni $3\frac{1}{3}$ marta oshirilgan bo'lsa, u qanchaga ko'paygan?
A) $10\frac{13}{30}$ B) $11\frac{13}{30}$ C) $12\frac{13}{30}$ D) $\frac{13}{30}$

✓Ikki kunda 220 kg qulupnay terildi. Ikkinchi kuni birinchiga kunga qaraganda 3 marta ko'p qulupnay terildi. birinchi kuni qancha qulupnay terildi?
A) 50 B) 110 C) 55 D) 22

Yechimi:

1–kun $\Rightarrow x$

Ikkinchi kuni birinchiga kunga qaraganda 3 marta ko'p qulupnay terildi $\Rightarrow 3x$

Ikki kunda 220 kg qulupnay terildi $\Rightarrow x+3x=220$

$x+3x=220$ **Javob: 55**

$4x=220$

$x=55$

Izoh: Qaysindan marta katta desa shuni "x" deb belgilang.

2323. Ikki kunda 294 yashik uzum terildi. Ikkinchi kun birinchi kunga qaraganda qaraganda 6 marta ko'p uzum terildi. Birinchi kuni qancha uzum terilgan?
A) 42 B) 56 C) 252 D) 84

2324. Ashrab birinchi kun kitobning 27 betini o'qidi. U ikkinchi kuni kitobning birinchi kunga qaraganda 3 marta ko'p betini o'qidi. U ikki kunda kitobning necha betini o'qigan?
A) 54 B) 81 C) 108 D) 25

2325. Sayohatchi birinchi kuni 12 km yo'l yurdi. U ikkinchi kuni birinchi kunga qaraganda 2 marta ko'p , uchinchi kuni esa birinchi kunga nisbatan 3 marta ko'p yo'l bosdi. Sayohatchi uch kunda qancha masofani bosib o'tgan?
A) 12 B) 72 C) 36 D) 24

✓Birinchi kuni ish normasining $\frac{1}{4}$ qismi bajarildi. Ikkinchi kuni birinchi kunda bajarilgan ishning $\frac{1}{8}$ qismicha ko'p ish bajarildi. Shu ikki kunda qancha bajariladi?
A) $\frac{17}{32}$ B) $\frac{1}{32}$ C) 55 D) $\frac{7}{32}$

Yechimi: Birinchi kuni ish normasining $\frac{1}{4}$ qismi bajarildi $\Rightarrow$ $\frac{1}{4}x+\frac{1}{4}\cdot\frac{1}{8}x$

Ikkinchi kuni birinchi kunda bajarilgan ishning $\frac{1}{8}$ qismicha ko'p ish bajarildi? $\Rightarrow$ $\frac{1}{4}x+\frac{1}{4}\cdot\frac{1}{8}x$

Shu ikki kunda qancha bajariladi $\Rightarrow$ $\frac{1}{4}x+\frac{1}{4}x+\frac{1}{4}\cdot\frac{1}{8}x$

$\frac{1}{4}x+\frac{1}{4}x+\frac{1}{4}\cdot\frac{1}{8}x=\frac{1}{4}x+\frac{1}{4}x+\frac{1}{32}x=\frac{8x+8x+x}{32}=\frac{17x}{32}$

Javob: $\frac{17}{32}$

Izoh: Qismicha ko'pda, oldin qismi keyin qo'shish lozim.

2326. Birinchi kuni ish normasining $\frac{1}{3}$ qismi bajarildi. Ikkinchi kuni birinchi kunda bajarilgan ishning $\frac{1}{6}$ qismicha ko'p ish bajarildi. Shu ikki kunda qancha bajariladi?
A) $\frac{17}{18}$ B) $\frac{13}{18}$ C) $\frac{7}{18}$ D) $\frac{11}{18}$

2327. Ishchilar birinchi kuni buyurtmaning $\frac{2}{9}$ qismini, ikkinchi kuni esa $\frac{1}{3}$qismini bajarishdi. Ikki kunda ishchilar buyurtmaning qancha qismini bajaradilar?
A) $\frac{7}{9}$ B) $\frac{1}{3}$ C) $\frac{6}{9}$ D) $\frac{5}{9}$

2328. Bekzod pulining $\frac{4}{7}$ qismiga kitob va $\frac{2}{7}$ qismiga daftar xarid qildi. Bekzodda pulining qancha qismi qoldi?

A) $\frac{1}{7}$ B) $\frac{6}{7}$ C) $\frac{5}{7}$ D) $\frac{3}{7}$

2329. Ikki kunda bog'dagi o'rikning $\frac{11}{12}$ qismi terildi. Agar birinchi kuni o'rikning $\frac{5}{12}$ qismi terilgan bo'lsa, ikkinchi kuni jami o'rikning qancha qismi terilgan?

A) $\frac{1}{2}$ B) $\frac{4}{12}$ C) $\frac{5}{12}$ D) $\frac{3}{12}$

✓Yer maydoni xaritasida masshtab 1: 1000 ko'rsatilgan. Xaritadagi ikki nuqta orasidagi masofa 1,7 sm ga teng. Haqiqiy masofani (m) hisoblang?

A) 18 B) 170 C) 17 D) 1700

Yechimi:

$$1{,}7 : \frac{1}{1000} = \frac{17}{10} \cdot 1000 = \frac{17}{\cancel{10}} \cdot 100\cancel{0} = 1700$$

$100\ sm = 1\ m$
$17\ 00\ sm = 17\ m$ $\Leftarrow$ $100\ sm = 1m$, $17\ \cancel{00}\ sm = 17\ m$

Javob: 17

Izoh: Haqiqiy tasvirning uzunligini toppish uchun masshtabga bo'lish lozim.

Masshtab(1:1000)–chizmadagi o'lcham haqiqiy o'lchamdan necha marta kichikligini ko'rsatuvchi son.

2330. Yer maydoni xaritasida masshtab 1:1000 ko'rsatilgan. Xaritadagi ikki nuqta orasidagi masofa 5,5 sm ga teng. Haqiqiy masofani (m) hisoblang?

A) 550 B) 55 C) 5,5 D) 5500

2331. Yer maydoni xaritasida masshtab 1: 2000 ko'rsatilgan. Xaritadagi ikki nuqta orasidagi masofa 7 mm ga teng. Haqiqiy masofani (m) hisoblang?

A) 14 B) 1,4 C) 3,5 D) 140

2332. Yer maydoni xaritasida masshtab 1:500 ko'rsatilgan. Xaritadagi ikki nuqta orasidagi masofa 0,4 sm ga teng. Haqiqiy masofani (m) hisoblang?

A) 20 B) 0,2 C) 200 D) 2

✓Ikki shahar orasidagi masofa xaritada 48 sm. Xaritaning masshtab 1: 2000 000. bu shaharlar orasidagi haqiqiy masofani (km) hisoblang?

A) 960 B) 170 C) 17 D) 1700

Yechimi:

$$48 : \frac{1}{2000000} = 48 \cdot 2000000 = 96000000\ sm$$

$100000\ sm = 1km$
$96000000\ sm = 960\ km$

$\Uparrow$

$100000\ sm = 1km$
$960\ \cancel{00000}\ sm = 960\ km$

Javob: 960

2333. Ikki shahar orasidagi masofa xaritada 12,8 sm. Xaritaning masshtab 1:1500 000. bu shaharlar orasidagi haqiqiy masofani (km) hisoblang?

A) 190 B) 192 C) 1920 D) 19,2

2334. Ikki shahar orasidagi masofa xaritada 85,48 sm. Xaritaning masshtab 1: 2500 000. bu shaharlar orasidagi haqiqiy masofani (km) hisoblang?

A) 2137 B) 21,37 C) 213,7 D) 21370

2335. Ikki shahar orasidagi masofa xaritada 24 sm. Xaritaning masshtab 1: 500 000. bu shaharlar orasidagi haqiqiy masofani (km) hisoblang?

A) 1200 B) 12 C) 210 D) 120

✓A va B qishloqlar orasidagi masofa 60 km ga teng. Agar xaritaning masshtab 1:1500 000 bo'lsa, bu qishloqlar orasidagi masofa Xaritada qancha (sm) bo'lishini hisoblang?

A) 0,08 B) 40 C) 1,7 D) 4

Yechimi:

$$60 \cdot \frac{1}{1500000} = 6000000 \cdot \frac{1}{1500000} =$$

$$= 60\cancel{00000} \cdot \frac{1}{15\cancel{00000}} = \frac{60}{15} = 4\ sm$$

Javob: 4

$60\ km = 6000000\ sm$
$100000\ sm = 1\ km$

Izoh: Xaritada qancha (dm, sm, mm) bo'lishini toppish uchun masshtabga ko'paytirish lozim.

2336. Xaritaning masshtabi 1: 2000 000 ko'rsatilgan. Ikki shahar orasidagi masofa 420 km ga teng. Bu shaharlar orasidagi masofa xaritada qancha (sm) bo'ladi?

A) 2100 B) 21 C) 2,1 D) 210

2337. Xaritaning masshtabi 1: 5000 000 ko'rsatilgan. Ikki shahar orasidagi masofa 5250 km ga teng. Bu shaharlar orasidagi masofa xaritada qancha (sm) bo'ladi?

A) 105 B) 2,1 C) 10,5 D) 10

2338. Xaritaning masshtabi 1: 90 000 ko'rsatilgan. Ikki shahar orasidagi masofa 17,1 km ga teng. Bu shaharlar orasidagi masofa xaritada qancha (mm) bo'ladi?

A) 190 B) 19 C) 1,9 D) 21

✓A va B qishloqlar orasidagi masofa xaritada 7,2 sm, aslida haqiqiy masofa 360 km. Xaritaning masshtabi qancha (sm) bo'lishini hisoblang?

A) 1:50000 B) 1:500
C) 1:5000000 D) 1:5000

Yechimi: $1\ km = 100000\ sm$

$$\frac{xaritadagi\ uzunligi}{xaqiqiy\ uzunligi} = \frac{7{,}2\ sm}{360\ km} = \frac{7{,}2\ sm}{360 \cdot 100000\ sm} =$$

$$= \frac{72}{3600 \cdot 100000} = \frac{2}{10000000} = \frac{1}{5000000}$$

Javob: 1:5000 000

Izoh: Xaritaning uznunligini haqiqiy uzunligiga bo'lamiz.

2339. Ikki shahar orasidagi masofa xaritada 5 sm ko'rsatilgan. Haqiqiy uzunligi25 km ga teng. xaritaning masshtabini toping?

A) 1:50000 B) 1: 500000
C) 1: 5000 D) 1: 5000000

2340. Ikki shahar orasidagi masofa xaritada 20 sm ko'rsatilgan. Haqiqiy uzunligi 90 km ga teng. xaritaning masshtabini toping?

A) 1:450000 B) 1: 4500000
C) 1: 45000 D) 1: 45000000

2341. Ikki shahar orasidagi masofa xaritada 40 sm ko'rsatilgan. Haqiqiy uzunligi45 km ga teng. xaritaning masshtabini toping?

A) 1:112500 B) 1: 1125000
C) 1: 11250000 D) 1: 11250

✓1 dan 280 gacha sonlar orasida 7 ga bo'linmaydiganlari nechta?

A) 150 B) 15 C) 240 D) 100

Yechimi:

$$280-\left[\frac{280}{7}\right]=280-40=240$$ **Javob: 240**

Izoh: 1 dan "n" gacha sonlar orasida "m" ga bo'linmaydiganlari desa, solishtiring(butun qismni olish lozim). $n-\left[\frac{n}{m}\right] \Leftrightarrow 280-\left[\frac{280}{7}\right]$

2342. 1 dan 299 gacha sonlar orasida 6 ga bo'linmaydiganlari nechta?

A) 150 B) 250 C) 50 D) 49

2343. 1 dan 580 gacha sonlar orasida 13 ga bo'linmaydiganlari nechta?

A) 536 B) 526 C) 100 D) 436

2344. 1 dan 683 gacha sonlar orasida 17 ga bo'linmaydiganlari nechta?

A) 543 B) 125 C) 653 D) 643

✓1 dan 120 gacha sonlar orasida 2 ga ham, 5 ga ham bo'linmaydiganlari nechta?

A) 48 B) 12 C) 24 D) 10

Yechimi:

$$120-\left(\left[\frac{120}{2}\right]+\left[\frac{120}{5}\right]-\left[\frac{120}{2\cdot5}\right]\right)=$$ **Javob: 48**

$$=120-(60+24-12)=120-72=48$$

Izoh: 1 dan "n" gacha sonlar orasida "m" va k ga bo'linmaydiganlari desa, solishtiring(butun qismni olish lozim). $n-\left(\left[\frac{n}{m}\right]+\left[\frac{n}{k}\right]-\left[\frac{n}{nk}\right]\right)$

2345. 1 dan 126 gacha sonlar orasida 2 ga ham, 7 ga ham bo'linmaydiganlari nechta?

A) 50 B) 54 C) 45 D) 64

2346. 1 dan 120 gacha sonlar orasida 3 ga ham, 5 ga ham bo'linmaydiganlari nechta?

A) 56 B) 60 C) 61 D) 64

2347. 1 dan 175 gacha sonlar orasida 5 ga ham, 7 ga ham bo'linmaydiganlari nechta?

A) 120 B) 126 C) 110 D) 136

✓ Sinfdagi 42 ta o'quvchidan 31 tasi suzish to'garagiga, 16 tasi voleybol to'garagiga qatnashadi. Agar har bir o'quvchi hech bo'lmaganda bitta to'garagiga qatnashsa, faqqat suzish to'garagiga qatnashadigan o'quvchilar nechtani tashkil etadi?

A) 48 B) 12 C) 26 D) 10

Yechimi:

$$\underline{2ta\ to'garakga\ qatnashganlari} \Rightarrow \underline{(31+16)-42=5}$$

$$\underline{\text{faqqat suzish to'garagiga qatnashadigan o'quvchilar}} \Rightarrow \underline{31-5=26}$$ **Javob: 26**

Izoh: Avval 2 ta mashg'ulotga qatnashadiganlarni toppish lozim.

2348. Sinfdagi 36 ta o'quvchidan 27 tasi suzish to'garagiga, 18 tasi voleybol to'garagiga qatnashadi. Agar har bir o'quvchi hech bo'lmaganda bitta to'garagiga qatnashsa, 2 ta to'garakga qatnashadigan o'quvchilar nechtani tashkil etadi?

A) 9 B) 17 C) 18 D) 45

2349. 40 kishidan 32 tasi o'yin to'garagiga, 27 tasi esa xorda ashula aytadi. Necha kishi faqat o'yin to'garagiga qatnashadi?

A) 59 B) 13 C) 19 D) 8

2350. 42 ta turistdan 28 tasi ingliz tilini, 25 tasi fransuz tilini bilishadi. Shu turistlardan nechtasi ikkala tilni ham bilishadi?

A) 12 B) 16 C) 11 D) 13

✓ $\overline{2ery6}$ ni mingli, yuzli, o'nli va birli qismlarga ajratib yozilgan javobni toping.

A) $2\cdot10000+e\cdot1000+r\cdot100+y\cdot10+6$

B) $2\cdot1000+e\cdot1000+r\cdot100+y\cdot10+6$

C) $2\cdot1000+e\cdot100+r\cdot100+y\cdot10+6$

D) $2\cdot1000+e\cdot100+r\cdot100+y\cdot10$

Yechimi:

$\overline{ab}=a\cdot10+b$

$24=2\cdot10+4$

$\overline{abc}=a\cdot100+b\cdot10+c$

$938=9\cdot100+3\cdot10+8$

$\overline{abck}=a\cdot1000+b\cdot100+c\cdot10+k$

$3568=3\cdot1000+5\cdot100+6\cdot10+8$

Javob: $\overline{2ery6}=2\cdot10000+e\cdot1000+r\cdot100+y\cdot10+6$

Izoh: Yuqorida yozilganlar pastida misol $\overline{ab}=a\cdot10+b$ ✓ qilib yozib qo'yilgan.
$24=2\cdot10+4$

2351. $\overline{45dfg}$ ni mingli, yuzli, o'nli va birli qismlarga ajratib yozilgan javobni toping.

A) $4\cdot10000+5\cdot100+d\cdot100+f\cdot10+g$

B) $4\cdot10000+5\cdot1000+d\cdot100+f\cdot10+g$

C) $4\cdot10000+5\cdot1000+d\cdot100+g\cdot10+f$

D) $4\cdot10000+5\cdot1000+f\cdot100+d\cdot10+g$

2352. $\overline{2gh007}$ ni mingli, yuzli, o'nli va birli qismlarga ajratib yozilgan javobni toping.

A) $2\cdot100000+h\cdot10000+g\cdot1000+7$

B) $2\cdot1000000+g\cdot10000+h\cdot1000+7$ ✓

C) $2\cdot100000+g\cdot10000+h\cdot1000+7$

D) $2\cdot100000+g\cdot10000+h\cdot100+7$

2353. $\overline{800as}$ ni mingli, yuzli, o'nli va birli qismlarga ajratib yozilgan javobni toping.

A) $8\cdot10000+a\cdot100+s\cdot10+7$

B) $8\cdot10000+a\cdot100+s\cdot10$

C) $8\cdot100000+a\cdot10+s$

D) $8\cdot10000+a\cdot10+s$

✓ $\overline{aa2a}+\overline{28a}=\overline{a402}$ dan a ni toping.

A) 1 B) 2 C) 3 D) 4

Yechimi:

1–usul

$\overline{aa2a}+\overline{28a}=\overline{a402}$ ning har birini mingli, yuzli, o'nli va birli qismlarga ajratib yozamiz.

$\overline{aa2a}+\overline{28a}=\overline{a402}$

$a\cdot1000+a\cdot100+2\cdot10+a+2\cdot100+8\cdot10+a=$

$=a\cdot1000+4\cdot100+2$

$1102a+300=1000a+402$

$102a=102$

$a=1$

ustuncha qilib qo'shilgan uni tahlil qiling:

2–usul

$\begin{array}{r}\overline{aa2a}\\ +\overline{28a}\\ \hline \overline{a402}\end{array}\Rightarrow$ $a+a=2$ *yoki* $a+a=12$ *ekanligidan* $a=1$ *yoki* $a=6$

$a=1\Rightarrow\begin{array}{r}1121\\ +281\\ \hline 1402\end{array}\Rightarrow$ *demak,* $a=1$

$a=6\Rightarrow\begin{array}{r}6626\\ +286\\ \hline 7912\end{array}\Rightarrow$ *demak,* $a=6$ *emas*

2354. $\overline{18c}+\overline{c8c}=566$ dan c ni toping.

A) 1 B) 2 C) 3 D) 4

2355. $\overline{bb2b}-\overline{5bl}=3883$ dan b ni toping.

A) 1 B) 2 C) 3 D) 4

2356. $\overline{a22}+\overline{a22}=\overline{8aa}$ dan a ni toping.

A) 1 B) 2 C) 3 D) 4

2357. $\overline{1a1a1}+\overline{13131}=\overline{a5a5a}$ dan a ni toping.

A) 1 B) 2 C) 3 D) 4

✓ $\overline{b008}-\overline{cc}=\overline{cc0c}$ dan c; $b$ni toping.

A) c=9; b=1 B) c=9; b=1

C) c=1; b=9 D) c=9; b=5

Yechimi:

$\overline{b008}-\overline{cc}=\overline{cc0c}$

agar ayruv "–" qilib berilsa, o'ng tomonga "+" qilib o'tkazish lozim

$\overline{b008}-\overline{cc}=\overline{cc0c}$ $\Rightarrow$ $\begin{array}{r}\overline{b0008}\\ -\overline{cc}\\ \hline \overline{cc0c}\end{array}\Rightarrow\begin{array}{r}\overline{cc0c}\\ +\overline{cc}\\ \hline \overline{b0008}\end{array}$

$\Downarrow$ $\Downarrow$

$\overline{b008}=\overline{cc0c}+\overline{cc}$ | $c+c=8$ *yoki* $c+c=18$ **ekanligidan** $a=4$ *yoki* $c=9$

$c=4\Rightarrow\begin{array}{r}4404\\ +44\\ \hline 4458\end{array}\Rightarrow$ *demak,* $c=4$ *emas*

$c=9\Rightarrow\begin{array}{r}9909\\ +99\\ \hline 10008\end{array}\Rightarrow$ *demak,* $c=9$ $b=1$

Javob: c=9; b=1

Izoh: Bir xil harflar, bir xil raqamlardir.

2358. $\overline{abba}-\overline{2ab6}=\overline{b702}$ dan a; b ni toping.

A) a=8; b=15 B) a=3; b=1

C) a=8; b=5 D) a=4; b=5

2359. $\overline{a003b}-\overline{bba}=\overline{98aa}$ dan a; b ni toping.

A) a=8; b=15 B) a=1; b=2

C) a=1; b=5 D) a=4; b=5

2360. $\overline{98c}+\overline{8c}=\overline{a0c4}$ dan a; c ni toping.

A) a=4; c=2 B) a=2; c=1

C) a=1; c=7 D) a=1; c=2

2361. $\overline{ABC}+\overline{MN}=\overline{FEDP}$ dan $F^{M+N}+A^{F}$ ni toping.

A) 11 B) 20 C) 31 D) 10

2362. $\overline{abc}+\overline{dec}=\overline{fkmc}$ dan $f^{a+b}(b+d)^{c}$ ni toping.

A) 1 B) 2 C) 3 D) 4

✓ Ikki xonali son bilan uning raqamlari o'rinlarini almashtirishdan hosil bo'lgan son ayirmasi quyidagilardan qaysi biriga qoldiqsiz bo'linadi?

A) 5 B) 9 C) 11 D) 4

Yechimi: Ikki xonali son $\Rightarrow\overline{ab}$

Ikki xonali son bilan uning raqamlari o'rinlarini almashtirishdan hosil bo'lgan son ayirmasi $\Rightarrow\overline{ab}-\overline{ba}$

$\overline{ab}-\overline{ba}=10a+b-(10b+a)=10a+b-10b-a=9a-9b=9(a-b)$

demak, 9 ga karali ekan **Javob:** 9

2363. Ikki xonali son bilan uning raqamlari o'rinlarini almashtirishdan hosil bo'lgan son yig'indisi quyidagilardan qaysi biriga qoldiqsiz bo'linadi?

A) 8 B) 3 C) 11 D) 9

2364. Ikki xonali sonning o'ng tomoniga 0 raqami yozilsa, berilgan sonning yarmi bilan 323 ning yig'indisiga teng. bo'ldan son hosil bo'ladi. Berilgan sonni toping.

A) 18 B) 34 C) 26 D) 24

2365. Ikki xonali son o'zining raqamlari yig'indisidan 4 marta katta. Raqamlari kvadratlarining yig'indisi 5 ga teng. Shu ikki xonali sonning kvadratini hisoblang.
A) 144 B) 441 C) 121 D) 361

2366. Raqamlari yig'indisining uchlanganiga teng ikki xonali sonni toping.
A) 27 B) 17 C) 11 D) 21

2367. Raqamlari yig'indisiga bo'lganda, bo'linmasi 4 ga va qoldig'i nolga teng bo'ladigan ikki xonali sonlardan birini ko'rsating.
A) 16 B) 36 C) 42 D) 25

✓A, B–raqamlar, AB va 5A esa ikki xonali sonlar. Agar AB•3=5A bo'lsa, A^2+B^2 ning qiymati qanchaga teng bo'ladi?
A) 65 B) 37 C) 13 D) 50

Yechimi:

$\underline{AB\cdot 3=5A} \Rightarrow \boxed{AB=\frac{5A}{3}}$

$\underline{5A} \Rightarrow \begin{bmatrix}51\\54\\57\end{bmatrix} \Rightarrow \begin{bmatrix}\frac{51}{3}=17\\ \frac{54}{3}=18??\\ \frac{57}{3}=19??\end{bmatrix}$

$\underline{\frac{51}{3}=17} \Rightarrow \boxed{AB=\frac{5A}{3}}$

$A^2+B^2=1^2+7^2=50$

Javob: 50

Izoh: $\underline{AB\cdot 3=5A} \Rightarrow \boxed{AB=\frac{5A}{3}}$ ekanligidan ellik nechidir son 3 ga bo'linadi deb qidirish lozim.

2368. A, B–raqamlar, BA va 9A esa ikki xonali sonlar. Agar BA•6=9A bo'lsa, $A+B$ ning qiymati qanchaga teng bo'ladi?
A) 8 B) 7 C) 6 D) 1

2369. A, B–raqamlar, BA va 4A esa ikki xonali sonlar. Agar BA•3=4A bo'lsa, A^2+B^2 ning qiymati qanchaga teng bo'ladi?
A) 18 B) 34 C) 26 D) 24

2370. A, B–raqamlar, AB va B5 esa ikki xonali sonlar. Agar AB•5=B5 bo'lsa, $B-A$ ning qiymati qanchaga teng bo'ladi?
A) 8 B) 3 C) 11 D) 9

✓Otasi 66, o'g'li 16 yoshda. Necha yildan keyin otasi o'g'lidan 3 marta katta bo'ladi?
A) 5 B) 9 C) 6 D) 4

Yechimi:

$\underline{\text{Necha yildan keyin}} \Rightarrow \boxed{x}$

$\underline{\text{Otasi 66, o'g'li 16 yoshda. Necha yildan keyin otasi o'g'lidan 3 marta katta}} \Rightarrow \boxed{66+x=3(x+16)}$

$66+x=3(x+16)$

$66+x=3x+48$

$-2x=-18$

$x=9$

Javob: 9

Izoh: Necha yildan keyin degani uchun "+" (qo'shish) lozim. Agar necha yil oldin desa "–" (ayrish) lozim.

2371. Otasi 40, o'g'li 16 yoshda. Necha yildan keyin otasi o'g'lidan 2 marta katta bo'ladi?
A) 8 B) 5 C) 4 D) 6

2372. Buvisi 100, nabirasi 28 yoshda. Nechi yil oldin nabirasi buvisidan 4 marta yosh bo'lgan?
A) 8 B) 5 C) 4 D) 6

2373. Onasi 50, qizi 28 yoshda. Nechi yil oldin qizi onasidan 2 marta yosh bo'lgan.
A) 5 B) 6 C) 8 D) 4

✓Ikki sonning yig'indisi 5,6 ga teng. Ulardan biri ikkinchisidan 3 marta kichik. Shu sonlarning kattasini toping.
A) 5,2 B) 9,3 C) 6,2 D) 4,2

Yechimi:

$\underline{\text{ikki sonning yig'indisi 5,6 ga teng.}} \Rightarrow \boxed{x+y=5,6}$

$\underline{\text{Ulardan biri ikkinchisidan 3 marta kichik.}} \Rightarrow \boxed{x=\frac{y}{3}}$

$\begin{cases}x+y=5,6\\ x=\frac{y}{3}\end{cases}$ *sistemani yechamiz.*

$x+y=5,6$

$\frac{y}{3}+y=5,6$

$y+3y=5,6\cdot 3$

$4y=16,8$

$y=4,2$

Javob: 4,2

Izoh: bu turdagi misollarni yechish uchun sistemasini tuzib olish lozim.

2374. Ikki soning yig'indisi 6,5 ga teng. Ulardan biri ikkinchisidan 4 marta kichik. Shu sonlarning kattasini toping.
A) 6 B) 5,2 C) 4 D) 5,3

2375. Ikki sonning yigindisi 7 ga teng. Ulardan biri ikkinchisidan 4 marta kichik bo'lsa, shu sonlarning kattasini toping.
A) 5,2 B) 6,2 C) 5,6 D) 5,4

2376. Ikki soning yig'indisi 4,8 ga teng. Ulardan biri ikkinchisidan 3 marta kichik. Shu sonlarning kichigini toping.
A) 1,2 B) 1,4 C) 1,6 D) 2,1

✓Fermada tovuq va qo'ylar bor. Ularning jami soni 170 ta, oyoqlar soni 440 ta. Qo'ylar nechta?
A) 50 B) 80 C) 60 D) 70

Yechimi:

fermadagi tovuqlar soni $\Rightarrow \boxed{x}$

fermadagi qo'ylar soni $\Rightarrow \boxed{y}$

fermadagi tovuq oyoqlari soni $\Rightarrow \boxed{2x}$

fermadagi qo'ylar oyoqlari soni $\Rightarrow \boxed{4y}$

$\begin{cases} x+y=170 \\ 2x+4y=440 \end{cases}$ *sistemani yechamiz*

$\begin{cases} x+y=170\,(\cdot -2) \\ 2x+4y=440 \end{cases} \Leftrightarrow \begin{cases} -2x-2y=-340 \\ 2x+4y=440 \end{cases}$

$+\begin{cases} -2x-2y=-340 \\ 2x+4y=440 \end{cases}$

$2y=100$

$y=50$

Javob: 50

Izoh: Bu turdagi misollarni yechish uchun sistemasini tuzib olish lozim.

2377. Fermada tovuq va qo'ylar bor. Ularning jami soni 139 ta, oyoqlar soni 446 ta. Tovuqlar nechta?

A) 65 B) 55 C) 42 D) 84

2378. Katakda quyonlar va tovuqlar bor. Agar oyoqlar 180 ta va boshlari 57 ta bolsa, tovuqlar nechta?

A) 35 B) 33 C) 24 D) 14

2379. Do'kondagi 3 g'ildirakli va 2 g'ildrakli velosipedlar soni 70 ta, g'ildraklari soni 166 ta. 3 g'ildrakli velosipedlar soni topilsin.

A) 26 B) 34 C) 16 D) 44

✓Agar ikki sondan birinchisining ikkilanganidan ikkinchi sonning ayirmasi 7 ga teng, birinchi sondan ikkinchi son ikkilanganining ayirmasi 8 ga teng bo'lsa, shu sonlarni toping.

A) 5; 3 B) 8; 0 C) 6; 4 D) 7; 4

Yechimi:

Agar ikki sondan $\Rightarrow$ $x,\ y$

Agar ikki sondan birinchisining ikkilanganidan ikkinchi sonning ayirmasi 7 ga teng. $\Rightarrow$ $2x-y=7$

birinchi sondan ikkinchi son ikkilanganining ayirmasi 8 ga teng. $\Rightarrow$ $x-2y=8$

$\begin{cases} 2x-y=7 \\ x-2y=8 \end{cases}$ sistemani yechamiz.

$\begin{cases} 2x-y=7 \\ x-2y=8\,(\cdot -2) \end{cases} \Leftrightarrow \begin{cases} 2x-y=7 \\ -2x+4y=-16 \end{cases}$

$+\begin{cases} 2x-y=7 \\ -2x+4y=-16 \end{cases}$

$3y=9$

$y=3$

$2x-y=7$

$2x-3=7$

$2x=10$

$x=5$

Javob: 5; 3

Izoh: Bu turdagi misollarni yechish uchun sistemasini tuzib olish lozim.

2380. 2500 so'mga 1 kg anjir va 20 kg husayni uzum sotib olishdi. Agar 5 kg anjir 10 kg uzum 3500 so'm tursa, har bir meaning 1 kg qancha?

A) 615; 115 B) 500; 100

C) 145; 180 D) 285; 135

2381. Kinoteatrda ikki kunda 792 ta bilet sotildi.Bir kassasida ikkinchi kassasiga qaraganda 86 ta ko'p bilet sotilgan. Har bir kassada nechtadan bilet sotilgan?

A) 539; 253 B) 429; 363

C) 439; 353 D) 449; 343

2382. Ikki ishchi 86 ta detal tayorladi. Birinchi ishchi ikkinchisiga qaraganda 8 ta kam detal tayorlagan. har bir ishchi nechtadan detal tayorlagan.

A) 39; 47 B) 49; 37

C) 19; 67 D) 29;57

2383. 14 m matodan 4 ta erkaklar 2 ta bolalar kastumi tikish mumkin. Agar 15 m shu matodan 2 ta erkaklar va 6 ta bolalar kastumi tikish mumkin bo'lsa, 1 ta erkaklar va 1 ta bolalar ko'ylagi uchun necha metr mato kerak?

A) 2,6 B) 3,4 C) 1,6 D) 4,3

✓Bir nechta natural sonlarning yig'indisi 75 ga teng. Agar shu sonlarning har biridan 2 ni ayirib, yig'indi hisoblansa, 61 ga teng bo'ladi. Yigindida nechta son qatnashgan?

A) 3 B) 7 C) 4 D) 5

Yechimi:

Yigindida nechta son qatnashgan? $\Rightarrow$ n

Bir nechta natural sonlarning yig'indisi 75 ga teng. $\Rightarrow$ $a_1+a_2+...+a_n=75$

Agar shusonlarning har biridan 2 ni ayirib, $\Rightarrow$ $a_1-2+a_2-2+...+a_n-2$

Agar shu sonlarning har biridan 2 ni ayirib, yig'indi hisoblansa, 61 ga teng. $\Rightarrow$ $a_1+a_2+...+a_n-2n=61$

$a_1+a_2+...+a_n-2n=61$

$75-2n=61$

$-2n=61-75$

$-2n=-14$

$n=7$

Javob: 7

2384. Bir nechta natural sonlarning yig'indisi 94 ga teng. Agar shu sonlarning har biridan 3 ni ayirib, yig'indi hisoblansa, 58 ga teng bo'ladi. Yigindida nechta son qatnashgan?

A) 5 B) 12 C) 14 D) 8

2385. Bir nechta natural son berilgan va ularning yigindisi 76. Agarda har bir sonni 3 ga oshirsak, unda yangi sonlar yig'indisi 97 ga teng. Qancha son berilgan edi?

A) 3 B) 7 C) 6 D) 17

2386. Bir nechta natural sonlarning yig'indisi 205 ga teng. Agar shu sonlarning har biridan 5 ni ayirib, yig'indi hisoblansa, 90 ga teng bo'ladi. Yigindida nechta son qatnashgan?

A) 3 B) 23 C) 14 D) 13

2387. Bir nechta natural son berilgan va ularning yigindisi 25. Agarda har bir sonni 7 ga oshirsak, unda yangi sonlar yig'indisi 95 ga teng. Qancha son berilgan edi?

A) 5 B) 8 C) 9 D) 10

✓Berilgan beshta sonning har biri 3 ga ko'paytirilib, so'ngra hosil bo'lgan sonlarning har biriga 2 q... Hosil bo'lgan sonlar yig'indisi 70 ga teng bo'lsa, berilgan sonlar yig'indisi nechaga teng bo'lgan?

A) 20 B) 70 C) 30 D) 40

Yechimi:

Berilgan beshta sonning har biri 3 ga ko'paytirilib, $\Rightarrow$ $a; b; c; n; m$ / $3a; 3b; 3c; 3n; 3m$

so'ngra hosil bo'lgan sonlarning har biriga 2 qo'shildi.

$\Downarrow$

$3a+2;\ 3b+2;\ 3c+2;\ 3n+2;\ 3m+2$

Hosil bo'lgan sonlar yig'indisi 70 ga teng bo'lsa.

$\Downarrow$

$$3a+2+3b+2+3c+2+3n+2+3m+2=70$$

$$3a+2+3b+2+3c+2+3n+2+3m+2=70$$

$$3a+3b+3c+3n+3m+2\cdot 5=70$$

$$3a+3b+3c+3n+3m=70-10$$

$$3a+3b+3c+3n+3m=60$$

$$3(a+b+c+n+m)=60$$

$$a+b+c+n+m=20$$

J: 20

2388. Berilgan to'rtta sonning har biri 6 ga ko'paytirilib, so'ngra hosil bo'lgan sonlarning har biriga 5 qo'shildi. Hosil bo'lgan sonlar yig'indisi 50 ga teng bo'lsa, berilgan sonlar yig'indisi nechaga teng bo'lgan?

A) 5 B) 12 C) 14 D) 45

2389. Berilgan oltita sonning har biri 4 ga ko'paytirilib, so'ngra hosil bo'lgan sonlarning har biridan 5 ayrildi. Hosil bo'lgan sonlar yig'indisi 50 ga teng bo'lsa, berilgan sonlar yig'indisi nechaga teng bo'lgan?

A) 5 B) 12 C) 20 D) 8

2390. Berilgan beshta sonning har biri 7 ga ko'paytirilib, so'ngra hosil bo'lgan sonlarning har biridan 2 ayrildi. Hosil bo'lgan sonlar yig'indisi 60 ga teng bo'lsa, berilgan sonlar yig'indisi nechaga teng bo'lgan?

A) 10 B) 12 C) 14 D) 8

✓7 ta sonning o'rta arifmetigi 13 ga teng. Bu sonlarga qaysi son qo'shilsa, ularning o'rta arifmetigi 18 bo'ladi?

A) 20 B) 73 C) 30 D) 53

Yechimi:

7 ta sonning o'rta arifmetigi 13 ga teng. $\Rightarrow \dfrac{a_1+a_2+...+a_7}{7}=13$

Bu sonlarga qaysi son qo'shilsa, ularning o'rta arifmetigi 18. $\Rightarrow \dfrac{a_1+a_2+...+a_7+x}{8}=18$

$$\frac{a_1+a_2+...+a_7}{7}=13$$

$\Downarrow$

$$a_1+a_2+...+a_7=13\cdot 7$$

$$a_1+a_2+...+a_7=91$$

$$\frac{\overbrace{a_1+a_2+...+a_7}^{91}+x}{8}=18$$

$$\frac{91+x}{8}=18$$

$$91+x=18\cdot 8$$

$$x=144-91$$

$$x=53$$

Javob: 53

2391. 11 ta sonning o'rta arifmetigi 14 ga teng. Bu sonlarga qaysi son qo'shilsa, ularning o'rta arifmetigi 13 bo'ladi?

A) 5 B) 1 C) 4 D) 2

2392. 5 ta sonning o'rta arifmetigi 16 ga teng. Bu sonlarga qaysi son qo'shilsa, ularning o'rta arifmetigi 22 bo'ladi?

A) 80 B) 12 C) 20 D) 52

2393. 9 ta sonning o'rta arifmetigi 21 ga teng. Bu sonlarga qaysi son qo'shilsa, ularning o'rta arifmetigi 34 bo'ladi?

A) 51 B) 121 C) 142 D) 151

✓M ta sonning o'rta arifmetigi 13 ga, boshqa N tasiniki esa 35 ga teng. Shu M+N ta sonning o'rta arifmetigini toping.

A) $\dfrac{13N+35M}{M+N}$ B) $\dfrac{13M}{M+N}$ C) $\dfrac{13M+35N}{M+N}$ D) $\dfrac{M}{N}$

Yechimi:

M ta sonning o'rta arifmetigi 13 ga $\Rightarrow \dfrac{a_1+a_2+...+a_M}{M}=13$

boshqa N ta sonning o'rta arifmetigi 35 ga $\Rightarrow \dfrac{b_1+b_2+...+b_N}{N}=35$

Shu M+N ta sonning o'rta arifmetigi

$\Downarrow$

$$\frac{a_1+a_2+...+a_M+b_1+b_2+...+b_N}{M+N}=???$$

$\dfrac{a_1+a_2+...+a_M}{M}=13$ $\Downarrow$ $a_1+a_2+...+a_M=13M$

$\dfrac{b_1+b_2+...+b_N}{N}=35$ $\Downarrow$ $b_1+b_2+...+b_N=35N$

$$\frac{\overbrace{a_1+a_2+...+a_M}^{13M}+\overbrace{b_1+b_2+...+b_N}^{35N}}{M+N}=\frac{13M+35N}{M+N}$$

Javob:A

2394. N ta sonning o'rta arifmetigi 24 ga, boshqa M tasiniki esa 17 ga teng. Shu M+N ta sonning o'rta arifmetigini toping.

A) $\dfrac{24N+17M}{M+N}$ B) $\dfrac{13M}{M+N}$ C) $\dfrac{24M+17N}{M+N}$ D) $\dfrac{M}{N}$

2395. C ta sonning o'rta arifmetigi 25 ga, boshqa K tasiniki esa 31 ga teng. Shu C+K ta sonning o'rta arifmetigini toping.

A) $\dfrac{24K+31C}{K+C}$ B) $\dfrac{31K}{K+C}$ C) $\dfrac{25C+31K}{K+C}$ D) $\dfrac{C}{K}$

2396. N ta sonning o'rta arifmetigi 78 ga, boshqa M tasiniki esa 87 ga teng. Shu M+N ta sonning o'rta arifmetigini toping.

A) $\dfrac{78N+87M}{M+N}$ B) $\dfrac{13M}{M+N}$

C) $\dfrac{78M+87N}{M+N}$ D) $\dfrac{M}{N}$

✓Kasrning suratiga 2 qo'shilsa, kasr 1 ga, maxrajiga uch qo'shilsa, u $\frac{1}{2}$ ga teng bo'ladi. Shu kasrning $\frac{3}{5}$ qismini toping.

A) $\frac{3}{7}$ B) $\frac{4}{7}$ C) $\frac{5}{7}$ D) $\frac{8}{7}$

Yechimi:

$\underline{kasr} \Rightarrow \frac{x}{y}$

$\underline{\text{Kasrning suratiga 2 qo'shilsa, kasr 1 ga}} \Rightarrow \boxed{\frac{x+2}{y}=1}$

$\underline{\text{maxrajiga uch qo'shilsa, u } \frac{1}{2} \text{ ga teng bo'ladi}} \Rightarrow \boxed{\frac{x}{y+3}=\frac{1}{2}}$

$$\begin{cases} \frac{x+2}{y}=1 \\ \frac{x}{y+3}=\frac{1}{2} \end{cases} \Leftrightarrow \begin{cases} x+2=y \\ 2x=y+3 \end{cases} \Leftrightarrow \begin{cases} x-y=-2 \\ 2x-y=3 \end{cases}$$

$$\underline{\begin{cases} x-y=-2 \\ 2x-y=3 \end{cases}} \Rightarrow \underline{\begin{cases} x-y=-2 \\ 5-y=-2 \\ -y=-2-5 \\ y=7 \end{cases}}$$

$$\underline{\frac{x}{y}=\frac{5}{7} \Rightarrow \frac{3}{5} \text{ Shu kasrning } \frac{3}{5} \text{ qismini toping.}} \Rightarrow \boxed{\frac{5}{7}\cdot\frac{3}{5}=\frac{3}{7}}$$

Javob: $\frac{3}{7}$

2397. Kasrning maxraji suratidan 4 birlik ortiq. Agar kasrning surati va maxraji 1 birlik ortirilsa, $\frac{1}{2}$ soni hosil bo'ladi. Berilgan kasrning kvadratini toping.

A) $\frac{25}{81}$ B) $\frac{49}{121}$ C) $\frac{9}{49}$ D) $\frac{121}{225}$

2398. Kasr surati va maxrajining yig'indisi 23 ga teng. Surati maxrajidan 9 ta kam. Kasrni toping.

A) $\frac{7}{16}$ B) $\frac{8}{15}$ C) $\frac{16}{7}$ D) $\frac{10}{13}$

Prosent (Foizlar)

✓ 35 % ni kasr ko'rinishini toping.

A) 0,38 B) 0,12 C) 0,35 D) 1,2

Yechimi:

Ta'rif: Sonning yuzdan bir qismi shu sonning protsenti(foizi) deyiladi.

demak,

$\underline{35\% \text{ ni kasr ko'rinishi}} \Rightarrow \boxed{35\%=\frac{35}{100}=0,35}$

Javob: 0,35

Izoh: a % ni kasr ko'rinishda $\frac{a}{100}$ qilib yozib olish lozim.

2399. 12,8% ni kasr ko'rinishini toping.

A) 0,0128 B) 0,128 C) 1,28 D) 12,8

2400. $35\frac{5}{7}$ % ni kasr ko'rinishini toping.

A) 5/14 B) 11/14 C) 3/14 D) 9/14

2401. $187\frac{1}{2}$ % ni kasr ko'rinishini toping.

A) 18,75 B) 1,75 C) 0,1875 D) 1,875

2402. 25% ni kasr ko'rinishini toping.

A) 0,25 B) 2,5 C) 0,025 D) 0,36

2403. $6\frac{1}{4}$ % ni kasr ko'rinishini toping.

A) 0,625 B) 0,0625 C) 6,25 D) 0,0125

2404. 22,5% ni kasr ko'rinishini toping.

A) 2,25 B) 0,0225 C) 0,235 D) 0,225

2405. 750% ni kasr ko'rinishini toping.

A) 0,75 B) 7,5 C) 75 D) 0,075

✓ 240 ning85 % ini toping.

A) 482 B) 124 C) 265 D) 204

Yechimi:

1–usul

$\underline{240 \to 100\%,\ x \to 85\%} \Rightarrow \boxed{x=\frac{240\cdot 85}{100}=204}$

2–usul

$\underline{a \text{ sonining } t \text{ % i}} \Rightarrow \boxed{x=a\cdot\frac{t}{100}}$

$\underline{240 \text{ ning } 85 \text{ % i}} \Rightarrow \boxed{x=240\cdot\frac{85}{100}=204}$

Javob: 204

Izoh: *2*–usulda avval protsentni kasr ko'rinishda $\frac{85}{100}$ qilib yozib olib keyin, berilgan sonni ko'paytirish lozim.

$x=240\cdot\frac{85}{100}$

2406. 500 ning 3% ini toping.

A) 15 B) 30 C) 45 D) 25

2407. 280 ning 10% ini toping.

A)18 B) 28 C)14 D) 12

2408. 9,5 ning 280% ini toping.

A) 2,66 B) 0,266 C) 28,6 D) 26,6

2409. 8,5 ning 120% ini toping.

A) 8,6 B) 10,8 C) 10,2 D) 9,4

2410. 1,25 ning 1,2% ini toping.

A) 0,015 B) 0,15 C) 0,05 D) 1,5

✓85 % i204 ga teng sonni toping.

A) 482 B) 240 C) 265 D) 204

Yechimi:

$\underline{85 \text{ % i } 204 \text{ ga teng son}} \Rightarrow \boxed{\frac{85}{100}x=204}$

$\frac{85}{100}x=204$

$x=204:\frac{85}{100}$

$x=204\cdot\frac{100}{85}=240$

Javob: 240

Izoh: Avval protsentni kasr ko'rinishda $\frac{85}{100}$ qilib yozib oling.

2411. 8% i 24 ga teng sonni toping.
A) 200 B)150 C) 300 D) 250

2412. 30% i $12\frac{3}{4}$ ga teng sonni toping.
A) 32,5 B) 5,35 C) 40,5 D) 42,5

2413. 10% ni 0,14 kg ga teng sonni toping.
A) 1,4 B) 2,8 C) 3,5 D) 0,28

2414. 52% i 1,04 ga teng sonni toping.
A) 3 B) 2 C) 4 D) 5

2415. $1\frac{1}{4}$% i 55 ga teng sonni toping.
A) 440 B) 4400 C) 6600 D) 4000

2416. 750% ni 450 ga teng sonni toping.
A) 60 B) 50 C) 80 D)90

2417. 120% ni 0,6 ga teng sonni toping.
A) 0,4 B) 0,8 C) 0,15 D) 0,5

✓85%• x = 204 tenglamani yeching.
A) 482 B) 240 C) 265 D) 204
Yechimi:

$\frac{85}{100}x = 204$

$x = 204 : \frac{85}{100}$ **Javob: 240**

$x = 204 \cdot \frac{100}{85} = 240$

Izoh: Yechimi oldingi misol bilan bir xil.

2418. 60%•x = 24 tenglamani yeching.
A) 40 B) 80 C) 60 D) 100

2419. $1\frac{2}{3}$ %•x = 4,75 tenglamani yeching.
A) 275 B) 560 C) 180 D) 285

2420. $2\frac{1}{2}$ %•x = 0,15 tenglamani yeching.
A) 5 B) 4 C) 6 D) 3

2421. $10\frac{3}{4}$ %•x = 8,6 tenglamani yeching.
A) 80 B) 90 C) 70 D) 85

2422. $\frac{2}{3}$%•x = $4\frac{1}{5}$ tenglamani yeching.
A) 620 B) 630 C) 680 D) 600

✓ $\frac{5}{16}$ kasrni prosent ko'rinishini toping.
A) 48,2 B) 31,25 C) 26,5 D) 20.4
Yechimi:

$\frac{5}{16} \cdot 100 = \frac{500}{16} = 31,25\%$ **Javob: 31,25**

Izoh: solishtirib o'rganing.

$\frac{5}{16}$ kasrni prosent ko'rinishini toping $\Rightarrow \frac{5}{16} \cdot 100$

35 % ni kasr ko'rinishi $\Rightarrow \frac{35}{100}$

2423. $\frac{1}{2}$ kasrni present (%) ko'rinishini toping.
A) 40 B) 60 C) 80 D) 50

2424. 0,2 kasrni prosent (%) ko'rinishini toping.
A) 60 B) 40 C) 20 D) 30

2425. $\frac{1}{8}$ kasrni prosent (%) ko'rinishini toping.
A) 12,5 B)1,25 C) 25 D) 14,5

2426. 0,042 kasrni prosent (%) ko'rinishini toping.
A) 30 B) 4,2 C) 6,5 D) 4,4

2427. $\frac{2}{5}$ kasrni prosent (%) ko'rinishini toping.
A) 60 B) 40 C) 64 D) 28

2428. $1\frac{3}{4}$ kasrni prosent (%) ko'rinishini toping.
A) 175 B) 165 C) 145 D) 180

2429. 0,125 kasrni prosent (%) ko'rinishini toping.
A) 15,2 B) 16,4 C) 12,5% D) 8,96

2430. 4,25 kasrni prosent (%) ko'rinishini toping.
A) 350 B) 325 C) 300 D) 425

2431. 1,2 kasrni prosent (%) ko'rinishini toping.
A) 150 B) 140 C) 120 D) 160

✓ $3p-3 \in N$ son 1; 2; 3; 6; 9 18; va 21 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 43 B) 35 C) 41 D) 24
Yechimi: **J: 43**

1; 2; 3; 6; 9; 18; va 21 ga qoldiqsiz bo'linadi. $\Rightarrow EKUK(1; 2; 3; 6; 9; 18; \text{va } 21)$

$\Downarrow$

$\frac{EKUK(1; 2; 3; 6; 9; 18; \text{ va } 21)}{18}$ $EKUK(18 \text{ va } 21) = \frac{18 \cdot 21}{3} = 126$

$3p-3 = 126 \Rightarrow 3p = 126+3 \Rightarrow 3p = 129 \Rightarrow p = 43$

Izoh: Berilgan sonlarga EKUK topamiz(EKUK(1,2,3,6,9,18,21)). Keyin berilgan songa $3p-3 = 126$ tenglash lozim.

2432. $4p-8 \in N$ son 5; 15; 20 30; va 40 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 42 B) 120 C) 128 D) 32

2433. $5p+2 \in N$ son 4; 8; 24 32; va 64 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 42 B) 38 C) 128 D) 39

2434. $3p-9 \in N$ son 7; 21; 35 42; va 70 ga qoldiqsiz bo'linadi. p ning eng kichik natural qiymatini toping.
A) 42 B) 120 C) 73 D) 32

✓Barcha uch xonali sonlar ichida 44 ga qoldiqsiz bo'linadiganlari nechta?
A) 43 B) 22 C) 41 D) 20
Yechimi:

$999:44\approx\underline{22},7045$ | $99:44\approx\underline{2},25$

$\Downarrow$ | $\Rightarrow$ | $\Downarrow$

22 | 2

$\Updownarrow$

$22-2=20$

Javob: 20

TEZ TOPISH FORMULASI:

$$\left[\frac{999}{a}\right]-\left[\frac{99}{a}\right]\Rightarrow\left[\frac{999}{44}\right]-\left[\frac{99}{44}\right]=22-2-0=20$$

Izoh: formulaga soling tez va aniq chiqadi.

2435. Barcha uch xonali sonlar ichida 35 ga qoldiqsiz bo'linadiganlari nechta?

A) 28 B) 24 C) 26 D) 20

2436. Barcha uch xonali sonlar ichida 22 ga qoldiqsiz bo'linadiganlari nechta?

A) 42 B) 45 C) 41 D) 32

2437. Barcha uch xonali sonlar ichida 11 ga qoldiqsiz bo'linadiganlari nechta?

A) 79 B) 90 C) 81 D) 82

2438. Barcha uch xonali sonlar ichida 7 ga qoldiqsiz bo'linadiganlari nechta?

A) 142 B) 126 C) 127 D) 128

✓ 59 ni bo'lganda, qoldiq 9 chiqadigan barcha natural sonlarning yig'indisini toping.

A) 85 B) 22 C) 45 D) 20

Yechimi:

59 ni bo'lganda, qoldiq 9 chiqadigan

$\Downarrow$

$\begin{array}{|c|c|}\hline 59 & x \\ \hline - & y \\ \hline 9 & \\ \hline\end{array}\Rightarrow\boxed{\begin{array}{l}59=xy+9\\ xy=50\end{array}}$

$50=2\cdot5^2$

$$NBY(50)=\frac{2^{1+1}-1}{2-1}\cdot\frac{5^{2+1}-1}{5-1}=$$

$$=\frac{4-1}{2-1}\cdot\frac{125-1}{5-1}=\frac{3}{1}\cdot\frac{124}{4}=3\cdot31=93$$

9 dan kichik 50 ga karrali

1, 2, 5 shu sonl arg *a bo'lganda*

qoldiq 9 bo'lmaydi shuning uchun

$\Rightarrow1+2+5=8$

$93-8=85$

Javob: 85

Izoh: Qoldiqni berilgan sondan ayrib $\begin{array}{l}59=xy+9\\ xy=50\end{array}$ NBY ni hisoblash lozim(NBY(50)). Qoldiqgacha sonlar ichidan 50 ga bo'linadigan sonlarni ayirib chiqarib tashlaymiz.

2439. 89 ni bo'lganda, qoldiq 9 chiqadigan barcha natural sonlarning yig'indisini toping.

A) 186 B) 148 C) 166 D) 120

2440. 213 ni bo'lganda, qoldiq 13 chiqadigan barcha natural sonlarning yig'indisini toping.

A) 435 B) 445 C) 465 D) 332

2441. 255 ni bo'lganda, qoldiq 5 chiqadigan barcha natural sonlarning yig'indisini toping.

A) 460 B) 390 C) 360 D) 472

✓520 ni o'zidan farqli bo'lgan ikki son ko'paytmasi shaklida tasvirlashning nechta varianti bor?

A) 7 B) 11 C) 4 D) 13

Yechimi:

$520=2^3\cdot5\cdot13$

$NBS(520)=(3+1)\cdot(1+1)\cdot(1+1)=16$ **Javob: 7**

$\frac{16}{2}-1=8-1=7$

TEZ TOPISH FORMULASI:

$$\frac{NBS(a)}{2}-1\Rightarrow\frac{NBS(520)}{2}-1$$

2442. 320 ni o'zidan farqli bo'lgan ikki son ko'paytmasi shaklida tasvirlashning nechta varianti bor?

A) 8 B) 14 C) 6 D) 11

2443. 480 ni ni o'zidan farqli bo'lgan ikki son ko'paytmasi shaklida tasvirlashning nechta varianti bor?

A) 12 B) 24 C) 11 D) 20

2444. 640 ni o'zidan farqli bo'lgan ikki son ko'paytmasi shaklida tasvirlashning nechta varianti bor?

A) 9 B) 16 C) 7 D) 11

✓1 dan 200 gacha sonlar ichida 5 ga bo'linib, 7 ga bo'linmaydigan sonlar nechta?

A) 43 B) 22 C) 40 D) 35

Yechimi:

$\left[\frac{200}{5}\right]-\left[\frac{200}{5\cdot7}\right]=40-5=35$ **Javob: 35**

2445. 1 dan 120 gacha sonlar ichida 3 ga bo'linib, 5 ga bo'linmaydigan sonlar nechta?

A) 36 B) 32 C) 17 D) 40

2446. 1 dan 250 gacha sonlar ichida 2 ga bo'linib, 5 ga bo'linmaydigan sonlar nechta?

A) 100 B) 125 C) 105 D) 112

2447. 1 dan 350 gacha sonlar ichida 4 ga bo'linib, 9 ga bo'linmaydigan sonlar nechta?

A) 68 B) 87 C) 38 D) 78

✓Uchta sonning o'rta arifmetigi 30 ga, dastlabki ikkitasiniki esa 25 ga teng. Uchinchi sonni toping.

A) 43 B) 22 C) 40 D) 20

Yechimi:

Uchta sonning o'rta arifmetigi 30 ga $\Rightarrow\boxed{\frac{a+b+c}{3}=30}$

dastlabki ikkitasiniki esa 25 ga teng $\Rightarrow\boxed{\frac{a+b}{2}=25}$

$\frac{a+b+c}{3}=30\Rightarrow\boxed{a+b+c=90}$

$\frac{a+b}{2}=25\Rightarrow\boxed{a+b=50}$

$\begin{cases} a+b+c=90 \\ a+b=50 \end{cases}$ *sistemani yechamiz* $\rightarrow \begin{cases} a+b+c=90 \\ a+b=50 \end{cases}$

$c=40$

Javob: 40

2448. Uchta sonning o'rta arifmetigi 36 ga, dastlabki ikkitasiniki esa 24 ga teng. Uchinchi sonni toping.
A) 40 B) 48 C) 60 D) 20

2449. To'rtta sonning o'rta arifmetigi 16 ga, dastlabki uchtasiniki esa 11 ga teng. To'rtinchi sonni toping.
A) 31 B) 45 C) 41 D) 32

2450. Beshta sonning o'rta arifmetigi 22 ga, dastlabki to'rttasiniki esa 12 ga teng. Beshinchi sonni toping.
A) 62 B) 90 C) 60 D) 72

✓Ikki sonning yig'indisi 8,2 ga teng. Ulardan biri ikkinchisidan 4 marta kichik. Shu sonlarning kattasini toping.
A) 6 B) 6,56 C) 5,56 D) 5,56

Yechimi:

Ikki sonning yig'indisi 8,2 ga teng. $\Rightarrow a+b=8,2$

Ulardan biri ikkinchisidan 4 marta kichik. $\Rightarrow a=\frac{b}{4}$

$\begin{cases} a+b=8,2 \\ a=\frac{b}{4} \end{cases}$ *sistemani yechamiz*

$\begin{cases} a+b=8,2 \\ a=\frac{b}{4} \end{cases} \Rightarrow \begin{cases} a+b=8,2 \\ \frac{b}{4}+b=8,2 \\ b+4b=8,2\cdot 4 \\ 5b=32,8 \\ b=32,8:5 \\ b=6,56 \end{cases}$ **Javob: 6,56**

$a=\frac{b}{4}=\frac{6,56}{4}=\frac{656}{400}=1,64$

Izoh: Tenglamalar sistemasini tuzishda "marta kichik" $\frac{b}{4}$. "marta katta" $4b$ qilish lozim.

2451. Ikki sonning yig'indisi 10,8 ga teng. Ulardan biri ikkinchisidan 3 marta kichik. Shu sonlarning kichigini toping.
A) 1,2 B) 4,8 C) 2,7 D) 5,4

2452. Ikki sonning yig'indisi 11,5 ga teng. Ulardan biri ikkinchisidan 4 marta katta. Shu sonlarning kattasini toping.
A) 10,2 B) 9,2 C) 8,4 D) 9,6

2453. Ikki sonning yig'indisi 6,6 ga teng. Ulardan biri ikkinchisidan 5 marta katta. Shu sonlarning kattasini toping.
A) 6,2 B) 5,5 C) 1,1 D) 7,2

✓Ikki sonning ko'paytmasi 5,76 ga teng. Birinchi ko'paytuvchi 0,8 ga, ikkinchi ko'paytuvchi 1,6 ga bo'linsa, ko'paytma necha bo'ladi?
A) 6 B) 6,5 C) 4,5 D) 5,5

Yechimi:

Ikki sonning ko'paytmasi 5,76 ga teng. $\Rightarrow a\cdot b=5,76$

Birinchi ko'paytuvchi 0,8 ga, ikkinchi ko'paytuvchi 1,6 ga bo'linsa. $\Rightarrow \frac{a}{0,8}\cdot\frac{b}{1,6}$

$\frac{a}{0,8}\cdot\frac{b}{1,6}=\frac{a\cdot b}{0,8\cdot 1,6}=\frac{5,76}{0,8\cdot 1,6}=4,5$ **Javob: 4,5**

2454. Ikki sonning ko'paytmasi 5,5 ga teng. Birinchi ko'paytuvchi 0,5 ga, ikkinchi ko'paytuvchi 5,5 ga bo'linsa, ko'paytma necha bo'ladi?
A) 1,2 B) 2 C) 2,7 D) 5,4

2455. Ikki sonning ko'paytmasi 8,16 ga teng. Birinchi ko'paytuvchi 0,4 ga, ikkinchi ko'paytuvchi 6 ga bo'linsa, ko'paytma necha bo'ladi?
A) 1,2 B) 4,8 C) 2,7 D) 3,4

✓32 dan 62,4 necha foiz ortiq?
A) 90 B) 65 C) 95 D) 55

Yechimi:

$32 \rightarrow 100\%$
$62,4 \rightarrow x\%$
$\Rightarrow 32x=62,4\cdot 100$
$32x=6240$
$x=195$

necha foiz ortiq? $\Rightarrow 195-100=95$

Javob: 95

Izoh: Proporsiyani tuzishda shartidagi "dan" so'zıga e'tibor bering shu son to'g'risiga 100 % qilish lozim. Quyidagiga e'tibor bering.

32 *dan* 62,4
necha foiz ortiq?

$32 \rightarrow 100\%$
$62,4 \rightarrow x\%$

2456. 56,2 soni 20 dan necha foiz ortiq?
A) 19 B) 181 C) 81 D) 281

2457. 40 dan 29,2 necha foiz kam?
A) 12 B) 47 C) 26 D) 27

2458. 10,2 soni 17 dan necha foiz kam?
A) 40 B) 80 C) 60 D) 50

✓8 foizi 40 ning 25 foziga teng bo'lgan sonni toping.
A) 190 B) 165 C) 195 D) 125

Yechimi:

8 foizi $\Rightarrow 0,08$

40 ning 25 foziga $\Rightarrow 40\cdot 0,25$

8 foizi 40 ning 25 foziga teng. $\Rightarrow 0,08x=40\cdot 0,25$

$0,08x=40\cdot 0,25$
$0,08x=10$
$x=10:0,08$
$x=125$

Javob: 125

2459. 18 foizi 72 ning 35 foziga teng bo'lgan sonni toping?

A) 190 B) 140 C) 181 D) 240

2460. 28 foizi 70 ning 30 foziga teng bo'lgan sonni toping?
A) 72 B) 77 C) 65 D) 75

2461. 38 foizi 80 ning 19 foziga teng bo'lgan sonni toping?
A) 40 B) 80 C) 60 D) 50

✓ Ushbu 3,4 ;1,5 sonlar ayirmasining 25% ini toping.
A) 0,375 B) 0,265 C) 0,475 D) 0,19

Yechimi:

Ushbu 3,4 ; 1,5 sonlar ayirmasi $\Rightarrow$ $3,4-1,5$

3,4 ; 1,5 sonlar ayirmasining 25% ini $\Rightarrow$ $(3,4-1,5)\cdot 0,25$

$(3,4-1,5)\cdot 0,25=0,475$

Javob: 0,475

2462. Ushbu 3,4 ; 1,5 sonlar yig'indisining 25% ini toping
A) 1,9 B) 1,225 C) 1,85 D) 1,22

2463. Ushbu 7,05 ;1,15 sonlar ayirmasining 20% ini toping.
A) 1,28 B) 1,77 C) 1,68 D) 1,18

2464. Ushbu 7,05 ;1,15 sonlar yig'indisining 20% ini toping.
A) 1,28 B) 1,77 C) 1,68 D) 1,64

✓Ikki sonning ayirmasi 5 ga teng. Agar shu sonlardan kattasining 20 % i kichigining $\frac{7}{30}$ qismiga teng bo'lsa, shu sonlarni toping.
A) 30 va 35 B) 63 va 68
C) 36 va 41 D) 45 va 50

Yechimi:

Ikki sonning ayirmasi 5 ga teng. $\Rightarrow$ $a-b=5$

Agar shu sonlardan kattasining 20 % i kichigining $\frac{7}{30}$ qismiga teng. $\Rightarrow$ $\frac{20}{100}a=\frac{7}{30}b$

$$\begin{cases} a-b=5 \\ 0,2a=\frac{7}{30}b \end{cases} \Rightarrow \begin{cases} a-b=5 \\ a=\frac{7}{6}b \end{cases}$$

$0,2a=b$

$a=\frac{7b}{30}:\frac{1}{5}$

$a=\frac{7b}{30}\cdot 5 \Rightarrow a=\frac{7b}{6}$

$a-b=5$

$\frac{7b}{6}-b=5$

$7b-6b=30$

$b=30$

Javob: 30 va 35

Izoh: Protsentni kasr ko'rinishida yozib olib keyin yakkalash lozim.

2465. Ikki sonning ayirmasi 7 ga teng. Agar shu sonlardan kattasining $\frac{2}{5}$ qismiga kichigining 50 % i teng bo'lsa, shu sonlarni toping.
A) 18 va 11 B) 20 va 13 C) 35 va 28 D) 28 va 14

2466. Ikki sonning yig'indisi 24 ga teng. Agar shu sonlardan birining 60 % i ikkinchisining $\frac{3}{10}$ qismiga teng bo'lsa, shu sonlarni toping.
A) 18 va 6 B) 20 va 4 C) 7 va 17 D) 8 va 16

2467. Ikki sonning ayirmasi 5 ga teng. Agar shu sonlardan kattasining 20% i kichigini 2/9 qismiga teng bo'lsa, shu sonlarni toping.
A) 18 va 13 B) 20 va 25 C) 45 va 50 D) 21 va 16

✓Ishchining oylik maoshi 950 so'm. Agar uning maoshi 60 % ortsa, u qancha maosh oladi?
A) 1520 B) 1068 C) 1420 D) 1560

Yechimi:

a soni t % ga oshirilsa $\Rightarrow$ $a\cdot\left(1+\frac{t}{100}\right)$

Ishchining oylik maoshi 950 so'm. Agar uning maoshi 60% ortsa $\Rightarrow$ $950\cdot\left(1+\frac{60}{100}\right)$

$950\cdot\left(1+\frac{60}{100}\right)=950\cdot 1,6=1520$ **Javob: 1520**

2468. Ishchining oylik maoshi 350 so'm. Agar uning maoshi 30% ortsa, u qancha maosh oladi?
A) 555 B) 600 C) 455 D) 400

2469. Nafaqaxo'rning oylik nafaqasi 450 so'm. Agar uning nafaqasi 20% ga ortsa, u qancha nafaqa oladi?
A) 560 B) 540 C) 470 D) 500

2470. Talabaning stipendiyasi 120 ming so'm. Agar uning stipendiyasi 20% ga ortsa, u necha ming so'm stipendiya oladi?
A) 148 B) 144 C) 142 D) 140

✓Ishchining oylik maoshi 950 so'm. Agar uning maoshi 2 marta 10 % ortsa, u qancha maosh oladi?
A) 1520,8 B) 1249,5 C) 1420 D) 1149,5

Yechimi:

a soni t % ga "n" marta oshirilsa $\Rightarrow$ $a\cdot\left(1+\frac{t}{100}\right)^n$

Ishchining oylik maoshi 950 so'm. Agar uning maoshi 2 marta 10% ortsa $\Rightarrow$ $950\cdot\left(1+\frac{10}{100}\right)^2$

$950\cdot\left(1+\frac{10}{100}\right)^2=950\cdot 1,1^2=1149,5$

Javob: 1149,5

2471. Ishchining oylik maoshi 3500 so'm. Har yili uning maoshi 10% ortsa, u 2 yildan keyin qancha maosh oladi?
A) 4355 B) 4600 C) 4235 D) 4468

2472. Nafaqaxo'rning oylik nafaqasi 4500 so'm. Har yili uning nafaqasi 10% ga ortsa, u 2 yildan keyin qancha nafaqa oladi?
A) 5605 B) 5445 C) 4705 D) 5000

2473. Talabaning stipendiyasi 120 ming so'm. Har yili uning stipendiyasi 20% ga ortsa, u 2 yildan keyin necha ming stipendiyasi oladi?

A) 148,8 B) 172,8 C) 190,2 D) 180

✓Ishchining oylik maoshi 900 so'm. Agar uning maoshi 20 %kamaysa, u qancha maosh oladi?

A) 720 B) 768 C) 420 D) 560

Yechilishi:

a soni t % ga kamaytirilsa $\Rightarrow \boxed{a\left(1-\frac{t}{100}\right)}$

Ishchining oylik maoshi 900 so'm. Agar uning maoshi 20% kamaysa $\Rightarrow \boxed{900\left(1-\frac{20}{100}\right)}$

$900\cdot\left(1-\frac{20}{100}\right)=900\cdot 0,8=720$ **Javob: 720**

2474. Ishchining oylik maoshi 7500 so'm. Agar uning maoshi 30% kamaysa, u qancha maosh oladi?

A) 5250 B) 6000 C) 5450 D) 4000

2475. Nafaqaxo'rning oylik nafaqasi 8500 so'm. Agar uning nafaqasi 20% ga kamaysa, u qancha nafaqa oladi?

A) 6800 B) 5640 C) 5800 D) 7800

2476. Talabaning stipendiyasi 160 ming so'm. Agar uning stipendiyasi 25% ga kamaysa, u necha ming so'm stipendiya oladi?

A) 120 B) 144 C) 130 D) 140

✓Ishlab chiqarish samaradorligi birinchi yili 15% ga, ikkinchi yili 20% ga ortdi. Shu ikki yil ichida samaradorlik necha foizga ortgan?

A) 35 B) 38 C) 40 D) 60

Yechimi:

$\boxed{t_1\ \%\ \Uparrow,\ t_2\ \%\ \Uparrow} \Rightarrow \boxed{A=\left(1+\frac{t_1}{100}\right)\cdot\left(1+\frac{t_2}{100}\right)\cdot a}$

$\boxed{15\ \%\ \Uparrow,\ 20\ \%\ \Uparrow} \Rightarrow \boxed{A=\left(1+\frac{15}{100}\right)\cdot\left(1+\frac{20}{100}\right)\cdot a}$

$A=\left(1+\frac{15}{100}\right)\cdot\left(1+\frac{20}{100}\right)\cdot a=1,15\cdot 1,2a=1,38a$

$1,38a-a=0,38a \qquad 0,38a \Rightarrow 38\%$

Javob: 38

2477. Ishlab chiqarish samaradorligi birinchi yili 10% ga, ikkinchi yili 20% ga ortdi. Shu ikki yil ichida samaradorlik necha foizga ortgan?

A) 32 B) 36 C) 54 D) 30

2478. Mahsulot inflyasiya natijasida birinchi 20% ga, keyinchalik esa 30% oshirilgan. Mahsulotning oxirgi narxi dastlabkisiga qaraganda necha foizga ortgan?

A) 68 B) 50 C) 56 D) 48

2479. Mahsulotning narxi birinchi marta 15% ga, ikkinchi marta yangi bahosi yana 25% ga oshirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda necha foizga ortgan?

A) 48,25 B) 43,75 C) 30 D) 40

✓Ishlab chiqarish samaradorligi birinchi yili 15% ga kamaydi, ikkinchi yili 20% ga ortdi. Shu ikki yil ichida samaradorlik qanday o'zgargan?

A) 2 % ortgan
B) 5% ortgan
C) 2% kamaygan
D) 5% kamaygan

Yechimi:

$\boxed{t_1\ \%\ \Downarrow,\ t_2\ \%\ \Uparrow} \Rightarrow \boxed{A=\left(1-\frac{t_1}{100}\right)\cdot\left(1+\frac{t_2}{100}\right)\cdot a}$

$\boxed{15\ \%\ \Downarrow,\ 20\ \%\ \Uparrow} \Rightarrow \boxed{A=\left(1-\frac{15}{100}\right)\cdot\left(1+\frac{20}{100}\right)\cdot a}$

$A=\left(1-\frac{15}{100}\right)\cdot\left(1+\frac{20}{100}\right)\cdot a=0,85\cdot 1,2\ a=1,02\ a$

$1,02a-a=0,02\ a \qquad 0,02a \Rightarrow 2\%\ ortgan$

Javob: 2% ortgan

Izoh: Agar 1,02 a ning oldidagi butun qismi 0, 76 a bo'lganda (ya'ni "0" butun) kamaygan bo'lardi. Shunda javob ($a-0,76a=0,34a$) 34% kamaygan

2480. Ishlab chiqarish samaradorligi birinchi yili 35% ga kamaydi, ikkinchi yili 60% ga ortdi. Shu ikki yil ichida samaradorlik qanday o'zgargan?

A) o'zgarmagan B) 4% ortgan
C) 4% kamaygan D) 20 % ortgan

2481. Ishlab chiqarish samaradorligi birinchi yili 25% ga kamaydi, ikkinchi yili 30% ga ortdi. Shu ikki yil ichida samaradorlik qanday o'zgargan?

A) o'zgarmagan B) 2,5% ortgan
C) 2,5% kamaygan D) 0,75% kamaygan

2482. Mahsulot inflyasiya natijasida birinchi 35% ga oshirildi, keyinchalik esa 10% kamaytirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda qanday o'zgargan?

A) o'zgarmagan B) 16% ortgan
C) 21,5% ortgan D) 21,5 % kamaygan

2483. Mahsulot inflyasiya natijasida birinchi 20% ga oshirildi, keyinchalik esa 30% kamaytirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda qanday o'zgargan?

A) o'zgarmagan B) 16% ortgan
C) 16% kamaygan D) 0,8% kamaygan

2484. Mahsulotning narxi birinchi marta 50% ga kamaytirildi, ikkinchi marta yangi bahosi 50% ga oshirildi. Mahsulotning oxirgi narxi dastlabkisiga qaraganda qanday o'zgargan?

A) o'zgarmagan B) 25% ortgan
C) 75% kamaygan D) 25% kamaygan

✓*Go'sht qaynatilganda o'z vaznining 40 % ini yo'qatadi.* 7,2 kg qaynatilgan go'sht xosil qilish uchun qozonga necha kg go'sht solish kerak?

A) 12 B) 15 C) 22 D) 35

Yechimi:

$t_1\ \%\ \Downarrow\ A=\left(1-\frac{t_1}{100}\right)\cdot a \Rightarrow \boxed{7,2=\left(1-\frac{40}{100}\right)\cdot a}$

$7,2=\left(1-\frac{40}{100}\right)\cdot a$

$7,2=0,6a$ **Javob: 12 kg**

$a=12$

2485. Go'sht qaynatilganda o'z vaznining 40% ini yo'qotadi. 6 kg qaynatilgan go'sht hosil qilish uchun qozonga necha kg go'sht solish kerak?
A) 20 B) 15 C) 30 D) 10

2486. 1 kg yangi uzilgan nokdan 84% quritilgan nok olinadi. 252 kg quritilgan nok olish uchun qancha kg yangi uzilgan nok kerak?
A) 150 B) 300 C) 100 D) 200

2487. 14 % ga arzonlashtirilgandan keyin mahsulotning bahosi 1892 so'm bo'ldi. Mahsulotning dastlabki bahosini aniqlang
A) 2750 B) 1500 C) 2200 D) 2500

2488. Olxo'ri quritilganda 35% olxo'ri qoqisi hosil bo'ladi. 64 kg olxo'ri quritilsa, qancha olxo'ri qoqisi olinadi?
A) 22,4 B) 18,5 C) 41,6 D) 24

2489. Do'konga 96 ta karam keltirildi. Agar karamning 80% sotilgan bo'lsa, do'konda qancha karam qolgan?
A) 20 B) 18 C) 19,2 D) 22,5

✓Mahsulotning bahosi 30 % ga oshirildi. ma'lum vaqtdan keyin 20 % gaarzonlashtirildi, shundan so'ng uning narxi 8944 so'm bo'ldi. Mahsulotning dastlabki bahosi necha so'm bo'lgan?
A) 8400 B) 9300 C) 8600 D) 8500

Yechimi:

$t_1\%\uparrow,\ t_2\%\downarrow$

$$A=\left(1-\frac{t_1}{100}\right)\cdot\left(1-\frac{t_2}{100}\right)\cdot a$$

$\Downarrow$

30% ↑, 20 % ↓ ⇒
1,3 0,8

$$\begin{cases} 8944=1,3\cdot 0,8a \\ a=\dfrac{8944}{1,3\cdot 0,8} \\ a=8600 \end{cases}$$

Javob: 8600

2490. Mahsulotning bahosi 20 % ga oshirildi. ma'lum vaqtdan keyin 30 % gaarzonlashtirildi, shundan so'ng uning narxi 1680 so'm bo'ldi. Mahsulotning dastlabki bahosi necha so'm bo'lgan?
A) 1200 B) 1500 C) 3000 D) 2000

2491. Mahsulotning bahosi 80 % ga oshirildi. ma'lum vaqtdan keyin 60 % gaarzonlashtirildi, shundan so'ng uning narxi 2160 so'm bo'ldi. Mahsulotning dastlabki bahosi necha so'm bo'lgan? ✓
A) 1500 B) 3000 C) 1000 D) 2000

✓Umumiy daftarning bahosi oldin 15%, keyin 139 so'm arzonlashgach, 150 so'm bo'ldi. daftarning dastlabki bahosi necha so'm bo'lgan?
A) 400 B) 390 C) 500 D) 340

Yechimi:

Umumiy daftarning bahosi oldin 15 % ⇒ $(1-0,15)a=0,85a$

$\Downarrow$

Umumiy daftarning bahosi oldin 15%, keyin 139 so'm arzonlashgach, 150 so'm bo'ldi ⇒ $0,85a-139=150$

$0,85a-139=150$

$0,85a=289$

$a=340$

Javob: 340

2492. Umumiy daftarning bahosi oldin 40 %, keyin 180 so'm arzonlashgach, 1500 so'm bo'ldi. daftarning dastlabki bahosi necha so'm bo'lgan?
A) 2800 B) 1800 C) 3000 D) 2000

2493. Umumiy daftarning bahosi oldin 25%, keyin 250 so'm arzonlashgach, 2000 so'm bo'ldi. daftarning dastlabki bahosi necha so'm bo'lgan?
A) 1500 B) 3000 C) 1000 D) 2200

2494. Umumiy daftarning bahosi oldin 35%, keyin 175 so'm qimmatlashgach, 2200 so'm bo'ldi. daftarning dastlabki bahosi necha so'm bo'lgan?
A) 1000 B) 3500 C) 1500 D) 2000

2495. Umumiy daftarning bahosi oldin 18%, keyin 138 so'm qimmatlashgach, 2380 so'm bo'ldi. daftarning dastlabki bahosi necha so'm bo'lgan?
A) 2300 B) 3080 C) 1900 D) 2000

✓Ikkita buyumning birgalikdagi bahosi 35800 so'm turadi. Agar birinchi buyumning bahosi 10% kamaytirilsa, ikkinchisiniki esa 15% ortirilsa, ular birgalikda 38070 so'm turadi. Birinchi buyumning dastlabki bahosini toping.
A) 12400 B) 25790 C) 23500 D) 13340

Yechimi:

Ikkita buyumning birgalikdagi bahosi 35800 so'm turadi. ⇒ $x+y=35800$

$\Downarrow$

Agar birinchi buyumning bahosi 10% kamaytirilsa, ikkinchisiniki esa 15% ortirilsa, ular birgalikda 38070 so'm turadi.

$\Downarrow$

$$\begin{cases} (1-0,1)x+(1+0,15)y=38070 \\ 0,9x+1,15y=38070 \end{cases}$$

$$\begin{cases} x+y=35800 \\ 0,9x+1,15y=38070 \end{cases}$$

$$\begin{cases} x+y=35800 \quad (\cdot -1,15) \\ 0,9x+1,15y=38070 \end{cases} \Leftrightarrow + \begin{cases} -1,15x-1,15y=-35800\cdot 1,15 \\ 0,9x+1,15y=38070 \end{cases}$$

$$-0,25x=-41170+38070$$

$$x=3100:0,25$$

$$x=12400$$

Javob: 12400

2496. Ikkita buyumning birgalikdagi bahosi 75100 so'm turadi. Agar birinchi buyumning bahosi 20% kamaytirilsa,

ikkinchisiniki esa 10% ortirilsa, ular birgalikda 65870 so'm turadi. Birinchi buyumning dastlabki bahosini toping.
A) 55800 B) 66960 C) 23160 D) 19200

2497. Ikkita buyumning birgalikdagi bahosi 35000 so'm turadi. Agar birinchi buyumning bahosi 15% kamaytirilsa, ikkinchisiniki esa 20% ortirilsa, ular birgalikda 37660 so'm turadi. Birinchi buyumning dastlabki bahosini toping.
A) 25990 B) 12400 C) 14260 D) 22500

✓Matematikadan o'tkazilgan imtihonda o'quvchilarning 12% i birorta ham masalalarni yecha olmadi, 195 ta o'quvchi masalalarni yechishda xatolikka yo'l qo'ydi. Agar barcha masalalarni to'liq yechgan o'quvchilarning masalalarni umuman yecha olmagan o'quvchilarga nisbati 7:3kabi bo'lsa, qancha o'quvchi imtihon topshirgan?
A) 440 B) 340 C) 240 D) 325

Yechimi:

Matematikadan o'tkazilgan imtihonda o'quvchilarning 12% i birorta ham masalalarni yecha olmadi. $\Rightarrow 0{,}12x$

195 ta o'quvchi masalalarni yechishda xatolikka yo'l qo'ydi. $\Rightarrow 195$

Agar barcha masalalarni to'liq yechgan $\Rightarrow 0{,}88x-195$

Agar barcha masalalarni to'liq yechgan o'quvchilarning masalalarni umuman yecha olmagan o'quvchilarga nisbati 7 : 3 kabi

$$\Downarrow$$

$$\frac{0{,}88x-195}{0{,}12x}=\frac{7}{3} \Rightarrow \text{proporsiyadan } x=325 \text{ chiqadi}$$

Javob: 325

2498. Matematikadan o'tkazilgan imtihonda o'quvchilarning 10% i birorta ham masalalarni yecha olmadi, 325 ta o'quvchi masalalarni yechishda xatolikka yo'l qo'ydi. Agar barcha masalalarni to'liq yechgan o'quvchilarning masalalarni umuman yecha olmagan o'quvchilarga nisbati 5 : 2kabi bo'lsa, qancha o'quvchi imtihon topshirgan?
A) 500 B) 380 C) 700 D) 710

2499. Matematikadan o'tkazilgan imtihonda o'quvchilarning 15% i birorta ham masalalarni yecha olmadi, 180 ta o'quvchi masalalarni yechishda xatolikka yo'l qo'ydi. Agar barcha masalalarni to'liq yechgan o'quvchilarning masalalarni umuman yecha olmagan o'quvchilarga nisbati 5:3kabi bo'lsa, qancha o'quvchi imtihon topshirgan?
A) 230 B) 300 C) 460 D) 410

✓To'rtta sonning yig'indisi 161 ga teng. Ulardan dastlabki uchtasi 4; 5 va 8 sonlariga to'g'ri proporsional, birinchi va to'rtinchi sonlar esa 6 va 4 sonlariga teskari proporsional. Ikkinchi sonni toping.
A) 45 B) 35 C) 40 D) 30

Yechimi:

To'rtta sonning yig'indisi 161ga teng.

$$\Downarrow$$

$$a+b+n+m=161$$

ulardan dastlabki uchtasi 4,5 va 8 sonlariga to'g'ri proporsional. $\Rightarrow \begin{cases} a=4x, \\ b=5x \\ n=8x \end{cases}$

$$\Downarrow$$

$$4x+5x+8x+?=161$$

birinchi va to'rtinchi sonlar esa 6 va 4 sonlariga teskari proporsional. $\Rightarrow \frac{a}{m}=\frac{4}{6}$

$$\frac{a}{m}=\frac{4}{6} \Rightarrow \frac{4x}{m}=\frac{4}{6}$$

$$m=6x$$

$$4x+5x+8x+6x=161$$

Javob: 35

$$23x=161$$

$$x=7$$

$$b=5x \Rightarrow b=5\cdot 7=35$$

2500. To'rtta sonning yig'indisi 192 ga teng. Ulardan dastlabki uchtasi 4; 5 va 9 sonlariga to'g'ri proporsional, birinchi va to'rtinchi sonlar esa 6 va 4 sonlariga teskari proporsional. Ikkinchi sonni toping.
A) 50 B) 40 C) 45 D) 35

2501. To'rtta sonning yig'indisi 189 ga teng. Ulardan dastlabki uchtasi 5; 6 va 9 sonlariga to'g'ri proporsional, ikkinchi va to'rtinchi sonlar esa 7 va 6 sonlariga teskari proporsional. uchinchi sonni toping.
A) 81 B) 63 C) 72 D) 54

✓a ning qanday qiymatida $9-a$ va $15-a$ lar qarama-qarshi sonlar bo'ladi?
A) 9 B) 12 C) 10 D) 15

Yechimi:

$9-a$ va $15-a$ lar qarama-qarshi sonlar.

$$\Downarrow$$

$$9-a=-(15-a)$$

$$9-a=-15+a$$

$$-2a=-24$$

$$a=12$$

Javob: 12

2502. n ning qanday qiymatida $9-4n$ va $26-n$ lar qarama-qarshi sonlar bo'ladi.
A) 0 B) 7 C) 4 D) 5

2503. a ning qanday qiymatida $8-a$ va $82-9a$ lar qarama-qarshi sonlar bo'ladi.
A) 81 B) 3 C) 9 D) 4

2504. a ning qanday qiymatida $39-7a$ va $25-a$ lar qarama-qarshi sonlar bo'ladi.
A) 9 B) 10 C) 8 D) 7

✓a sonining b songa nisbati $\frac{7}{11}$ ga, c sonining b songa nisbati $\frac{11}{5}$ ga teng. c sonining a soniga nisbati nechaga teng?

A) $\frac{121}{3}$ B) $\frac{11}{35}$ C) $\frac{121}{35}$ D) $\frac{12}{35}$

Yechimi:

a sonining b songa nisbati $\frac{7}{11}$ ga teng $\Rightarrow \frac{a}{b}=\frac{7}{11}$

c sonining b songa nisbati $\frac{11}{5}$ ga teng $\Rightarrow \frac{c}{b}=\frac{11}{5}$

c sonining a soniga nisbati nechaga teng? $\Rightarrow \frac{c}{a}=?$

c sonining a soniga nisbati nechaga teng? $\Rightarrow \frac{c}{a}=?$

$\frac{a}{b}=\frac{7}{11} \Rightarrow a=\frac{7}{11}b$ $\quad$ $\frac{c}{b}=\frac{11}{5} \Rightarrow c=\frac{11}{5}b$

$\frac{c}{a}=? \Rightarrow \frac{c}{a}=\frac{\frac{11}{5}b}{\frac{7}{11}b}=\frac{11}{5}:\frac{7}{11}=\frac{121}{35}$

Javob: $\frac{121}{35}$

2505. a sonining b songa nisbati $\frac{5}{11}$ ga, c sonining b songa nisbati $\frac{9}{11}$ ga teng. c sonining a soniga nisbati nechaga teng?

A) 5 B) $\frac{9}{5}$ C) $\frac{4}{5}$ D) $\frac{5}{9}$

2506. a sonining b songa nisbati $\frac{3}{4}$ ga, c sonining b songa nisbati $\frac{25}{32}$ ga teng. c sonining a soniga nisbati nechaga teng?

A) $\frac{12}{25}$ B) $\frac{25}{24}$ C) $\frac{24}{25}$ D) 4

✓a soni b^2+6 bilan to'g'ri proporsional. b=8 bo'lganda, a=140 bo'lsa, b=−3 bo'lganda, a soni nechaga teng bo'ladi?

A) 30 B) 12 C) 10 D) 15

Yechimi:

a soni bilan to'g'ri b^2+6 proporsional. $\Rightarrow a=x\left(b^2+6\right)$

$b=8$ bo'lganda, $a=140$ bo'lsa $\Rightarrow \begin{cases} a=x\left(b^2+6\right) \\ 140=x\left(8^2+6\right) \end{cases}$

$\Downarrow$

$x=2$

$b=-3$ bo'lganda, a soni nechaga teng bo'ladi $\Rightarrow \begin{cases} a=x\left(b^2+6\right) \\ x=2 \\ a=2\left(b^2+6\right) \end{cases}$

$\Downarrow$

$a=2\left(b^2+6\right) \Rightarrow a=2\left((-3)^2+6\right) \Rightarrow \quad a=30$

Javob: 30

2507. a soni b^2-23 bilan to'g'ri proporsional. b=6 bo'lganda, a=−39 bo'lsa, b=−2 bo'lganda, a soni nechaga teng bo'ladi?

A) 10 B) 72 C) 38 D) 57

2508. a soni b^2+7 bilan to'g'ri proporsional. b=6 bo'lganda, a=−43 bo'lsa, b=−4 bo'lganda, a soni nechaga teng bo'ladi?

A) 81 B) −32 C) −23 D) 23

✓ Sinfda o'qiydigan o'g'il bolalar sonining barcha o'quvchilar soniga nisbati $\frac{11}{17}$ ga teng bo'lsa, qiz bolalar sonining o'g'il bolalar soniga nisbati nechaga teng bo'ladi?

A) $\frac{6}{11}$ B) $\frac{5}{11}$ C) $\frac{3}{11}$ D) $\frac{11}{6}$

Yechimi:

Sinfda o'qiydigan o'g'il bolalar $\Rightarrow a$

Sinfda o'qiydigan qiz bolalar soni $\Rightarrow b$

barcha o'quvchilar $\Rightarrow a+b$

Sinfda o'qiydigan o'g'il bolalar sonining barcha o'quvchilar soniga nisbati $\Rightarrow \frac{a}{a+b}=\frac{11}{17}$

$\frac{a}{a+b}=\frac{11}{17} \Rightarrow \begin{cases} a=11x \\ a+b=17x \end{cases}$

$a+b=17x$

$11x+b=17x$

$b=17x-11x$

$b=6x$

qiz bolalar sonining o'g'il bolalar soniga nisbati nechaga teng bo'ladi? $\Rightarrow \frac{b}{a}=\frac{6x}{11x}=\frac{6}{11}$

Javob: A)

2509. Sinfda o'qiydigan o'g'il bolalar sonining barcha o'quvchilar soniga nisbati $\frac{13}{27}$ ga teng bo'lsa, qiz bolalar sonining o'g'il bolalar soniga nisbati nechaga teng bo'ladi?

A) $\frac{13}{14}$ B) $\frac{12}{13}$ C) $\frac{14}{11}$ D) $\frac{14}{13}$

2510. Sinfda o'qiydigan o'g'il bolalar sonining barcha o'quvchilar soniga nisbati $\frac{19}{31}$ ga teng bo'lsa, qiz bolalar sonining o'g'il bolalar soniga nisbati nechaga teng bo'ladi?

A) $\frac{16}{11}$ B) $\frac{19}{12}$ C) $\frac{12}{19}$ D) $\frac{19}{11}$

✓ Sayohat uchun ma'lum miqdorda pul yig'ish kerak edi. Agar har bir sayohatchi 750 so'mdan to'lasa, to'lovga 1200 so'm yetmaydi, agar har bir sayohatchi 800 so'mdan to'lasa, keragidan 1200 so'm ortib qoladi. Sayohatga necha kishi qatnashishi kerak edi?

A) 48 B) 45 C) 50 D) 55

Yechimi:

Sayohat uchun ma'lum miqdorda pul yig'ish kerak edi $\Rightarrow x$

Agar har bir sayohatchi 750 so'mdan to'lasa, to'lovga 1200 so'm yetmaydi $\Rightarrow \boxed{x=750y+1200}$

Agar har bir sayohatchi 800 so'mdan to'lasa, keragidan 1200 so'm ortib qoladi $\Rightarrow \boxed{x=800y-1200}$

$$x=x$$

$$750y+1200=800y-1200$$

$$-50y=-2400$$

$$y=48$$

Javob:48

2511. Sayohat uchun ma'lum miqdorda pul yig'ish kerak edi. Agar har bir sayohatchi 550 so'mdan to'lasa, to'lovga 3200 so'm yetmaydi, agar har bir sayohatchi 900 so'mdan to'lasa, keragidan 5200 so'm ortib qoladi. Sayohatga necha kishi qatnashishi kerak edi?

A) 55 B) 48 C) 30 D) 24

2512. Sayohat uchun ma'lum miqdorda pul yig'ish kerak edi. Agar har bir sayohatchi 550 so'mdan to'lasa, to'lovga 4700 so'm yetmaydi, agar har bir sayohatchi 950 so'mdan to'lasa, keragidan 6100 so'm ortib qoladi. Sayohatga necha kishi qatnashishi kerak edi?

A) 29 B) 31 C) 27 D) 24

✓ Firma mahsulotni 380 so'mga sotib, 5 foiz zarar qildi. Shu mahsulotning tannarxini toping?

A) 400 B) 450 C) 500 D) 550

Yechimi:

$$\left(1-\frac{5}{100}\right)x=380 \Rightarrow \begin{array}{l} 0{,}95x=380 \\ x=380:0{,}95 \\ x=400 \end{array}$$

Javob:400

2513. Firma mahsulotni 6400 so'mga sotib, 20 foiz zarar qildi. Shu mahsulotning tannarxini toping?

A) 9000 B) 8332 C) 7330 D) 8000

2514. Firma mahsulotni 1100 so'mga sotib, 12 foiz zarar qildi. Shu mahsulotning tannarxini toping?

A) 2029 B) 1231 C) 1250 D) 1324

✓ Bir kombayn daladagi hosilni 5 soatda, boshqasi esa shu hosilni 10 soatda yig'ib olishi mumkin. Ikkala kombayn birgalikda hosilni qancha soatda yig'ib olishi mumkin?

A) $3\frac{1}{3}$ B) $2\frac{1}{3}$ C) $3\frac{2}{3}$ D) $1\frac{1}{3}$

Yechimi:

Agar 1–kombayn hosilni x soatda, 2–kombayn y soatda, ikkala kombayn birgalikda hosilni z soatda yig'ib olsa, u holda

$$\frac{1}{x}+\frac{1}{y}=\frac{1}{z} \Rightarrow \frac{1}{5}+\frac{1}{10}=\frac{1}{z}$$

$$\frac{3}{10}=\frac{1}{z} \Rightarrow z=3\frac{1}{3}$$

Javob: $3\frac{1}{3}$

Izoh: ishga oid misollar bir taqsim qilib olinadi ya'ni $\frac{1}{x}+\frac{1}{y}=\frac{1}{z} \Rightarrow$ ikkalasi birgalikda deganni uchun "+" lozim.

2515. Usta muayyan ishni 12 kunda, uning shogirdi esa 60 kunda bajaradi. Agar usta va shogird birga ishlasalar, o'sha ishni necha kunda bajarishadi?

A) 10 B) 11 C) 8 D) 9

2516. Meshdagi suv Anvarning o'ziga 10 kunga, ukasiga esa 15 kunga yetadi. Meshdagi suv ikkalasiga necha kunga yetadi?

A) 9 B) 6 C) 8 D) 7

2517. Hovuzga 2 ta quvur o'tkazilgan. Birinchi quvur hovuzni 25 soatda to'ldiradi, ikkinchisi esa 100 soatda. Ikkala quvur birgalikda hovuzni qancha vaqtda to'ldiradi?

A) 10 B) 12 C) 20 D) 24

✓ Katta kombayn daladagi hosilni 15 soatda, kichkinasi esa shu hosilni 36 soatda yig'ib olishi mumkin. 10 ta katta va 12 ta kichik kombayn birgalikda hosilni qancha soatda yig'ib olishi mumkin?

A) 1 B) 3 C) 2 D) 8

Yechimi:

$$a\cdot\frac{1}{x}+b\cdot\frac{1}{y}=\frac{1}{z} \Rightarrow 10\cdot\frac{1}{15}+12\cdot\frac{1}{36}=\frac{1}{z} \Rightarrow z=1$$

Javob: 1

Izoh: Nechta desa ko'paytirib $\boxed{10}\cdot\frac{1}{15}+\boxed{12}\cdot\frac{1}{36}=\frac{1}{z}$ qo'shish lozim.

2518. Usta muayyan ishni 24 kunda, uning shogirdi esa 60 kunda bajaradi. Agar 6 ta usta va 15 ta shogird birga ishlasalar, o'sha ishni necha kunda bajarishadi?

A) 4 B) 3 C) 2 D) 9

2519. Meshdagi suv Anvarning o'ziga 5 kunga, ukasiga esa 35 kunga yetadi. Meshdagi suv Anvar va 7 ta ukasiga birga necha kunga yetadi?

A) 9 B) 2,5 C) 8 D) 3,5

✓ Hovuzga 2 ta quvur o'tkazilgan. Birinchi quvur bo'sh hovuzni 10 soatda to'ldiradi, ikkinchisi esa 15 soatda bo'shatadi. Hovuz bo'sh bo'lgan vaqtda ikkala quvur birdaniga ochilsa, hovuz necha soatdan keyin to'ladi?

A) 30 B) 25 C) 20 D) 15

Yechimi:

$$\frac{1}{x}-\frac{1}{y}=\frac{1}{z} \Rightarrow$$

Birinchi quvur bo'sh hovuzni 10 soatda to'ldiradi, ikkinchisi esa 15 soatda bo'shatadi. $\Rightarrow \boxed{\frac{1}{10}-\frac{1}{15}=\frac{1}{x}}$

$\frac{1}{10}-\frac{1}{15}=\frac{1}{x} \Rightarrow \boxed{\begin{array}{c}\frac{3-2}{30}=\frac{1}{x}\\ \frac{1}{30}=\frac{1}{x}\\ x=30\end{array}}$ **Javob: 30**

Izoh: Bo'shatadi degan so'ziga Etibor bering shuning uchun "–" qo'shish lozim.

2520. Hovuzga 2 ta quvur o'tkazilgan. Birinchi quvur bo'sh hovuzni 12 soatda to'ldiradi, ikkinchisi esa 15 soatda bo'shatadi. Hovuz bo'sh bo'lgan vaqtda ikkala quvur birdaniga ochilsa, hovuz necha soatdan keyin to'ladi?
A) 10 B) 20 C) 60 D) 30

2521. Hovuzga 2 ta quvur o'tkazilgan. Birinchi quvur bo'sh hovuzni 12 soatda to'ldiradi, ikkinchisi esa 24 soatda bo'shatadi. Hovuz bo'sh bo'lgan vaqtda ikkala quvur birdaniga ochilsa, hovuz necha soatdan keyin to'ladi?
A) 36 B) 24 C) 25 D) 12

✓ Massasi 400 g va kontsentratsiyasi 8 % bo'lgan eritma, massasi 600 g va kontsentratsiyasi 13 % bo'lgan eritma bilan aralashtirildi. Hosil bo'lgan aralashmaning konsentratsiyasini (% da) toping.
A) 15 B) 5 C) 11 D) 21

Yechimi: konsentratsiyani topish formulasi:

$$p=\frac{p_1\cdot m_1+p_2\cdot m_2}{m_1+m_2} \quad p=\frac{8\cdot 400+13\cdot 600}{400+600}=\frac{11000}{1000}=11$$

Javob : (C)

2522. Massasi 200 g va kontsentratsiyasi 3 % bo'lgan eritma, massasi 300 g va kontsentratsiyasi 8 % bo'lgan eritma bilan aralashtirildi. Hosil bo'lgan aralashmaning konsentratsiyasini (% da) toping.
A) 7 B) 6 C) 11 D) 2

2523. 45 *l* tuzli suvning tarkibida 12 % tuz , yana bir idishda 15 *l* tuzli suvning tarkibida 16 % tuzli eritma bilan aralashtirildi. Hosil bo'lgan aralashmaning necha % li tuzli eritma bor.
A) 13 B) 5 C) 11 D) 21

2524. Yog'lig'i 2 % bo'lgan 80 *l* sut bilan yo'g'lig'i 5% bo'lgan 20 *l* sut aralashtirilsa, yog'lig'i necha % bo'lgan sut olish mumkin?
A) 1,6 B) 2,6 C) 1,1 D) 2,1

2525. Birinchi idishda 40 kg 20% li, ikkinchi idishda 20 kg 35 % li erimtma bor. Ularni aralashtirib, necha % eritma olinadi ?
A) 16 B) 26 C) 15 D) 25

✓ 8 % li 3 kg eritmaga 4% li necha kg eritmani aralashtirib 5 % li eritmani hosil qilish mumkin ?
A) 5 B) 9 C) 7 D) 21

Yechimi: Aralashmani topish formulasi:

$$p=\frac{p_1\cdot m_1+p_2\cdot m_2}{m_1+m_2} \quad 5=\frac{8\cdot 3+4\cdot x}{3+x}\Leftrightarrow 5=\frac{24+4\cdot x}{3+x}\Rightarrow x=9$$

Javob : (B)

2526. 9 % li 7 kg eritmaga 5 % li necha kg eritmani aralashtirib 6 % li eritmani hosil qilish mumkin
A) 8 B) 21 C) 11 D) 2

2527. 6 % li necha kg eritmaga 9 % li 3 kg eritmani aralashtirib 7 % li eritmani hosil qilish mumkin
A) 6 B) 5 C) 11 D) 13

2528. Yog'lig'i 2 % bo'lgan 80 *l* sut bilan yog'lig'i 5% bo'lgan necha *l* sut aralashtirilsa, yog'lig'i 2,6 % bo'lgan sut olish mumkin?
A) 16 B) 20 C) 11 D) 21

✓ $\frac{73!}{3^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 32 B) 42 C) 24 D) 34

Yechimi:

$$n=\left[\frac{73}{3}\right]+\left[\frac{73}{3^2}\right]+\left[\frac{73}{3^3}\right]+\left[\frac{73}{3^4}\right]+\ldots=24+8+2+0=34$$

Javob: 34 (D)

Izoh: butun qismini olish lozim.

2529. $\frac{197!}{3^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 85 B) 95 C) 65 D) 27

2530. $\frac{300!}{2^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 296 B) 286 C) 233 D) 236

2531. $\frac{600!}{7^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 98 B) 88 C) 78 D) 68

2532. $\frac{200!}{9^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 45 B) 55 C) 48 D) 50

2533. $\frac{320!}{25^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 34 B) 44 C) 39 D) 36

2534. $\frac{490!}{49^n}$ ifoda butun son bo'lsa, *n* eng katta qiymati nechiga teng bo'ladi?
A) 98 B) 38 C) 40 D) 48

k soniga karrali n xonali sonlar topish

✓ **4** soniga karrali **6** xonali sonlar nechta? .
A) 30000 B) 225000
C) 3600 D) 25000

Yechimi:

k soniga karrali **n** xonali sonlar topish

$$N=\left[\frac{\overbrace{999\ldots9}^{n}}{k}\right]-\left[\frac{\overbrace{999\ldots9}^{n-1}}{k}\right]$$

(Butun qismini olib hisoblash lozim.)

$$N=\left[\frac{999999}{4}\right]-\left[\frac{99999}{4}\right]=[249999,75]-[24999,75]=$$

$$=249999-24999=225000$$

2535. 3 soniga karrali **5** xonali sonlar nechta?

A) 210000 B) 30000
C) 3000 D) 2000

2536. 2 soniga karrali 7 xonali sonlar nechta ?

A) 4500000 B) 5999
C) 4600000 D) 449999

2537. 6 soniga karrali 4 xonali sonlar nechta ?

A) 1550 B) 1599
C) 1555 D) 1500

2538. 3 soniga karrali **6** xonali sonlar nechta ?

A) 300000 B) 3000000
C) 3000 D) 480

Bir nomalumli chiziqli tengsizliklar

✓ **Tengsizliklar uchun quyidagi keltirilgan tasdiqlardan qaysilari to'g'ri?**

1) $-11,7<0$ 2) $98,3<0$

3) (x – manfiy son) $x>0$

4) (y – manfiy son) $y<0$

A) 1; 2 B) 3; 4 C) 1; 4 D) 2; 4

Yechimi:

1) $-11,7<0$ 2) $98,3<0$

3) (x – manfiy son) $x>0$ **Javob: 1; 4**

4) (y – manfiy son) $y<0$

Izoh: Manfiy sonlar "0" dan kichik. musbat sonlar noldan "0" dan katta.

2539. Tengsizliklar uchun quyidagi keltirilgan tasdiqlardan qaysilari to'g'ri?

1) $-9,15>0$ 2) $-8,8<0$

3) (x – musbat son) $x>0$

4) (y – manfiy son) $y>0$

A) 1; 2 B) 3; 4 C) 1; 4 D) 2; 3

2540. Tengsizliklar uchun quyidagi keltirilgan tasdiqlardan qaysilari to'g'ri?

1) $4,005>0$ 2) $-1,9>0$

3) (x – musbat son) $x<0$

4) (y – manfiy son) $y<0$

A) 1; 2 B) 3; 4 C) 1; 4 D) 2; 3

2541. Tengsizliklar uchun quyidagi keltirilgan tasdiqlardan qaysilari to'g'ri?

1) $-6,265>0$ 2) $25,23<0$

3) (x – musbat son) $x>0$

4) (y – manfiy son) $y<0$

A) 3; 4 B) 2; 4 C) 1; 4 D) 2; 3

✓ $3,35<4,5$ ni ikkala qismini 4 ga ko'paytiring.

A) $13,4<18$ B) $13,4>18$ C) $13,4>9$ D) $13,4<9$

Yechimi:

$3,35<4,5 \quad (\cdot 4)$

$4\cdot 3,35<4\cdot 4,5$ **Javob:** $13,4<18$

$13,4<18$

Izoh: Agar ko'paytiriladigan son manfiy son (ya'ni -4) bo'lganda. tengsizlik belgisi ("<" dan ">" ga) o'zgarar edi.

2542. $\frac{5}{6}>\frac{2}{3}$ ni ikkala qismini -12 ga ko'paytiring.

A) $-10<-8$ B) $-10>-8$ C) $-10<-6$ D) $-10<-2$

2543. $1,8<2,4$ ni ikkala qismini 5 ga ko'paytiring.

A) $9>12$ B) $9<12$ C) $9>16$ D) $9>6$

2544. $-2a>-4$ ni ikkala qismini $-0,5$ ga ko'paytiring. (a – musbat son)

A) $a>2$ B) $2a<2$ C) $a<2$ D) $-a<-2$

✓ $-2<5$ ni ikkala qismini 2 ga bo'ling.

A) $-1>2,5$ B) $-1<8,5$ C) $-1<2,5$ D) $-4<10$

Yechimi:

$-2<5 \quad (:2)$

$-2:2<5:2$ **Javob:** $-1<2,5$

$-1<2,5$

Izoh: Agar bo'linadigan (":") son manfiy son (ya'ni -2) bo'lganda. tengsizlik belgisi ("<" dan ">" ga) o'zgarar edi.

2545. $\frac{2}{3}x>-\frac{1}{4}$ ni ikkala qismini $-\frac{2}{3}$ ga bo'ling.

A) $-x<\frac{3}{8}$ B) $-x>-\frac{3}{8}$ C) $-x<-\frac{3}{8}$ D) $-x>\frac{3}{8}$

2546. $-25>-30$ ni ikkala qismini 5 ga bo'ling.

A) $5>6$ B) $-5>-6$ C) $-5<-6$ D) $5<9$

2547. $12a>4,8$ ni ikkala qismini $-0,5$ ga bo'ling.

A) $24a<9,6$ B) $-24a<9,6$

C) $-24a<-9,6$ D) $24a<-9,6$

✓ $-11<9$ *va* $8>5$ tengsizliklarni qo'shing.

A) $-1>2,5$ B) $19<-4$ C) $19>-4$ D) $-4<10$

Yechimi:

$-11<9$ *va* $8>5$

$$\begin{cases}-11<9 \quad (\cdot -1)\\ 8>5\end{cases} \Leftrightarrow +\begin{cases}11>-9\\ 8>5\end{cases}$$

$19>-4$ **Javob:** $19>-4$

Izoh: tengsizlik belgilari bir xil ya'ni $\begin{cases}<\\<\end{cases}$ *yoki* $\begin{cases}>\\>\end{cases}$ bo'gandagina ularni qo'shish lozim.

2548. $-8<2$ *va* $3<5$ tengsizliklarni qo'shing.

A) $5<-9$ B) $-5<9$ C) $-5>7$ D) $-5<7$

2549. $\begin{matrix}3x+y<2x+1 \ va\\ 3y-2x<14-2x\end{matrix}$ tengsizliklarni qo'shing.

A) $x>y+15$ B) $5x-y<15$

C) $-y<x+2$ D) $x+4y<15$

2550. $\begin{matrix}3x^2+2y>4a-2 \ va\\ 5y-3x^2<3-4a\end{matrix}$ tengsizliklarni qo'shing.

A) $-6x^2+3y>-8a+5$ B) $6x^2-3y>8a-5$

C) $-24x<9,6$ D) $7y<1$

✓ Agar $b-a=-1,3$ bo'lsa a va b sonlarni taqqoslang.

A) $a>b$ B) $a<b$

C) $a=b$ D) taqqoslab bo'lmaydi

Yechimi: $b-a=-1,3$

natija "–1,3" manfiy bo'lganidan kichik sondan katta son ayirilganini tushunish lozim, ya'ni

$b-a=-1,3 \Rightarrow b<a$ **Javob:** $a>b$

Izoh: Natijadagi "–" yoki "+" ga qarash lozim.

2551. Agar $b-a=0{,}01$ bo'lsa a va b sonlarni taqqoslang.
A) $a>b$ B) $a<b$ C) $a=b$ D) taqqoslab bo'lmaydi

2552. Agar $a-b=(-5)^4$ bo'lsa a va b sonlarni taqqoslang.
A) $a>b$ B) $a<b$ C) $a=b$ D) taqqoslab bo'lmaydi

2553. Agar $a-b=-5^4$ bo'lsa a va b sonlarni taqqoslang.
A) $a>b$ B) $a<b$ C) $a=b$ D) taqqoslab bo'lmaydi

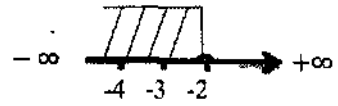
2554. Agar $b-a=(-2)^3$ bo'lsa a va b sonlarni taqqoslang.
A) $a<b$ B) $a>b$ C) $a=b$ D) taqqoslab bo'lmaydi

✓ $x<-2$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping.
A) -2 B) -3 C) -1 D) -4

Yechimi:
Quyidagi belgilarni o'qilishini bilish lozim.

" < ": "kichik" deb o'qilsin masalan: $x<5$: *x kichik 5* " > " : "katta" deb o'qilsin masalan: $x>-6$: *x katta* -6	" ≤ ": "kichik yoki teng" deb o'qilsin masalan: $x\le -2$: *x kichik yoki teng* -2 " ≥ " : "katta yoki teng" deb o'qilsin masalan: $x\ge 14$: *x katta yoki teng* 14

$x<-2$ bo'lganidan



Javob: –3
Izoh: Agar $x\le -2$ bo'lsa, javobga "–2" ni olardik.

2555. $x\le 3$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 2 B) 4 C) 1 D) 3

2556. $x<3$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 1 B) 4 C) 2 D) 3

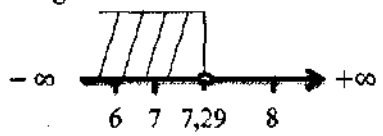
2557. $x<4$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 3 B) 2 C) 4 D) 1

2558. $x<-5$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) –4 B) –6 C) –2 D) –3

2559. $x\le 11$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 11 B) 12 C) 14 D) 10

✓ $x<7{,}29$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping.
A) -2 B) 8 C) 7 D) –4

Yechimi:
Tengsizliklarni belgilarini nomini eslab qoling.
" ≤ *va* ≥ " : *noqat'iy* tengsizlik belgisidir.
" < *va* > " : *qat'iy* tengsizlik belgisidir.
$x<7{,}29$ bo'lganidan



Javob: 7
Izoh: Agar $x\le 7{,}29$ bo'lsa, javobga "7" ni olardik, chunki 7,29 soni butun son emas.

2560. $x\le 0{,}3$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 0,3 B) 1 C) –1 D) 0

2561. $x<2{,}3$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) 2,3 B) 4 C) 2 D) 3

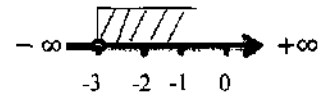
2562. $x<-0{,}4$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) –1 B) –2 C) 0 D) 0,4

2563. $x<-5\frac{4}{9}$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) –7 B) –6 C) –4 D) –5

2564. $x\le -3{,}14$ tengsizlikning qanoatlantiruvchi eng katta butun qiymatini toping?
A) –4 B) –2 C) –1 D) 0

✓ $x>-3$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping.
A) -2 B) -3 C) -1 D) -4

Yechimi: $x>-3$ bo'lganidan



Javob: –2

Izoh: Agar $x\ge -3$ bo'lsa, javobga "–3" ni olardik.

2565. $x\ge 6$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?
A) 2 B) 4 C) 6 D) 3

2566. $x\ge -6$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?
A) –5 B) –4 C) 6 D) –6

2567. $x>-4$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?
A) –3 B) –2 C) –4 D) –1

2568. $x>-1$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?
A) –1 B) –4 C) 0 D) –3

2569. $x\ge 1$, tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?
A) 2 B) 1 C) 4 D) 0

✓ $x>4{,}21$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping.

A) 2 B) 5 C) 1 D) 4

Yechimi:

$x>4{,}21$ bo'lganidan

Javob: 5

Izoh: Agar $x\geq 4$, 2 bo'lsa, javobga "5" ni olardik, chunki 4,21 soni butun son emas.

2570. $x\geq 3{,}24$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?

A) 3,24 B) 4 C) −1 D) 0

2571. $x>0{,}3$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?

A) 1 B) 4 C) 2 D) 0,3

2572. $x>-0{,}4$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?

A) −1 B) −2 C) 0 D) 1

2573. $x>-5\frac{4}{9}$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?

A) −7 B) −6 C) −5 D) −4

2574. $x\geq -3{,}14$ tengsizlikning qanoatlantiruvchi eng kichik butun qiymatini toping?

A) −3 B) −4 C) −1 D) 0

✓ $12(x-4)+4<x-2$ tengsizlikni yeching.

A) $(-\infty;2)$ B) $(-\infty;-1)$

C) $(-\infty;2]$ D) $(-\infty;-2)$

Yechimi: tenglamani yechganday yechamiz.

tenglama		tengsizlik
$2(x-4)+4=x-2$		$2(x-4)+4<x-2$
$2x-8+4=x-2$	$\Leftrightarrow$	$2x-8+4<x-2$
$2x-x=-2+8-4$		$2x-x<-2+8-4$
$x=2$		$x<2$

$x<2$ bo'lganidan

$(-\infty;2)$ **Javob: A)**

Izoh: Agar $x\leq 2$ bo'lsa, javobga $(-\infty;2]$ ni olardik, ya'ni son tomoni to'rtburchak qavsdir.

Agar $x>2$ bo'lganida

$(2;+\infty)$

2575. $x+2\geq 15$ tengsizlikni yeching.

A) $(-\infty;13)$ B) $(13;+\infty)$ C) $(-\infty;13]$ D) $[13;+\infty)$

2576. $x-6<8$ tengsizlikni yeching.

A) $(-\infty;14)$ B) $(14;+\infty)$ C) $(-\infty;14]$ D) $[14;+\infty)$

2577. $2x-16>0$ tengsizlikni yeching.

A) $(-\infty;8)$ B) $(8;+\infty)$ C) $(-\infty;8]$ D) $[8;+\infty)$

2578. $3x-16<0$ tengsizlikni yeching.

A) $\left(-\infty;5\frac{1}{3}\right)$ B) $\left(5\frac{1}{3};+\infty\right)$ C) $\left(-\infty;5\frac{1}{3}\right]$ D) $\left[5\frac{1}{3};+\infty\right)$

2579. $3(x+1)\leq x+5$ tengsizlikni yeching.

A) $(-\infty;1]$ B) $(1;+\infty)$ C) $(-\infty;1)$ D) $[1;+\infty)$

2580. $4(x-1)\geq 5+x$ tengsizlikni yeching.

A) $(3;+\infty)$ B) $(-\infty;3)$ C) $[3;+\infty)$ D) $(-\infty;3]$

✓ $3(x-2)-4(x+1)<2(x-3)-2$ tengsizlikni yeching.

A) $\left(-\frac{2}{3};+\infty\right)$ B) $\left(-\infty;\frac{1}{3}\right)$ C) $\left(-\infty;\frac{2}{3}\right)$ D) $\left(-\infty;\frac{2}{3}\right]$

Yechimi: tenglamani yechganday yechamiz.

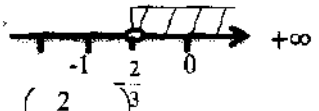
$3(x-2)-4(x+1)<2(x-3)-2$

$3x-6-4x-4<2x-6-2$

$-x-10<2x-8$

$-3x<2$

$x>-\frac{2}{3}$



$\left(-\frac{2}{3};+\infty\right)$

tengsizlik belgisiga e'tibor bering, noma'lum (x tomon) tomonda "−" bo'lsa, $-3x<2$ "<" belgi o'zgaradi ">":

$x>-\frac{2}{3}$ bo'ladi. **Javob: A)**

Izoh: eslab qoling "x ning " oldida "−" bo'lsa, belgi o'zgaradi. yana bir misol:

$-4x+24\leq 0$

$-4x\leq -24$

$x\geq 6$ $[6;+\infty)$

2581. $25-5x<0$ tengsizlikni yeching.

A) $[5;+\infty)$ B) $(-\infty;5]$ C) $(-\infty;5)$ D) $(5;+\infty)$

2582. $9-3x\geq 0$ tengsizlikni yeching.

A) $(-\infty;3)$ B) $(-\infty;3]$ C) $[3;+\infty)$ D) $(3;+\infty)$

2583. $-10x+5<0$ tengsizlikni yeching.

A) $[0{,}5;+\infty)$ B) $(-\infty;0{,}5]$ C) $(-\infty;0{,}5)$ D) $(0{,}5;+\infty)$

2584. $1{,}8-3x\geq 0$ tengsizlikni yeching.

A) $(-\infty;0{,}6]$ B) $(6;+\infty)$ C) $(-6;+\infty)$ D) $(-\infty;0{,}6)$

2585. $x+2<3(x+2)-4$ tengsizlikni yeching.

A) $(0;+\infty)$ B) $[0;+\infty)$ C) $(-\infty;0)$ D) $(-\infty;0]$

✓ $\frac{x}{5}-5>1\frac{3}{4}-\frac{5x}{2}$ tengsizlikni yeching.

A) $(2,4;+\infty)$ B) $[2,5;+\infty)$ C) $(-\infty;2,5)$ D) $(2,5;+\infty)$

Yechimi: *tenglamani yechganday yechamiz.*

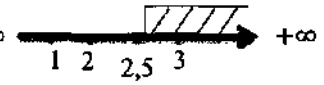
$\frac{x}{5}-5>1\frac{3}{4}-\frac{5x}{2}\ (\cdot 20)$

$\frac{4/x}{5}\cdot 20/_5 > \frac{5/7}{4}\cdot 10/_{5x}-\frac{10/5x}{2}$

$4x-100>35-50x$

$54x>135$

$x>2,5$



Javob: (D) $(2,5;+\infty)$

2586. $\frac{x-1}{3}\ge\frac{3x-3}{5}$ tengsizlikni yeching.

A) $(-\infty;1)$ B) $(1;+\infty)$ C) $(-\infty;1]$ D) $[1;+\infty)$

2587. $\frac{3x-3}{4}\ge\frac{2x-1}{3}$ tengsizlikni yeching.

A) $(5;+\infty)$ B) $(-\infty;5)$ C) $(-\infty;5]$ D) $[5;+\infty)$

2588. $\frac{3x}{2}-\frac{3}{5}<4x+3$ tengsizlikni yeching.

A) $\left(-\frac{36}{25};+\infty\right)$ B) $\left(\frac{36}{25};+\infty\right)$

C) $\left(-\infty;-\frac{36}{25}\right)$ D) $\left(-\infty;-\frac{36}{25}\right)$

2589. $\frac{4-3y}{2}-\frac{8y+1}{6}<15y-6$ tengsizlikni yeching.

A) $\left[\frac{47}{107};+\infty\right)$ B) $\left(\frac{47}{107};+\infty\right)$

C) $\left(-\infty;\frac{47}{107}\right]$ D) $\left(-\infty;\frac{47}{107}\right)$

✓ $\frac{1}{3}-2(x+4)$ ifoda x ning qanday qiymatlarida musbat bo'lishini aniqlang.

A) $\left(-\frac{2}{3};+\infty\right)$ B) $\left(-\infty;\frac{1}{3}\right)$

C) $\left(-\infty;-3\frac{5}{6}\right)$ D) $\left(-\infty;\frac{2}{3}\right]$

Yechimi: musbat sonlar noldan katta $(...>0)$ ekanini hisobga olsak. $\frac{1}{3}-2(x+4)>0$ *ga ega bo'lamiz*

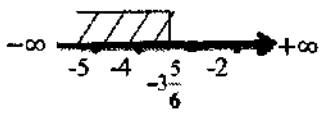
$\frac{1}{3}-2(x+4)>0\ (\cdot 3)$

$1-6x-24>0$

$-6x>-1+24$

$-6x>23$

$x<-\frac{23}{6}$



$x<-3\frac{5}{6}$ $\left(-\infty;-3\frac{5}{6}\right)$

Javob: (C)

2590. $\frac{3}{8}x+4$ ifoda x ning qanday qiymatlarida musbat bo'lishini aniqlang.

A) $\left(-\infty;-\frac{32}{3}\right)$ B) $\left(-\frac{32}{3};+\infty\right)$

C) $\left(-\infty;-\frac{32}{3}\right]$ D) $\left[-\frac{32}{3};+\infty\right)$

2591. $\frac{5}{2}-4x$ ifoda x ning qanday qiymatlarida musbat bo'lishini aniqlang.

A) $\left(\frac{5}{8};+\infty\right)$ B) $\left(-\infty;\frac{5}{8}\right)$ C) $\left(-\infty;\frac{5}{8}\right]$ D) $\left[\frac{5}{8};+\infty\right)$

2592. $\frac{2x-1}{2}-\frac{2x}{5}-\frac{3x-2}{5}+\frac{x}{4}$ ifoda x ning qanday qiymatlarida musbat bo'lishini aniqlang.

A) $[0,4;+\infty)$ B) $(0,4;+\infty)$ C) $(-0,4;+\infty)$ D) $(0,8;+\infty)$

2593. $8+\frac{3y-2}{4}-\frac{y-1}{6}+\frac{5y+4}{3}$ ifoda y ning qanday qiymatlarida musbat bo'lishini aniqlang.

A) $(4;\infty+)$ B) $[-4;+\infty)$ C) $(-4;+\infty)$ D) $(5;+\infty)$

✓ $\frac{8y-3}{5}-\frac{2}{5}$ ifoda x ning qanday qiymatlarida manfiy bo'lishini aniqlang.

A) $\left(-\frac{5}{8};+\infty\right)$ B) $\left(-\infty;\frac{5}{8}\right)$

C) $\left(-\infty;-\frac{5}{8}\right)$ D) $\left(-\infty;\frac{5}{8}\right]$

Yechimi: manfiy sonlar noldan kichik $(...<0)$ ekanini hisobga olsak,

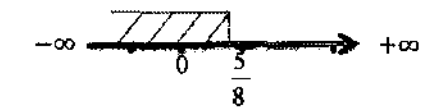
$\frac{8y-3}{5}-\frac{2}{5}<0$ *ga ega bo'lamiz*

$\frac{8y-3}{5}-\frac{2}{5}<0\ (\cdot 5)$

$8y-3-2<0$

$8y<5$

$y<\frac{5}{8}$



$\left(-\infty;\frac{5}{8}\right)$

Javob: B)

2594. $-2x+\frac{3}{4}$ *ifoda* x *ning qanday qiymatlarida manfiy* bo'lishini aniqlang.

A) $\left(-\infty;\frac{3}{8}\right)$ B) $\left(\frac{3}{8};+\infty\right)$ C) $\left(-\infty;\frac{3}{8}\right]$ D) $\left[\frac{3}{8};+\infty\right)$

2595. $-15+3(x-5)+9$ ifoda x ning qanday qiymatlarida manfiy bo'lishini aniqlang.

A) $[7;+\infty)$ B) $(-7;+\infty)$ C) $(7;+\infty)$ D) $(-\infty;7)$

2596. $-\frac{x+1}{2}+2x+\frac{x-2}{3}+\frac{x}{2}$ ifoda x ning qanday qiymatlarida manfiy bo'lishini aniqlang.

A) $(-\infty;0,5]$ B) $(0,5;+\infty)$ C) $(-\infty;0,5)$ D) $[0,5;+\infty)$

✓ $4(y-1)<2+7y$ tengsizlikning yechimi bo'ladigan eng kichik butun sonni toping.

A) -3 B) -4 C) -1 D) 0

Yechimi:

$4(y-1)<2+7y$

$4y-4<2+7y$

$4y-7y<2+4$

$-3y<6$

$y>-2$

$(-2;+\infty)$

Javob: -1

2597. $6y+1\geq 2(y-1)-3y$ tengsizlikning yechimi bo'ladigan eng kichik butun sonni toping.

A) 1 B) -1 C) 0 D) 2

2598. $\frac{y-4}{3}+3y\geq\frac{y}{3}-\frac{y+1}{4}$ tengsizlikning yechimi bo'ladigan eng kichik butun sonni toping.

A) 1 B) -4 C) -1 D) 0

2599. $\frac{3x+1}{4}-\frac{x}{2}<\frac{5x-2}{3}+\frac{3x}{5}$ tengsizlikning yechimi bo'ladigan eng kichik butun sonni toping.

A) -3 B) 0 C) -1 D) 1

✓ $4(2-x)<5(1-x)$ tengsizlikning yechimi bo'ladigan eng katta butun sonni toping.

A) -3 B) -4 C) -1 D) 0

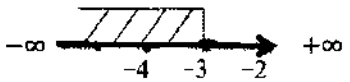
Yechimi:

$4(2-x)<5(1-x)$

$8-4x<5-5x$

$-4x+5x<5-8$

$x<-3$



$x<-3$ bo'lganidan $(-\infty;-3)$

Javob: -4

2600. $6x+5\leq 0$ tengsizlikning yechimi bo'ladigan eng katta sonni toping.

A) -1 B) -4 C) 1 D) 0

2601. $3(1-x)>2(2-x)$ tengsizlikning yechimi bo'ladigan eng katta sonni toping.

A) 0 B) -1 C) -2 D) 2

2602. $(x+1)(x-4)+4\geq(x+2)(x-3)-x$ tengsizlikning yechimi bo'ladigan eng katta sonni toping.

A) -6 B) -7 C) 6 D) -5

2603. $x+9>8-4x$ tengsizlikning yechimi bo'ladigan eng katta butun sonni toping.

A) -3 B) 0 C) -1 D) aniqlab bo'lmaydi

✓ a ning qanday qiymatlarida $\frac{a}{3}$ kasr $\frac{a+1}{4}$ kasrdan katta bo'ladi?

A) $(3;+\infty)$ B) $(-\infty;3)$ C) $(-\infty;-3)$ D) $(-\infty;3]$

Yechimi:

$\frac{a}{3}$ kasr $\frac{a+1}{4}$ kasrdan katta bo'ladi $\Rightarrow \frac{a}{3}>\frac{a+1}{4}$

$\frac{a}{3}>\frac{a+1}{4}\ (\cdot 12)$

$4a>3a+3$

$a>3$

$(3;+\infty)$ **Javob: (A)**

2604. b ning qanday qiymatlarida $\frac{b+3}{2}$ kasr $\frac{b-1}{5}$ kasrdan kichik bo'ladi?

A) $\left(-5\frac{2}{3};+\infty\right)$ B) $\left(-\infty;5\frac{2}{3}\right)$

C) $\left(-\infty;-5\frac{2}{3}\right)$ D) $\left(-\infty;5\frac{2}{3}\right]$

2605. x ning qanday qiymatlarida $\frac{3x-5}{6}$ kasr $\frac{6x-7}{15}$ va $\frac{3-x}{9}$ kasrlar ayirmasidan katta bo'ladi?

A) $(-3;+\infty)$ B) $(-\infty;3)$ C) $(-\infty;-3)$ D) $(-\infty;3]$

2606. x ning qanday qiymatlarida $\frac{2-5x}{4}$ va $\frac{7x-3}{6}$ kasrlar yig'indisi $\frac{2x+5}{18}$ kasrdankatta bo'ladi?

A) $\left(1\frac{3}{7};+\infty\right)$ B) $\left(-\infty;-1\frac{3}{7}\right)$

C) $\left(-\infty;1\frac{3}{7}\right)$ D) $\left(-\infty;-1\frac{3}{7}\right]$

✓ $3(x-2)+x<4x+1$ tengsizlikni yeching

A) $x\in R$ B) 6 C) $\varnothing$ D) 5

Yechimi:

$3(x-2)+x<4x+1$

$3x-6+x<4x+1$

$3x+x-4x<1+6$

$0<7$

$x\in R$

Javob: $x\in R$

Izoh: Agar to'g'ri tengsizlik $(0<7)$ bo'lib tugasa, $x\in R$: noto'g'ri tengsizlik $(0>7)$ bo'lib tugasa $\varnothing$ olinishi lozim. $x\in R$ ning o'rniga $(-\infty;+\infty)$ yoki "istalgan son" deb ham yoziladi.

2607. $5(x+2)-x>3(x-1)+x$ tengsizlikni yeching.

A) $x-$istalgan son B) $(-\infty;0)$

C) $\varnothing$ D) $(0;+\infty)$

2608. $5(x+2)+2(x+3)<3(x-1)+4x$ tengsizlikni yeching.

A) $(-\infty;+\infty)$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

2609. $\frac{3x+6}{4}-\frac{x}{4}>\frac{x+2}{2}$ tengsizlikni yeching.

A) $x\in R$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

2610. $\frac{2x-1}{5}-4<x-\frac{3x+1}{5}$ tengsizlikni yeching.

A) $(-\infty;+\infty)$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

2611. $3(2x-1)+3(x-1)>5(x+2)+2(2x-3)$ tengsizlikni yeching.

A) $(-\infty;+\infty)$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

2612. $\frac{5x+3}{2}-1\geq 3x-\frac{x-7}{2}$ tengsizlikni yechi ng.

A) $(-\infty;+\infty)$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

2613. $5x+1\geq 2(x-1)+3x+3$ tengsizlikni yeching.

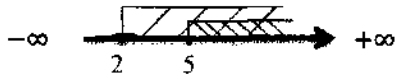
A) $x\in R$ B) $(-\infty;0)$ C) $\varnothing$ D) $(0;+\infty)$

Bir no'malumli tengsizliklar sistemasi

✓ $\begin{cases}x>2\\x>5\end{cases}$ tengsizlikni yeching

A) $(5;+\infty)$ B) $[5;+\infty)$ C) $(-\infty;5)$ D) $(-5;+\infty)$

Yechimi: $\begin{cases}x>2\\x>5\end{cases}$



$(5;+\infty)$ **Javob:(A)**

Izoh: Ikkita chiziq birga yurgan joy javob bo'ladi. Shuning uchun javobga "5" dan "+∞" olindi.

2614. $\begin{cases}x>0\\x>-1\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-\infty;0)$ B) $(-1;+\infty)$ C) $(0;+\infty)$ D) $(-\infty;-1)$

2615. $\begin{cases}x>2\\x\geq -3\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-2;+\infty)$ B) $(-\infty;-3)$ C) $(-3;+\infty)$ D) $(2;+\infty)$

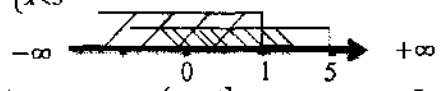
2616. $\begin{cases}x\geq -2\\x\geq -4\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-\infty;2)$ B) $[-2;+\infty)$ C) $(-2;+\infty)$ D) $[-4;+\infty)$

✓ $1\begin{cases}x\leq 1\\x<5\end{cases}$ tengsizlikni yeching

A) $(5;+\infty)$ B) $[1;+\infty)$ C) $(-\infty;1]$ D) $(1;+\infty)$

Yechimi: $\begin{cases}x\leq 1\\x<5\end{cases}$



$(-\infty;1]$ **Javob:(C)**

Izoh: Ikkita chiziq birga yurgan joy javob bo'ladi. Shuning uchun javobga "−∞" dan "1" olindi.

2617. $\begin{cases}x<0\\x<-1\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-\infty;-1)$ B) $(-\infty;0)$ C) $(-\infty;0)$ D) $(-1;+\infty)$

2618. $\begin{cases}x<-2\\x<-5\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-5;+\infty)$ B) $(-\infty;-2)$ C) $(-\infty;2)$ D) $(-\infty;-5)$

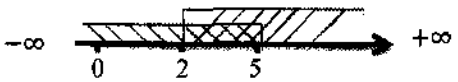
2619. $\begin{cases}x\leq 1\\x\leq 0\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-\infty;0]$ B) $(-\infty;1]$ C) $(-\infty;0)$ D) $(-\infty;1)$

✓ $\begin{cases}x>2\\x<5\end{cases}$ tengsizlikni yeching

A) $(5;+\infty)$ B) $[5;+\infty)$ C) $(-\infty;2]$ D) $(2;5)$

Yechimi: $\begin{cases}x>2\\x<5\end{cases}$



$(2;5)$

Javob: $(2;5)$

Izoh: Ikkita chiziq birga yurgan joy javob bo'ladi. Shuning uchun javobga "2" dan "5" gacha olinadi.

Eslatma!: $(2;5)$ ni $2<x<5$ qo'sh tengsizlik ko'rinishida ham yozish mumkin.

2620. $\begin{cases}x>3\\x<6\end{cases}$ tengsizliklar sistemasini yeching.

A) $(-\infty;6)$ B) $(3;6)$ C) $(3;+\infty)$ D) $(1;6)$

2621. $\begin{cases}x\leq -2\\x\geq -7,5\end{cases}$ tengsizliklar sistemasini yeching.

A) $-7,5\leq x<-2$ B) $-7,5<x<-2$

C) $-7,5\leq x\leq -2$ D) $-7,5<x\leq -2$

2622. $\begin{cases}x<0\\x\geq -2\end{cases}$ tengsizliklar sistemasini yeching.

A) $[-2;0)$ B) $[-\infty;0)$ C) $[-2;+\infty)$ D) $(-2;0)$

2623. $\begin{cases}x<1,5\\x\geq -1,5\end{cases}$ tengsizliklar sistemasini yeching.

A) $-1,5<x<1,5$ B) $-1,5\leq x\leq 1,5$

C) $-1,5\leq x<1,5$ D) $-1,5<x\leq 1,5$

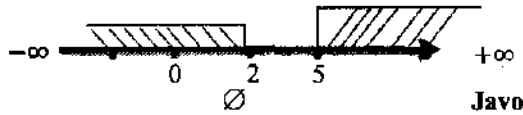
2624. $\begin{cases} x \geq 0 \\ x < \frac{1}{2} \end{cases}$ tengsizliklar sistemasini yeching.

A) $\left(0;\frac{1}{2}\right)$ B) $\left[\frac{1}{2};+\infty\right)$ C) $\left[0;\frac{1}{2}\right]$ D) $\left[0;\frac{1}{2}\right)$

✓ $\begin{cases} x \geq 5 \\ x \leq 2 \end{cases}$ tengsizlikni yeching.

A) $(5;+\infty)$ B) $\varnothing$ C) $(-\infty;1]$ D) $(-5;+\infty)$

Yechimi: $\begin{cases} x \geq 5 \\ x \leq 2 \end{cases}$



$\varnothing$ **Javob:(B)**

Izoh: Ikkita chiziq birga yurgan joy javob bo'ladi. 2 ta chiziqli kesishish joyi yo'q demak, "$\varnothing$" olinadi.

2625. $\begin{cases} x > 11 \\ x < 7 \end{cases}$ tengsizliklar sistemasini yeching.

A) $\varnothing$ B) $(3;6)$ C) $(3;+\infty)$ D) $(1;6)$

2626. $\begin{cases} x < 0 \\ x \geq 2 \end{cases}$ tengsizliklar sistemasini yeching.

A) $[-2;0)$ **B)** $[-\infty;0)$ C) $\varnothing$ D) $(-2;0)$

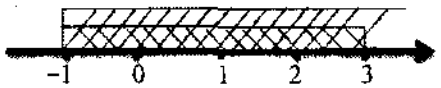
2627. $\begin{cases} x \geq 9 \\ x < \frac{1}{2} \end{cases}$ tengsizliklar sistemasini yeching.

A) $\left(0;\frac{1}{2}\right)$ B) $\varnothing$ C) $\left[0;\frac{1}{2}\right]$ D) $\left[0;\frac{1}{2}\right)$

✓ $\begin{cases} x \leq 3 \\ x > -1 \end{cases}$ tengsizlikning yechimi bo'ladigan butun sonlar nechta?

A) 2 B) 4 **C) 3** D) 5

Yechimi: $\begin{cases} x \leq 3 \\ x > -1 \end{cases}$



$(-1;3]$ 0; 1; 2; 3 $\Rightarrow$ 4 *ta*

Javob: 4

2628. $\begin{cases} x \geq 0{,}8 \\ x < 2{,}2 \end{cases}$ tengsizlikning yechimi bo'ladigan butun sonlar nechta?

A) 2 **B) 3** C) 1 D) 0

2629. $\begin{cases} x \leq 7{,}5 \\ x \geq -0{,}5 \end{cases}$ tengsizlikning yechimi bo'ladigan butun sonlar nechta?

A) 6 **B) 7** C) 9 D) 8

2630. $\begin{cases} x \leq 2{,}7 \\ x \geq 0 \end{cases}$ tengsizlikning butun yechimlari o'rta arifmetigini toping.

A) 2 B) 1 C) 3 D) 6

2631. $\begin{cases} x < 5{,}1 \\ x \geq -5{,}1 \end{cases}$ tengsizlikning butun yechimlari o'rta arifmetigini toping.

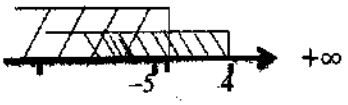
A) 32 B) 0 C) 29 D) 10

✓ $\begin{cases} x+8<12 \\ -3x>15 \end{cases}$ tengsizliklar sistemasining eng katta butun yechimini toping.

A) −2 B) −6 C) −3 D) −5

Yechimi: Sistemani tepasini keyin esa pastini alohida – alohida qilib ishlab chiqamiz.

$\begin{cases} x+8<12 \\ -3x>15 \end{cases}$



$\begin{cases} x+8<12 \\ x<12-8 \\ x<4 \end{cases} \Leftrightarrow \begin{cases} -3x>15 \\ x<-5 \end{cases}$

$(-\infty;-5)$

$\begin{cases} x+8<12 \\ -3x<15 \end{cases} \Rightarrow \begin{cases} x<4 \\ x<-5 \end{cases}$

Javob: −6

2632. $\begin{cases} 3x-18>0 \\ 4x>12 \end{cases}$ tengsizliklar sistemasining eng kichik butun yechimini toping.

A) 7 B) 4 C) 6 D)3

2633. $\begin{cases} 7x-14 \geq 0 \\ 2x \geq 8 \end{cases}$ tengsizliklar sistemasining eng kichik butun yechimini toping.

A) 2 **B) 1** C) 4 D) 5

2634. $\begin{cases} 3x+3 \leq 2x+1 \\ 3x-2 \leq 4x+2 \end{cases}$ tengsizliklar sistemasining barcha butun yechimlari ko'paytmasini toping.

A) 24 B) −12 C) 16 D) **−24**

2635. $\begin{cases} 4x+2 \geq 5x+3 \\ 2-3x<7-2x \end{cases}$ tengsizliklar sistemasining barcha butun yechimlari ko'paytmasini toping.

A) −24 B) −12 C) 16 D) 24

✓ $\begin{cases} 5(x+1)-x>2x+2 \\ 4(x+1)-4 \leq 2(2x+1)-x \end{cases}$ tengsizlikning eng katta va kichik butun yechimlari yig'indisini toping.

A) 2 **B) 4** C) 3 D) 1

Yechimi: Sistemani tepasini alohida pastini alohida qilib olib chiqamiz.

$5(x+1)-x>2x+2$

$4(x+1)-4\le 2(2x+1)-x$

$5(x+1)-x>2x+2$

$5x+5-x>2x+2$

$5x-x-2x>2-5$

$2x>-3$

$x>-\frac{3}{2}$

$x>-1,5$

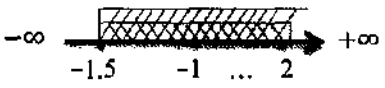
$4(x+1)-4\le 2(2x+1)-x$

$4x+4-4\le 4x+2-x$

$4x-4x+x\le 4+2-4$

$x\le 2$

$$\begin{cases}5(x+1)-x>2x+2\\4(x+1)-4\le 2(2x+1)-x\end{cases}\Leftrightarrow\begin{cases}x>-1,5\\x\le 2\end{cases}$$



$(-1,5;2]$ eng katta butun yechimi $\Rightarrow 2$

eng kichik butun yechimi $\Rightarrow -1$

eng katta va kichik butun yechimlari yeg'indisi $\Rightarrow 2+(-1)=1$ **Javob: (D)**

2636. $\begin{cases}2(x-1)-3<5(2x-1)-7x\\3(x+1)-2\le 6(1-x)+7x\end{cases}$ tengsizlikning eng katta va kichik butun yechimlari yig'indisini toping.

A) 4 B) 3 C) 5 D) 2

2637. $\begin{cases}5(x+1)\le 3(x+3)+1\\\frac{2x-1}{7}\le\frac{x+1}{2}\end{cases}$ tengsizlikning eng katta va kichik butun yechimlari yig'indisini toping.

A) 1 B) −2 C) −1 D) −3

2638. $\begin{cases}2(2x+1)+x>3(x-1)+4\\\frac{2x-1}{3}\ge\frac{3x-2}{4}\end{cases}$ tengsizlikning eng katta va kichik butun yechimlari ko'paytmasini toping.

A) 0 B) 2 C) 3 D) 5

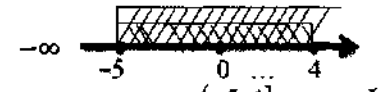
✓ $-7<2x+3\le 11$ qo'sh tengsizlikni yeching.

A) $(-5;4]$ B) $(-4;4]$ C) $(-3;4]$ D) $(-5;6]$

Yechimi: Qo'sh tengsizlikni sistema ko'rinishda yozib olamiz.

$-7<2x+3\le 11$ ⇓

$$\begin{cases}-7<2x+3\\2x+3\le 11\end{cases}\Leftrightarrow\begin{cases}-2x<3+7\\2x\le 11-3\end{cases}\Leftrightarrow\begin{cases}-2x<10\\2x\le 8\end{cases}\Leftrightarrow\begin{cases}x>-5\\x\le 4\end{cases}$$



$(-5;4]$ **Javob: (A)**

2639. $-16<4x+12<44$ qo'sh tengsizlikni yeching.

A) $(-5;4]$ B) $(-4;4]$ C) $(-7;8]$ D) $(-7;8)$

2640. $-2\le\frac{x+12}{2}\le 1$ qo'sh tengsizlikni yeching.

A) $(-16;-10]$ B) $(-4;-10]$ C) $[-16;-10]$ D) $(-5;6]$

2641. $1\le\frac{3x+17}{2}<28$ qo'sh tengsizlikni yeching.

A) $[-5;13)$ B) $(-4;13]$ C) $(-5;13]$ D) $(-5;6]$

Sonning moduli. modulli chiziqli tenglamalar.

✓ -150 ni modulini toping.

A) 20 B) 40 C) 30 D) 150

Yechimi: Sonning moduli deganda shu sonning ishorasini hisobga olmagandagi qiymati tushuniladi. Belgisi $\Rightarrow|\ |$

-150 moduli $\Rightarrow|-150|=150$

Javob: 150

Izoh: sonning "modulini" "absolyut qiymati" ham deyiladi. modulning formulasi. $\Rightarrow|-a|=a$; $|a|=a$

2642. 44 ni modulini toping.

A) 20 B) 44 C) −44 D) 150

2643. −78 ni modulini toping.

A) −78 B) 78 C) 30 D) 15

2644. −5,2 ni absolyut qiymatini toping.

A) 52 B) 5,2 C) −5,2 D) 3,2

2645. 3,9 ni absolyut qiymatini toping.

A) 3,9 B) 5,2 C) −39 D) −3,9

2646. $\left|-\frac{3}{4}\right|$ ni toping.

A) $\frac{3}{4}$ B) $-\frac{3}{4}$ C) 30 D) 150

2647. $\left|-1\frac{5}{7}\right|$ ni toping.

A) $\frac{3}{4}$ B) $-\frac{3}{4}$ C) $1\frac{5}{7}$ D) $-1\frac{5}{7}$

✓ $|-15|+|-20|-|-3|\cdot|-5|$ ni hisoblang.

A) 20 B) 40 C) 30 D) 150

Yechimi:

$|-15|+|-20|-|-3|\cdot|-5|=15+20-3\cdot 5=35-15=20$

Javob:(A)

Izoh: har birini moduldan chiqarib hisoblang.

2648. $|-6|+|19|$ ni hisoblang.

A) 20 B) 24 C) 25 D) 35

2649. $|19|-|-81|$ ni hisoblang.

A) 20 B) 100 C) 62 D) −62

2650. $|-5,6|+|-5,9|$ ni hisoblang.

A) 20 B) 0,3 C) −44 D) 11,5

2651. $|-32|+|-32|:|8|-|-4|$ ni hisoblang.

A) 32 B) 44 C) 34 D) 150

2652. $|-40|:|8|-|-12|:|-3|$ ni hisoblang.

A) 1 B) 6 C) 4 D) 5

✓ $\dfrac{|-15|+|-20|}{2\cdot|3-8|}$ ni hisoblang.

A) 2,5 B) 4,4 C) 3,5 D) 1,5

Yechimi:

$$\frac{|-15|+|-20|}{2\cdot|3-8|}=\frac{15+20}{2\cdot5}=\frac{35}{10}=\frac{7}{2}=3\frac{1}{2}$$

Javob: 3,5

Izoh: har birini moduldan chiqarib hisoblang.

2653. $\dfrac{|-104|:|-2|-8}{8\cdot|2017-2018|}$ ni hisoblang.

A) 2 B) 11 C) 5,5 D) –5,5

2654. $\dfrac{|-15|-9+|-20|-8}{8\cdot|23-8|}$ ni hisoblang.

A) 0,2 B) 10,4 C) 0,12 D) 0,15

2655. $\dfrac{|4-5\cdot|4-6|+4\cdot|3-6||}{|3-4|7-5|}$ ni hisoblang.

A)1,4 B) 1,3 C) 4,4 D) 1,2

✓ $|-19,2|$ *va* $|-21|$ ni hisoblang.

A) $|-19,2|=|-21|$ B) $|-19,2|>|-21|$

C) $|-19,2|<|-21|$ D) $\varnothing$

Yechimi:

$$\begin{array}{|l} |-19,2| \quad |-21| \\ \hline \end{array} \Rightarrow \begin{array}{|l} |19,2 \;<\; 21 \\ \hline \end{array}$$

Javob: $|-19,2|<|-21|$

Izoh: har birini moduldan chiqarib keyin taqqoslang.

2656. $|-5|$ *va* $|5|$ taqqoslang.

A) $|-5|=|15|$ B) $|-5|=|5|$

C) $|-5|>|5|$ D) $|-5|<|5|$

2657. $|-4,7|$ *va* $|-5|$ taqqoslang.

A) $|-4,7|=|-5|$ B) $|-4,7|>|-5|$

C) $|-14,7|<|-5|$ D) $|-4,7|<|-5|$

2658. $|-6,(8)|$ *va* $\left|6\frac{3}{5}\right|$ taqqoslang.

A) $|-6,(8)|=\left|6\frac{3}{5}\right|$ B) $|-6,(8)|<\left|6\frac{3}{5}\right|$

C) $\varnothing$ D) $|-6,(8)|>\left|6\frac{3}{5}\right|$

✓ $a=|-6,2|;\ b=|6,(2)|;\ c=\left|6\frac{4}{5}\right|$; *va* $k=\left|6\frac{6}{7}\right|$ sonlarni kamayish tartibida yozing.

A) $k>c>b>a$ B) $k>c>a>b$

C) $a>c>b>k$ D) $c>k>b>a$

Yechimi:

$$\begin{array}{|l} a=|-6,2|;\ b=|6,(2)|; \\ c=\left|6\frac{4}{5}\right|; \quad k=\left|6\frac{6}{7}\right| \\ \hline \end{array} \Rightarrow \begin{array}{|l} a=6,2 \\ b=6,2222... \\ c=6,8 \\ k=6,857... \\ \hline \end{array} \quad k>c>b>a$$

Javob:(A)

Izoh: har birini moduldan chiqarib keyin taqqoslang.

2659. $m=|4,8|;\ n=|-4,(8)|;\ p=\left|4\frac{3}{5}\right|$; *va* $q=|-3,2|$ sonlarni kamayish tartibida yozing.

A) $m>n>p>q$ B) $n>m>p>q$

C) $m>q>n>q$ D) $q>n>m>q$

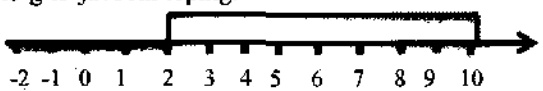
2660. $m=|8,(8)|;\ n=|-8,8|;\ p=\left|8\frac{7}{9}\right|$; *va* $q=\left|-8,\frac{6}{7}\right|$ sonlarni kamayish tartibida yozing.

A) $n>q>m>p$ B) $n>p>m>q$

C) $p>q>n>m$ D) $m>q>n>p$

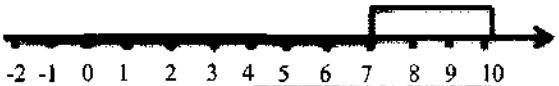
✓ Agar $a=2$ *va* $b=-4$ bo'lsa, rasmda $|a-b|$ ga mos to'g'ri javobni toping.

A)

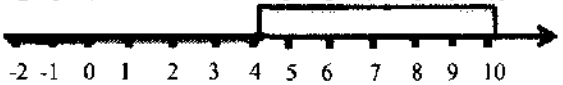


B)

C)



D)



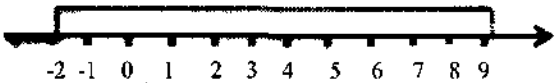
Yechimi: Berilgan $a=2$ *va* $b=-4$ sonlarni $|a-b|$ ga qo'yib hisoblang.

$a=2$ *va* $b=-4$ $\quad |a-b|=|2-(-4)|=|2+4|=6$

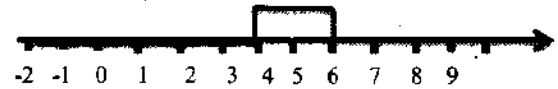
javoblardan uzuligi "6" ga teng kesmani topamiz.**Javob:D**

2661. Agar $a=-2$ *va* $b=3$ bo'lsa, rasmda $|a-b|$ ga mos to'g'ri javobni toping.

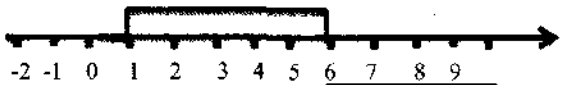
A)



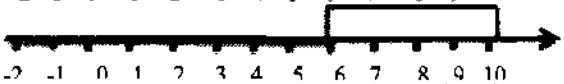
B)



C)

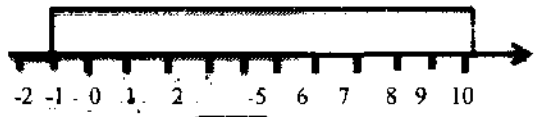


D)



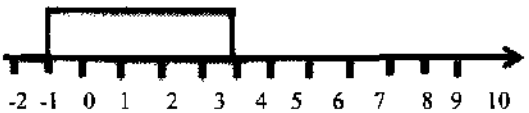
2662. Agar $a=-5$ *va* $b=6$ bo'lsa, rasmda $|a-b|$ ga mos to'g'ri javobni toping.

A)



B)

C)

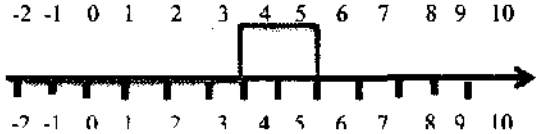


D)

2663. Agar $a=-13$ va $b=-11$ bo'lsa, rasmda $|a-b|$ ga mos to'g'ri javobni toping.

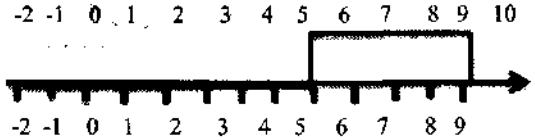
A)

B)



C)

D)



✓ $|x|=0,09$ tenglamani yeching.

A) –0,09; 0,09 B) 0,09
C) –0,09 D) 150

Yechimi:

formula		*misol*
$\|x\|=a$	$\Rightarrow$	$\|x\|=0,09$
$x_1=-a \quad x_2=a$		$x_1=-0,09 \quad x_2=0,09$

Javob: $x_1=-0,09 \quad x_2=0,09$

Izoh: $x_1=-0,09 \quad x_2=0,09$ ni bitta qilib $x_{12}=\pm 0,09$ ko'rinishda ham yozish mumkin.

2664. $|x|=39$ tenglamani yeching.

A) 39 B)–39 C) 28 D) ±39

2665. $|x|=2,5$ tenglamani yeching.

A) 2,5 B) –2,5 C) 25 D) ±2,5

2666. $|x|=\frac{9}{11}$ tenglamani yeching.

A) $-\frac{9}{11}$ B) $\pm\frac{11}{9}$ C) $\pm\frac{9}{11}$ D) $\frac{9}{11}$

✓ $|4x+3|=2$ tenglamani yeching.

A) –0,9; 0,25 B) 0,5
C) $-\frac{5}{2};\frac{1}{2}$ D) $-\frac{5}{4};\frac{1}{4}$

Yechimi:

formula		*misol*		
$\|x\|=a$		$4x+3=-2$		$4x+3=2$
$x_1=-a \quad x_2=a$		$4x=-2-3$		$4x=2-3$
$\Downarrow$		$4x=-5$		$4x=-1$
misol		$x=-\frac{5}{4}$		$x=-\frac{1}{4}$
$\|4x+3\|=2$				
$4x+3=-2 \quad 4x+3=2$				

Javob: D)

Izoh: $\underbrace{|x|=a}_{|4x+3|=2} \Rightarrow \begin{bmatrix} x_1=a \\ 4x+3=2 \end{bmatrix} \begin{bmatrix} \underbrace{x_2=-a}_{4x+3=-2} \end{bmatrix}$ ga ko'ra. 2 ta tenglamani yechamiz.

2667. $|x-1|=2$ tenglamani yeching.

A) 1;–3 B) –1; 3 C) 4; 2 D) 6

2668. $|x+3|=3$ tenglamani yeching.

A) 0;–6 B) 5; 6 C) 2; 3 D) 3;0

2669. $|3x-5|=5$ tenglamani yeching.

A) $\frac{3}{10};0$ B) $\frac{10}{3};0$ C) $\frac{7}{10};2$ D) $\frac{13}{3};10$

2670. $\left|\frac{2}{3}x+\frac{1}{6}\right|=\frac{1}{3}$ tenglamaning katta ildizini toping.

A) $-\frac{1}{4}$ B) $\frac{3}{4}$ C) $-\frac{3}{4}$ D) $\frac{1}{4}$

2671. $\left|\frac{3}{4}x-\frac{1}{2}\right|=\frac{1}{4}$ tenglamaning katta ildizini toping.

A) 1 B) $\frac{1}{3}$ C) -1 D) $-\frac{1}{3}$

2672. $|4-5x|=5$ tenglamaning kichik ildizini toping.

A) –1,8 B) –0,2 C) 1,8 D) 0,2

2673. $|3-4x|=3$ tenglamaning kichik ildizini toping.

A) 1,5 B) 0,5 C) 0 D) 2,5

2674. $|5-x|=5$ tenglamaning ildizlari yig'indisini toping.

A) 10 B) 0 C) 5 D)15

2675. $|-x|=3,4$ tenglamaning ildizlari yig'indisini toping.

A) 3,4 B) 0 C) 6,8 D) –6,8

✓ $|4x+3|=0$ tenglamani yeching.

A) –0,9; 0,25 B) 0,5 C) $-\frac{3}{4}$ D) $-\frac{5}{4}$

Yechimi:

$$\begin{array}{|c|} \hline formula \\ |x|=0 \\ x=0 \\ \hline \end{array} \Rightarrow \begin{array}{|l|} \hline |4x+3|=0 \\ 4x+3=0 \\ \hline \end{array} \qquad \begin{array}{l} 4x+3=0 \\ 4x=-3 \\ x=-\frac{3}{4} \end{array}$$

Javob: $-\frac{3}{4}$

Izoh: Eslab qoling barobar "0" bo'lsa, $\begin{array}{|c|} \hline formula \\ |x|=0 \\ x=0 \\ \hline \end{array} \Rightarrow \begin{array}{|l|} \hline |4x+3|=0 \\ 4x+3=0 \\ \hline \end{array}$ modul ichini nolga tenglab yechish lozim.

2676. $|x+4|=0$ tenglamani yeching.

A) -4 B) -2 C) -5 D) -9

2677. $|x-2|=0$ tenglamani yeching.

A) 2 B) -4 C) 6 D) -2

2678. $|2x-3|=0$ tenglamani yeching.

A) $-1,5$ B) 2,5 C) $\pm 1,5$ D) 1,5

2679. $|3-4x|=0$ tenglamani yeching.

A) $\frac{3}{5}$ B) $\frac{3}{4}$ C) $\frac{4}{3}$ D) $\frac{1}{4}$

✓ $|4x+3|=-25$ tenglamani yeching.

A) $-0,9;\ 0,25$ B) 0,5 C) $\varnothing$ D) $-\frac{5}{4}$

Yechimi:

$$\begin{array}{|c|} \hline formula \\ |x|=-a \\ \varnothing \\ \hline \end{array} \Rightarrow \begin{array}{|l|} \hline |4x+3|=-25 \\ \varnothing \\ \hline \end{array}$$

Javob:(C)

Izoh: $|4x+3|=-25$ moduldan hech qachon "–" (manfiy) son chiqmaydi. demak, $\varnothing$

2680. $|2018x+4|=-1$ tenglamani yeching.

A) $\varnothing$ B) -2108 C) -5 D) $x \in R$

2681. $\left|\frac{7}{9}x-2\right|=-\frac{3}{52}$ tenglamani yeching.

A) $\varnothing$ B) -4 C) 6 D) -2

2682. $|9,008x-3|=-2,7$ tenglamani yeching.

A) $-1,5$ B) 2,5 C) $\pm 1,5$ D) $\varnothing$

✓ $|b|:(-0,5)=-2,5$ tenglamani qanoatlantiruvchi b ning barcha qiymatlarini toping.

A) $-0,9;\ 0,25$ B) 0,5 C) $\pm 1,25$ D) $\varnothing$

Yechimi: ":" (bo'lingan) "1" qilib proporsiyaga to'ldiramiz va yechamiz.

$$|b|:(-0,5)=-2,5$$
$$|b|:(-0,5)=-2,5:1$$
$$|b|=-2,5\cdot(-0,5)$$
$$|b|=1,25$$
$$\swarrow \quad \searrow$$
$$b=-1,25 \qquad b=1,25$$

Javob: (C)

2683. $1,7:3=5,1:|x|$ tenglamani qanoatlantiruvchi x ning barcha qiymatlarini toping.

A) ± 9 B) -9 C) -6 D) -3

2684. $|a|:4,8=0,5$ tenglamani qanoatlantiruvchi a ning barcha qiymatlarini toping.

A) $\pm 9,6$ B) $-2,4$ C) $\pm 2,4$ D) $x \in R$

2685. $-4,8:|a|=-0,5$ tenglamani qanoatlantiruvchi a ning barcha qiymatlarini toping.

A) $\pm 9,6$ B) $-9,6$ C) $-2,4$ D) $x \in R$

2686. $|k|\cdot(-0,6)=-5,4$ tenglamani qanoatlantiruvchi k ning barcha qiymatlarini toping.

A) $-1,5$ B) 2,5 C) $\pm 3,24$ D) ± 9

✓ m ning qanday qiymatlarida $|4m+8|=-4m-8$. tenglik o'rinli bo'ladi?

A) $m<-2$ B) $m\geq -2$

C) $m>-2$ D) $m\leq -2$

Yechimi:

$$|4m+8|=-4m-8$$
$$|...|=musbat$$
$$-4m-8\geq 0$$
$$-4m\geq 8$$
$$m\leq -2$$

Javob: $m\leq -2$

Izoh: moduldan chiqqanda noma'lum $|4m+8|=-4m-8$ qatnashsa ≥ 0 qilib tengsizlikni yechish lozim. shartida "tenglamani yeching" desa ham shu ishlarni qilish lozim.

2687. $|x-8|=x-8$ tenglamani yeching.

A) $x\geq 8$ B) $x>8$ C) $x<8$ D) $x\leq 8$

2688. $|x-4|=4-x$ tenglamani yeching.

A) $(-\infty;4)$ B) $(4;+\infty)$ C) $(-\infty;4]$ D) $[4;+\infty)$

2689. x ning qanday qiymatlarida $|x+3|=x+3$ tenglik o'rinli bo'ladi.

A) $x>-3$ B) $x<3$ C) $x\geq -3$ D) $x\geq 3$

2690. $|x-2|=2-x$ tenglamani yeching.

A) $(-\infty;-2]$ B) $(2;+\infty)$ C) $(-\infty;2)$ D) $(-\infty;2]$

2691. x ning qanday qiymatlarida $|5x-30|=30-5x$ tenglik o'rinli bo'ladi.

A) $x\le 5$ B) $x<6$ C) $x\le 6$ D) $x<5$

✓ x ning qanday qiymatlarida $\frac{|x-6|}{x-6}=1$ tenglik o'rinli bo'ladi?

A) $x<6$ B) $x\ge -2$ C) $x>6$ D) $x\le -2$

Yechimi:

$\frac{|x-6|}{x-6}=1 \Rightarrow |x-6|=x-6$

$|..|=musbat$ **Javob:** $x>6$

$x-6>0$

$x>6$

Izoh: modul kasr bo'lgani uchun proporsiya qilib $\frac{|x-6|}{x-6}=1 \Rightarrow |x-6|=x-6$ keyin $">0"$ qilib tengsizlikni yechish lozim.

2692. $\frac{|x-6|}{x-6}=1$ 6tenglamani yeching.

A) $x>6$ B) $x\le 6$ C) $x\ge 6$ D) $x<6$

2693. $\frac{|x-9|}{x-9}=-1$ tenglamani yeching.

A) $(-\infty;-9)$ B) $(-\infty;9)$ C) $(-\infty;9]$ D) $(-\infty;-9]$

2694. $\frac{|3-2x|}{2x-3}=1$ tenglamani yeching.

A) $x\ge 1,5$ B) $x\le 1,5$ C) $x<1,5$ D) $x>1,5$

2695. $\frac{|x-7|}{x-7}=1$ tenglamani yeching.

A) $(-\infty;7)$ B) $(-\infty;7)$ C) $(7;+\infty)$ D) $(-\infty;-7)$

2696. $\frac{|1,5-x|}{x-1,5}=-1$ tenglamani yeching.

A) $x\ge 1,5$ B) $x<1,5$ C) $x>1,5$ D) $x\le 1,5$

✓ $1-|x|=0,5+7|x|$ tenglamani yeching

A) $x=\pm\frac{1}{16}$ B) $x=-\frac{1}{16}$ C) $x=6$ D) $x=\frac{1}{16}$

Yechimi:

$1-|x|=0,5+7|x|$

$-|x|-7|x|=0,5-1$

$-8|x|=-0,5$

$|x|=\frac{0,5}{8}=\frac{5}{80}=\frac{1}{16}$

$|x|=\frac{1}{16}$

$x_1=-\frac{1}{16}$ $x_2=\frac{1}{16}$

Javob: A)

Izoh: O'xshash modullarni ixchamlaymiz, va tenglamani yechamiz.

2697. $1+|x|=9$ tenglamani yeching.

A)±8 B) 9 C) 8 D) ±9

2698. $|x|-1=5$ tenglamani yeching.

A) 16 B)±6 C) ±7 D)±4

2699. $3|x|+1=|x|+7$ tenglamani yeching.

A) 16 B)±3 C)±4 D)±14

✓ $|x-1|=|x-2|$ tenglamani yeching

A) $x=\pm 1,5$ B) $x=-\frac{1}{16}$ C) $x=6$ D) $x=1,5$

Yechimi:

$|x-1|=|x-2|$

$x-1=x-2$ | $x-1=-(x-2)$

$x-x=-2+1$ | $x-1=-x+2$

$0=-1$ | $x+x=2+1$

$\varnothing$ | $2x=3$

$x=1,5$

Javob: $x=1,5$

Izoh: bitta "+" va bitta "–" qilib

$|x-1|=|x-2|$

2 ta qilib ishlaymiz.

$x-1=x-2$ $x-1=-(x-2)$

2700. $|x-5|=|x-8|$ tenglamani yeching.

A)±6,5 B) 5,5 C) 8 D) 6,5

2701. $|x+1|=|x-2|$ tenglamani yeching.

A) 0,5 B)±0,5 C)±7 D)0,4

2702. $|x+3|=|x-5|$ tenglamani yeching.

A) 6 B) 1 C)±4 D)±1

2703. $|x+6|=|x+10|$ teglamaning ildizlari nechta?

A) 2 B) 9 C) 1 D) 8,5

2704. $|x+3|=|x+7|$ tenglamaning ildizlari nechta?

A) 6 B) –5 C) 4 D) 1

✓ $|5x+2|=|4x+1|$ tenglamani yeching

A) $-1;-\frac{1}{3}$ B) $x=-\frac{1}{16}$ C) $x=6$ D) $x=1,5$

Yechimi:

$|5x+2|=|4x+1|$ **Javob:(A)**

$5x+2=4x+1$ | $5x+2=-(4x+1)$

$5x-4x=1-2$ | $5x+2=-4x-1$

$x=-1$ | $5x+4x=-1-2$

$9x=-3$

$x=-\frac{1}{3}$

2705. $|2x+5|=|4x+8|$ tenglamani yeching.

A)±6,5 B) 5,5 C) 8 ; –1,5 D) $-\frac{13}{6};-\frac{3}{2}$

2706. $|6x-99|=|4x-11|$ tenglamani yeching.

A) 11; 44 B)±0,5 C)±11 D) 44

2707. $|2x+3|=|3x-4|$ tenglamani yeching.

A) 6 B) $\frac{1}{5}$; 7 C)±7 D)±1

2708. $|7x-33|=|3x-17|$ tenglamani teglamaning ildizlari nechta?

A) 4; 5 B) 9 C) 2 D) 8; 5

✓ $|4-|2x-5||=12$ tenglamani yeching

A) $-1;-\frac{1}{3}$ B) $-5,5;\ 10,5$ C) $x=6$ D) $x=1,5$

Yechimi:

$$|4-|2x-5||=12 \Rightarrow \begin{bmatrix} 4-|2x-5|=12 \\ 4-|2x-5|=-12 \end{bmatrix} \Rightarrow \begin{bmatrix} -|2x-5|=8 \\ -|2x-5|=-16 \end{bmatrix}$$

$$\Leftrightarrow \begin{bmatrix} |2x-5|=-8 \Rightarrow \varnothing \\ |2x-5|=16 \end{bmatrix}$$

$2x-5=-16$	$2x-5=16$
$2x=-16+5$	$2x=16+5$
$2x=-11$	$2x=21$
$x=-5,5$	$x=10,5$

Javob: $-5,5;\ 10,5$

2709. $|6-|2x+19||=9$ tenglamani yeching.

A)±17 B) 5,5 C) 8 ; −1,5 D) −17; −2

2710. $||12-x|+12|=19$ tenglamani yeching.

A) 5; 19 B)±0,5 C)±11 D) 44

2711. $|19-|x+5||=0$ tenglamani yeching.

A) 6 B) −24; 14 C) ±24 D) ±14

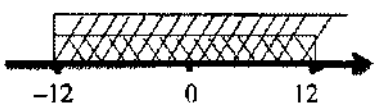
Modulli chiziqli tengsizliklar.

✓ $|x|<12$ tengsizlikni yeching.

A) $-12<x<12$ B) $x>12$ C) $x<6$ D) $x>1,5$

Yechimi:

$$|x|<a \Rightarrow \begin{bmatrix} x<a \\ x>-a \end{bmatrix} \qquad |x|<12 \Rightarrow \begin{bmatrix} x<12 \\ x>-12 \end{bmatrix}$$

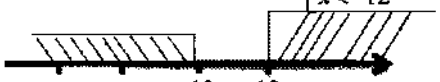


$(-12;12)$

Javob: $(-12;12)$

Izoh: Tengsizlik belgisi qanday turgan bo'lsa, birinchisi shunday yoziladi, $|x|<12 \Rightarrow \begin{bmatrix} x<12 \\ ? \end{bmatrix}$ ikkinchisida esa qarama-qarshi qilib "–" $|x|<12 \Rightarrow \begin{bmatrix} ? \\ x>-12 \end{bmatrix}$ yozamiz.

Agar quyidagicha bo'lsa, $|x|>12 \Rightarrow \begin{bmatrix} x>12 \\ x<-12 \end{bmatrix}$



$(-\infty;-12)\cup(12;+\infty)$

2712. $|x|>5$ tengsizlikni yeching.

A) $(-5;+\infty)$ B) $(-\infty;5)$

C) $(-\infty;-5)\cup(5;+\infty)$ D) $(-5;5)$

2713. $|x|<7,9$ tengsizlikni yeching.

A) $(-7,9;+\infty)$ B) $(-\infty;7,9)$

C) $(-7,9;7,9)$ D) $(-\infty;-7,9)\cup(7,9;+\infty)$

2714. $|x|\geq 11$ tengsizlikni yeching.

A) $(-\infty;-11]\cup[11;+\infty)$ B) $[-11;11]$

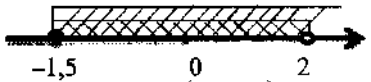
C) $(-\infty;-11)$ D) $(-\infty;-11)\cup(11;+\infty)$

✓ $|4x-1|<7$ tengsizlikni yeching.

A) $(-1,5;\ 2)$ B) $x>12$ C) $x<6$ D) $x>1,5$

Yechimi:

$$|4x-1|<7 \Rightarrow \begin{bmatrix} 4x-1<7 & 4x<7+1 \\ 4x-1>-7 & 4x<8 \\ & x<2 \end{bmatrix} \quad \begin{bmatrix} 4x-1>-7 \\ 4x>-7+1 \\ 4x>-6 \\ x>-1,5 \end{bmatrix}$$



$(-1,5;\ 2)$

Javob: $(-1,5;\ 2)$

2715. $|1+x|\leq 0,3$ tengsizlikni yeching.

A) $[-1,3;-0,7)$ B) $[-1,3;-0,7]$

C) $(-\infty;-1,3)\cup[-0,3;+\infty)$ D) $(-5;\ 5)$

2716. $|3-x|<\frac{2}{3}$ tengsizlikni yeching.

A) $\left(\frac{7}{3};+\infty\right)$ B) $\left[\frac{7}{3};\frac{11}{3}\right]$

C) $\left(\frac{7}{3};\frac{11}{3}\right)$ D) $\left(-\infty;\frac{7}{3}\right)\cup\left(\frac{11}{3};+\infty\right)$

2717. $|5-4x|\leq 1$ tengsizlikni yeching.

A) $(-\infty;1]\cup\left[\frac{3}{2};+\infty\right)$ B) $\left[1;\frac{3}{2}\right]$

C) $\left(1;\frac{3}{2}\right)$ D) $(-\infty;1)\cup(1,5;+\infty)$

2718. $|x-4|\leq 2$ tengsizlik nechta butun yechimga ega?

A) 6 B) 2 C) 4 D) 5

2719. $|2x+3|<3$ tengsizlik nechta butun yechimga ega?

A) 6 B) 2 C) 4 D) 5

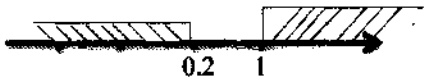
✓ $|3-5x|\geq 2$ tengsizlikni yeching.

A) $(-1,5;\ 2)$ B) $\left(\frac{7}{3};+\infty\right)$

C) $(-\infty;0,2)\cup(1;+\infty)$ D) $x>1,5$

Yechimi:

$$|3-5x|\geq 2 \Rightarrow \begin{bmatrix} 3-5x\geq 2 \\ 3-5x\leq -2 \end{bmatrix} \quad \begin{array}{l|l} 3-5x\geq 2 & 3-5x\leq -2 \\ -5x\geq 2-3 & -5x\leq -2-3 \\ -5x\geq -1 & -5x\leq -5 \\ x\leq 0,2 & x\geq 1 \end{array}$$



$(-\infty;0,2)\cup(1;+\infty)$ **Javob:(C)**

2720. $|1+x|\geq 1,3$ tengsizlikni yeching.

A) $[-1,3;-0,7)$ B) $[-2,3;0,7]$

C) $(-\infty;-2,3]\cup[0,3;+\infty)$ D) $(-5;\ 0,3)$

2721. $|3-x|>\frac{2}{3}$ tengsizlikni yeching.

A) $\left(\frac{7}{3};+\infty\right)$ B) $\left[\frac{7}{3};\frac{11}{3}\right]$

C) $\left(\frac{7}{3};\frac{11}{3}\right)$ D) $\left(-\infty;\frac{7}{3}\right)\cup\left(\frac{11}{3};+\infty\right)$

2722. $|4x-3|\geq 3$ tengsizlikni yeching.

A) $(-\infty;0]\cup\left[\frac{3}{2};+\infty\right)$ B) $\left[0;\frac{3}{2}\right]$

C) $\left(1;\frac{3}{2}\right)$ D) $(-\infty;0)\cup(1,5;+\infty)$

2723. $|3x+2|>1$ tengsizlikning eng kichik natural butun yechimini toping.

A) 1 B) 2 C) 4 D) 0

2724. $|3x-2|>4$ tengsizlikning eng kichik natural butun yechimini toping?

A) 6 B) 3 C) 4 D) 5

✓ Agar $x<z<y$ bo'lsa, $|x-y|-|z-y|-|z-x|$ ni soddalashtiring.

A) 5 B) 3 C) 10 D) 8

Yechimi:

$|x-y|-|z-y|-|z-x|$ $\boxed{x<z<y}$

$$\left.\begin{array}{l} |x-y|=y-x \\ |z-y|=y-z \\ |z-x|=z-x \end{array}\right| \Rightarrow \left|\begin{array}{l} |x-y|-|z-y|-|z-x|=y-x-(y-z)-(z-x)= \\ =y-x-y+z-z+x=0 \end{array}\right.$$

Javob: 0

Izoh: $|z-y|$ dan qaysi biri katta$(x<z<y)$ bo'lsa, o'sha harf birinchi $|z-y|=y-z$ bo'lishi lozim.

2725. Agar $0<k<m<n$ bo'lsa, $|n-m|-|n+k|-|m-k|$ ni soddalashtiring.

A) $-2m$ B) $2k-2n$ C) $-2n$ D) $2m-2k$

2726. Agar $0<q<p<k$ bo'lsa, $|p+q|+|k-q|-|k-p|$ ni soddalashtiring.

A) $2p$ B) $2p+2q$ C) $2p+2k$ D) $2q-2k$

2727. Agar $x<y<z$ bo'lsa, $|x-y|-|z-y|-|z-x|$ ni soddalashtiring.

A) $2x$ B) $2y-2x$ C) $2z-2y$ D) $2y-2z$

2728. Agar $p>q>k>0$ bo'lsa, $|p+q|-|k-q|+|k-p|$ ni soddalashtiring.

A) $2p$ B) $2p+2q$ C) $2p+2k$ D) $2q-2k$

✓ Agar $m\geq 2,\ n\geq 6$ *va* $k>26$ 6bo'lsa, $6:m+24:n+81:k$. ifodaning eng katta butun qiymatini toping.

A) 5 B) 3 C) 10 D) 8

Yechimi:

$$6:m+24:n+81:k=\frac{6}{m}+\frac{24}{n}+\frac{81}{k}$$

$\frac{6}{m}+\frac{24}{n}+\frac{81}{k}\Rightarrow$ katta qiymati mahrajining kichik qiymatidadir.

$m\geq 2;\ n\geq 6$ *va* $k>26 \Leftarrow$ mahrajining kichik qiymati.

2 6 27

$\frac{6}{2}+\frac{24}{6}+\frac{81}{27}\Rightarrow 3+4+3=10$

Javob: (C)

Izoh: Mahraj qancha kichik bo'lsa ifoda shuncha katta qiymatga erishadi. **masalan**:

$\frac{6}{2};\ \frac{6}{3};\ \frac{6}{4};\ \frac{6}{5};\ \frac{6}{6};\ldots$

3; 2; 1,5; 1,2; 1...

2729. Agar $m\geq 15,\ n>3$ *va* $k\geq 50$ bo'lsa, $45:m+28:n+750:k$. ifodaning eng katta butun qiymatini toping.

A) 35 B) 60 C) 40 D) 25

2730. Agar $m>17,\ n\geq 7$ *va* $k>27$ bo'lsa, $90:m+35:n+28:k$. ifodaning eng katta butun qiymatini toping.

A) 11 B) 21 C) 24 D) 10

2731. Agar $m\geq 1,\ n\geq 2$ *va* $k\geq 36$ bo'lsa, $2:m+6:n+432:k$. ifodaning eng katta butun qiymatini toping.

A) 12 B) 14 C) 17 D) 27

✓ Agar $m>7$, $n\ge 5$ va $k<11$ bo'lsa, $6\cdot m+24\cdot n-2\cdot k$ ifodaning eng kichik butun qiymatini toping.

A) 50 B) 130 C) 100 D) 148

Yechimi:

$$6\cdot m+24\cdot n-2\cdot k$$

$$\Downarrow$$

$$6\cdot kichik+24\cdot kichik-2\cdot katta$$

$$6\cdot 8+24\cdot 5-2\cdot 10=148$$

↗ ↑ ↖

$m>7$, $n\ge 5$ va $k<11$

Javob: (D)

Izoh: ayriladigan son qancha katta bo'lsa, ifoda shuncha kichik bo'ladi. **masalan:**

$180-20=160$ $180-50=130$

$180-80=100$ ... ...

2732. Agar $m\ge 15$, $n>3$ va $k\le 11$ bo'lsa, $5\cdot m+8\cdot n-7\cdot k$. ifodaning eng kichik qiymatini toping.

A) 35 B) 60 C) 40 D) 30

2733. Agar $m>17$, $n\ge 7$ va $k<27$ bo'lsa, $9\cdot m+3\cdot n-8\cdot k$ ifodaning eng kichik qiymatini toping.

A) –25 B) 26 C) 34 D) –24

2734. Agar $m>3$, $n>5$ va $k<6$ bo'lsa, $3m+5n-2k$ .ifodaning eng kichik qiymatini toping.

A) 13 B) 14 C) 32 D) 22

✓ Agar $3\le x\le 6$ va $15\le y\le 60$ bo'lsa, $\frac{y}{x}$ ning qiymati qaysi kesmaga tegishli?

A) $[2,5;\ 20]$ B) $[5;\ 20]$ C) $[0,5;\ 20]$ D) $[0,1;0,2]$

Yechimi:

$$\frac{y}{x}\in[a;b] \qquad \frac{y}{x}\in[kichik;\ katta]$$

$$kichik=\frac{y}{x}=\frac{15}{6}=2,5$$

$$katta=\frac{y}{x}=\frac{60}{3}=20 \qquad \frac{y}{x}\in[2,5;\ 20]$$

Javob: $[2,5;\ 20]$

Izoh: Mahraj qancha kichik, surat qancha katta bo'lsa

$katta=\frac{y}{x}=\frac{15\le y\le 60}{3\le x\le 6}=\frac{60}{3}=20$ ifoda shuncha katta qiymatga erishadi.

2735. Agar $4\le x\le 10$ va $25\le y\le 80$ bo'lsa, $\frac{y}{x}$ ning qiymati qaysi kesmaga tegishli?

A) $[2,5;\ 20]$ B) $[5;\ 20]$ C) $[0,5;\ 20]$ D) $[0,1;0,2]$

2736. Agar $5\le x\le 12$ va $36\le y\le 90$ bo'lsa, $\frac{y}{x}$ ning qiymati qaysi kesmaga tegishli?

A) $[2,5;\ 20]$ B) $[3;\ 18]$ C) $[1,5;\ 20]$ D) $[0,1;1,8]$

2737. Agar $15\le x\le 25$ va $75\le y\le 150$ bo'lsa, $\frac{x}{y}$ ning qiymati qaysi kesmaga tegishli?

A) $[2,5;20]$ B) $[5;20]$ C) $\left[0,1;\frac{1}{3}\right]$ D) $[0,1;0,2]$

✓ $x+\cfrac{1}{y+\cfrac{1}{z}}=\frac{38}{11}$ zanjir kasrdan z ni toping.

A) 5 B) 3 C) 10 D) 8

Yechimi: $\frac{38}{11}=3\frac{5}{11}=3+\frac{5}{11}=3+\cfrac{1}{\frac{11}{5}}=3+\cfrac{1}{2+\frac{1}{5}}$

$$x+\cfrac{1}{y+\cfrac{1}{z}}=3+\cfrac{1}{2+\cfrac{1}{5}}\Rightarrow\begin{cases}x=3\\y=2\\z=5\end{cases}$$

Javob: $z=5$

2738. $x+\cfrac{1}{y+\cfrac{1}{z}}=\frac{511}{100}$ zanjir kasrdan z ni toping.

A) 5 B) 9 C) 4 D) 11

2739. $x+\cfrac{1}{y+\cfrac{1}{z}}=\frac{29}{13}$ zanjir kasrdan z^2+y^2 ni toping.

A) 25 B) 16 C) 24 D) 9

2740. $x+\cfrac{1}{y+\cfrac{1}{z}}=\frac{54}{13}$ zanjir kasrdan $\frac{y+x}{z}$ ni toping.

A) 2 B) 6 C) 5 D) 4

✓ $x=1\cdot 2\cdot 3\cdot\ldots\cdot 23$ va $y=12^{23}$ ni taqqoslang.

A) $x<y$ B) $x=y+1$ C) $x>y$ D) $x=y$

Yechimi: Quyidagi qabul qilingan tengsizlikka ko'ra :

$$n!<\left(\frac{n+1}{2}\right)^n\Leftrightarrow 1\cdot 2\cdot 3\cdot\ldots\cdot n<\left(\frac{n+1}{2}\right)^n$$

$n=3$

$3!<\left(\frac{3+1}{2}\right)^3\Leftrightarrow 6<8$ $\quad x=23!$ va $y=12^{23}$ $\quad x<y$

Javob: $x<y$

2741. $x=1\cdot 2\cdot 3\cdot\ldots\cdot 29$ va $y=15^{29}$ ni taqqoslang.

A) $x<y$ B) $x=y+1$ C) $x>y$ D) $x=y$

2742. $x=16^{31}$ va $y=1\cdot 2\cdot 3\cdot\ldots\cdot 31$ ni taqqoslang.

A) $x>y$ B) $x=y+1$ C) $x<y$ D) $x=y$

2743. $x=1\cdot 2\cdot 3\cdot\ldots\cdot 25$ va $y=13^{25}$ ni taqqoslang.

A) $x<y$ B) $x=y+1$ C) $x>y$ D) $x=y$

Kvadrat ildizlar

✓ $\sqrt{36}$ ni hisoblang.

A) 6 B) 7 C) 5 D) 8

Yechimi: nimaning kvadrati bo'lsa, shu son javob bo'ladi. $\sqrt{36}=\sqrt{6^2}=6$ **Javob: 6**

2744. $\left(\sqrt{9}\right)^2$ ni hisoblang.

A) 9 B) 11 C) 8 D) 12

2745. $\left(\sqrt{25}\right)^2$ ni hisoblang.

A) 5 B) 11 C) 8 D) 25

2746. $3+\sqrt{49}$ ni hisoblang.

A) 9 B) 10 C) 8 D) 12

2747. $7-\sqrt{64}$ ni hisoblang.

A) 9 B) 1 C) -1 D) 12

2748. $\sqrt{81}-4$ ni hisoblang.

A) 5 B) 11 C) 8 D) 12

2749. $4\cdot\sqrt{0{,}01}$ ni hisoblang.

A) 9 B) 0,4 C) 8 D) 12

2750. $\frac{1}{3}\sqrt{0{,}81}$ ni hisoblang.

A) 0,3 B) 1,1 C) 0,8 D) 1,2

2751. $0{,}16\cdot\sqrt{0{,}16}$ ni hisoblang.

A) 6,4 B) 11 C) 0,64 D) 0,064

2752. $3^3+5\sqrt{16}$ ni hisoblang.

A) 9 B) 37 C) 47 D) 20

2753. $3\sqrt{121}-2\sqrt{144}$ ni hisoblang.

A) 9 B) 11 C) 8 D) 12

2754. $2\sqrt{3\cdot27}-6\sqrt{2\cdot18}$ ni hisoblang.

A) 9 B) 18 C) -18 D) 12

2755. $\sqrt{2^2+3\cdot7}$ ni hisoblang.

A) 9 B) 11 C) 8 D) 5

2756. $\sqrt{3^2+4^2}$ ni hisoblang.

A) 9 B) 5 C) 8 D) 12

2757. $\sqrt{17^2-15^2}$ ni hisoblang.

A) 9 B) 11 C) 8 D) 12

✓ $\sqrt{1296}$ ni hisoblang.

A) 36 B) 76 C) 35 D) 34

Yechimi: nimaning kvadrati bo'lsa, shu son javob bo'ladi.

$\sqrt{12'96}=36$

$\times^{66}_{6}$

9

396

396

Javob: (A)

yana bir boshqa misolda

$\sqrt{8'50'30'56}=2916$

$\times^{49}_{9}$ | 4, 450, 441

$\times^{581}_{1}$ | 930, 581

$\times^{5826}_{6}$ | 34956, 34956

2758. $\sqrt{2304}$ ni hisoblang.

A) 48 B) 38 C) 58 D) 92

2759. $\sqrt{5776}$ ni hisoblang.

A) 73 B) 74 C) 78 D) 76

2760. $\sqrt{20449}$ ni hisoblang.

A) 153 B) 133 C) 183 D) 143

2761. $\sqrt{60025}$ ni hisoblang.

A) 295 B) 225 C) 245 D) 235

✓ Agar $a=100$ bo'lsa, $\sqrt{11a+56}$ ni toping.

A) 64 B) 78 C) 55 D) 34

Yechimi:

$a=100 \Rightarrow \sqrt{11\cdot100+56}=\sqrt{1156}=34$ **Javob: (D)**

Izoh: berilgan harfni $a=100$ ildiz ichidagi harf $\sqrt{11a+56}$ o'rniga qoyib ildiz $\sqrt{11\cdot100+56}=\sqrt{1156}=34$ olish lozim.

2762. Agar $a=31$ bo'lsa, $\sqrt{100a+149}$ ni toping.

A) Ø B) 57 C) 56 D) -24

2763. Agar $a=110$ bo'lsa, $\sqrt{25a+166}$ ni toping.

A) 37 B) 54 C) 47 D) 76

2764. Agar $a=1000$ bo'lsa, $\sqrt{10a+609}$ ni toping.

A) Ø B) 203 C) 103 D) 130

✓ $\sqrt{-196}$ ni hisoblang.

A) 6 B) 7 C) 5 D) Ø

Yechimi: ildiz ostida "–" bo'lsa: Ø

$\sqrt{-a}\Rightarrow\varnothing$ $\sqrt{-196}\Rightarrow\varnothing$ **Javob: Ø**

Izoh: ildiz ostida "–" bo'lasa, yechimi yo'q bo'ladi.

2765. $\sqrt{-484}$ ni hisoblang.

A) Ø B) 38 C) 24 D) -24

2766. $\sqrt{-676}$ ni hisoblang.

A) -26 B) Ø C) 24 D) 76

2767. $\sqrt{-729}$ ni hisoblang.

A) Ø B) -27 C) 13 D) 14

✓ $\sqrt{3^6}$ ni hisoblang.

A) 26 B) 27 C) 55 D) Ø

Yechimi:

$\sqrt{3^6}=\sqrt{\left(3^3\right)^2}=3^3=27$ **Javob:** (B)

Izoh: nimanidir kvadrati qilib yozib olish lozim. yana bir boshqa misolda:

$\sqrt{n^8}=\sqrt{\left(n^4\right)^2}=n^4$

2768. $\sqrt{2^8}$ ni hisoblang.

A) 8 B) 38 C) 32 D) 16

2769. $\sqrt{x^{12}}$ ni soddalashtiring.

A) x^4 B) x^6 C) x^8 D) x^{10}

2770. $\sqrt{5^4}$ ni hisoblang.

A) 25 B) 125 C) 36 D) 100

2771. $\sqrt{a^{14}}$ $a>0$ ni soddalashtiring.

A) a^{12} B) a^7 C) a^8 D) a^{10}

2772. $\sqrt{11^4}$ ni hisoblang.

A) 121 B) 125 C) 144 D) 100

✓ $\sqrt{(-5)^6}$ ni hisoblang.

A) 126 B) 127 C) 125 D) Ø

Yechimi:

formula $\Rightarrow \sqrt{a^2}=|a|$

$\sqrt{(-5)^6}=\sqrt{\left((-5)^3\right)^2}=|-5|^3=5^3$ **Javob:** (C)

Izoh: nimanidir kvadrati qilib yozib olish lozim. yana bir boshqa misolda: $\sqrt{(-8)^2}=|-8|=8$

2773. $\sqrt{(-3)^4}$ ni hisoblang.

A) 8 B) 3 C) 27 D) 9

2774. $\sqrt{x^{18}}$ ni soddalashtiring.

A) x^4 B) $|x|^9$ C) x^9 D) x^{10}

2775. $\sqrt{(-7)^4}$ ni hisoblang.

A) 49 B) 125 C) 36 D) 100

2776. $\sqrt{a^{24}}$ ni soddalashtiring.

A) a^{22} B) a^{12} C) a^8 D) a^{10}

✓ 3 *va* $\sqrt{10}$ larni taqqaslang.

A) $3<\sqrt{10}$ B) $3=\sqrt{10}$

C) $3>\sqrt{10}$ D) Ø

Yechimi:

3 *va* $\sqrt{10}$

3^2 *va* $\sqrt{10^2}$.

$9<10 \Rightarrow 3<\sqrt{10}$

2 tomonini kvadratga ko'taramiz :

Javob: $3<\sqrt{10}$

Izoh: bu turdagi misollarni taqqoslashda 2 ta tomonini kvadratga ko'tarib olib taqqoslash lozim.

2777. 5 *va* $\sqrt{24}$ larni taqqaslang.

A) $5<\sqrt{24}$ B) $5=\sqrt{24}$

C) $5>\sqrt{24}$ D) ∅

2778. 7 *va* $\sqrt{40}$ larni taqqaslang.

A) $7>\sqrt{40}$ B) $7=\sqrt{40}$

C) $7<\sqrt{40}$ D) ∅

2779. 17 *va* $\sqrt{82}$ larni taqqaslang.

A) $17=\sqrt{82}$ B) $17>\sqrt{82}$

C) $17<\sqrt{82}$ D) ∅

2780. 14 *va* $\sqrt{196}$ 196larni taqqaslang.

A) $14>\sqrt{196}$ B) $14=\sqrt{196}$

C) $14<\sqrt{196}$ D) ∅

✓ $\sqrt{39}$ son ketma–ket kelgan qaysi natural sonlar orasida.

A) $6<\sqrt{39}<7$ B) $7<\sqrt{39}<8$

C) $8<\sqrt{39}<9$ D) $5<\sqrt{39}<6$

Yechimi:

$\sqrt{a+b}\approx\sqrt{a}+\frac{b}{2\sqrt{a}} \Rightarrow$ *formula*

$\sqrt{39}\approx\sqrt{36+3}\approx\sqrt{36}+\frac{3}{2\sqrt{36}}\approx 6+\frac{3}{12}\approx 6\frac{1}{4}\approx 6,25$

$6<6,25<7 \Rightarrow 6<\sqrt{39}<7$ **Javob:** (A)

Izoh: taqribiy hisoblash formulasi

$\sqrt{a+b}\approx\sqrt{a}+\frac{b}{2\sqrt{a}} \Rightarrow$ *formula* yana bir boshqa misolda:

$\sqrt{17}\approx\sqrt{16+1}\approx\sqrt{16}+\frac{1}{2\sqrt{16}}\approx 4+\frac{1}{8}\approx 4\frac{1}{8}\approx 4,125$

2781. $\sqrt{26}$ son ketma–ket kelgan qaysi natural sonlar orasida.

A) $6<\sqrt{26}<7$ B) $7<\sqrt{26}<8$

C) $5<\sqrt{26}<6$ D) ∅

2782. $\sqrt{120}$ son ketma–ket kelgan qaysi natural sonlar orasida.

A) $10<\sqrt{120}<11$ B) $9<\sqrt{120}<10$

C) $11<\sqrt{120}<12$ D) ∅

2783. $\sqrt{101}$ son ketma–ket kelgan qaysi natural sonlar orasida.

A) $9<\sqrt{101}<10$ B) $10<\sqrt{101}<11$

C) $11<\sqrt{101}<12$ D) $\varnothing$

✓ $\sqrt{(2-\sqrt{5})^2}$ ni soddalashtiring.

A) $\sqrt{5}+2$ B) $2-\sqrt{5}$ C) $\sqrt{5}-2$ D) $\varnothing$

Yechimi:

formula $\sqrt{a^2}=|a|$

$\sqrt{(2-\sqrt{5})^2}=|2-\sqrt{5}|=\sqrt{5}-2$ **Javob:** C)

Izoh: ildiz ichidagi sonlardan qaysi biri katta bo'lsa $(\sqrt{5}>2)$ shu son birinchi yoziladi. $\sqrt{(2-\sqrt{5})^2}=\sqrt{5}-2$

Agar "+" bo'lsa, o'zgarmaydi $\sqrt{(2+\sqrt{5})^2}=2+\sqrt{5}$

2784. $\sqrt{(4-\sqrt{15})^2}$ ni soddalashtiring.

A) $\sqrt{15}-4$ B) $4+\sqrt{15}$ C) 11 D) $4-\sqrt{15}$

2785. $\sqrt{(2+\sqrt{5})^2}$ ni soddalashtiring.

A) $\sqrt{5}-2$ B) $2-\sqrt{5}$ C) 3 D) $2+\sqrt{5}$

2786. $\sqrt{(7-\sqrt{35})^2}$ ni soddalashtiring.

A) $7+\sqrt{35}$ B) $7-\sqrt{35}$ C) $\sqrt{35}-7$ D) 28

2787. $\sqrt{(3+\sqrt{35})^2}$ ni soddalashtiring.

A) $3+\sqrt{35}$ B) 33 C) $3-\sqrt{35}$ D) $\sqrt{35}-3$

2788. $\sqrt{(\sqrt{37}-8)^2}$ ni soddalashtiring.

A) $\sqrt{37}-8$ B) $8-\sqrt{37}$ C) 29 D) $\sqrt{37}+8$

✓ Agar $x\ge 2$ bo'lsa, $\sqrt{(2-x)^2}$ ni soddalashtiring.

A) $x+2$ B) $2-x$ C) $x-2$ D) $\varnothing$

Yechimi:

formula $\sqrt{a^2}=|a|$

$\sqrt{(2-x)^2}=|2-x|=x-2$ **Javob:** C)

Izoh: ildiz ichidagi sonlardan qaysi biri katta bo'lsa $(x>2)$ shu son birinchi yoziladi. $\sqrt{(2-x)^2}=x-2$

2789. Agar $2x\ge 5$ bo'lsa, $\sqrt{(5-2x)^2}$ ni soddalashtiring.

A) $2-5x$ B) $2x+5$ C) $7x$ D) $2x-5$

2790. Agar $x\le 9$ bo'lsa, $\sqrt{(9-x)^2}$ ni soddalashtiring.

A) $9x-9$ B) $x-9$ C) 9 D) $9-x$

Agar $a\ge 3b$ bo'lsa, $\sqrt{a^2-6ab+9b^2}$ ni soddalashtiring.

A) $3b-a$ B) $a-3b$ C) $3b+a$ D) $3b$

2792. Agar $y\le 2x$ bo'lsa, $\sqrt{y^2-4xy+4x^2}$ ni soddalashtiring.

A) $2x-y$ B) $4xy$ C) $2y-x$ D) $y-2x$

✓ Agar $x\le -2$ bo'lsa, $\sqrt{(2+x)^2}$ ni soddalashtiring.

A) $x+2$ B) $2-x$ C) $x-2$ D) $-2-x$

Yechimi:

formula $\sqrt{a^2}=|a|$

$\sqrt{(2+x)^2}=-(x+2)=-x-2$ **Javob:** D)

Izoh: aslida ildiz ichidan modulda bo'lib ochiladi unda bitta "+" yoki "–" qilish lozim edi ya'ni $|x+2|=\begin{bmatrix}x+2\\-(x+2)\end{bmatrix}$

shulardan qaysi biri javobligini bilishda $x\le -2$ ni qanoatlantiruvchi son olib $(-4\le -2)$ tekshiring ya'ni

$|x+2|=\begin{bmatrix}-4+2=-2\Rightarrow\varnothing\\-(-4+2)=2\end{bmatrix}$

2793. Agar $x<-3$ bo'lsa, $\sqrt{(3+x)^2}$ ni soddalashtiring.

A) $3+x$ B) $-3+x$ C) $3x$ D) $-3-x$

2794. Agar $x\ge -9$ bo'lsa, $\sqrt{(9+x)^2}$ ni soddalashtiring.

A) $9x-9$ B) $-x-9$ C) 9 D) $9+x$

2795. Agar $b\ge -5$ bo'lsa, $\sqrt{b^2+10b+25}$ ni soddalashtiring.

A) $-b-5$ B) $b+5$ C) $b-5$ D) $5b$

2796. Agar $y\le -2x$ bo'lsa, $\sqrt{y^2+4xy+4x^2}$ ni soddalashtiring.

A) $-2x-y$ B) $4xy$ C) $2y+x$ D) $y-2x$

✓ Agar $1\le x\le 3$ bo'lsa, $\sqrt{x^2-2x+1}+\sqrt{x^2-6x+9}$ ni soddalashtiring.

A) 2 B) 5 C) 4 D) $\varnothing$

Yechimi:

formula $\sqrt{a^2}=|a|$

$\sqrt{x^2-2x+1}+\sqrt{x^2-6x+9}=\sqrt{(x-1)^2}+\sqrt{(x-3)^2}=$

$=|x-1|+|x-3|=x-1+\big(-(x-3)\big)=x-1-x+3=2$ **Javob:** A)

2797. Agar $a<5$ bo'lsa, $a+5-\sqrt{(a-5)^2}$ ni soddalashtiring.

A) $10+a$ B) $-3+a$ C) 10 D) $2a$

2798. Agar $x\ge y$ bo'lsa, $x+y+\sqrt{(x-y)^2}$ ni soddalashtiring.

A) $2y$ B) $2x+2y$ C) 0 D) $2x$

2799. Agar $x\le y$ bo'lsa, $x+y+\sqrt{(x-y)^2}$ ni soddalashtiring.

A) $2y$ B) $2x+2y$ C) 0 D) $2x$

2800. Agar $b \geq 5$ bo'lsa, $\sqrt{b^2-10b+25}+\sqrt{b^2-4b+4}$ ni soddalashtiring.

A) $-b-5$ B) $2b-7$ C) $b-5$ D) $5b$

2801. Agar $x \leq 1$ bo'lsa, $\sqrt{x^2-2x+1}+\sqrt{x^2-6x+9}$ ni soddalashtiring.

A) $4-2x$ B) $4xy$ C) $2y+x$ D) $y-2x$

✓ $\sqrt{49 \cdot 25}$ ni hisoblang.

A) 25 B) 35 C) 45 D) 45

Yechimi:

formula $\sqrt{a \cdot b} = \sqrt{a} \cdot \sqrt{b}$

$\sqrt{49 \cdot 25} = \sqrt{49} \cdot \sqrt{25} = 7 \cdot 5 = 35$ **Javob: 35**

2802. $\sqrt{0{,}01 \cdot 196}$ ni hisoblang.

A) 2,5 B) 1,8 C) 0,14 D) 1,4

2803. $\sqrt{9 \cdot 625 \cdot 36}$ ni hisoblang.

A) 250 B) 180 C) 350 D) 450

2804. $\sqrt{1{,}21 \cdot 2{,}25}$ ni hisoblang.

A) 1,5 B) 1,65 C) 0,14 D) 1,45

2805. $\sqrt{81 \cdot 256 \cdot 0{,}25}$ ni hisoblang.

A) 720 B) 36 C) 72 D) 62

2806. $\sqrt{49 \cdot 0{,}64}$ ni hisoblang.

A) 0,8 B) 4,8 C) 0,14 D) 5,6

✓ $\sqrt{2} \cdot \sqrt{22} \cdot \sqrt{11}$ ni hisoblang.

A) 22 B) 35 C) 45 D) 45

Yechimi:

formula $\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$

$\sqrt{2} \cdot \sqrt{22} \cdot \sqrt{11} = \sqrt{2 \cdot 22 \cdot 11} = \sqrt{2 \cdot 2 \cdot 11 \cdot 11} = \sqrt{2^2 \cdot 11^2} = 2 \cdot 11 = 22$

Javob: A)

2807. $\sqrt{2} \cdot \sqrt{32}$ ni hisoblang.

A) 8 B) 12 C) 14 D) 11

2808. $\sqrt{10} \cdot \sqrt{90}$ ni hisoblang.

A) 25 B) 30 C) 35 D) 900

2809. $\sqrt{3} \cdot \sqrt{7} \cdot \sqrt{21}$ ni hisoblang.

A) 21 B) 70 C) 14 D) 35

2810. $\sqrt{\frac{1}{2}} \cdot \sqrt{\frac{2}{3}} \cdot \sqrt{3}$ ni hisoblang.

A) 1 B) 36 C) 0 D) 16

2811. $\sqrt{\frac{2}{5}} \cdot \sqrt{\frac{5}{7}} \cdot \sqrt{\frac{7}{8}}$ ni hisoblang.

A) 0,25 B) 5,8 C) 0,5 D) 5,6

✓ $\sqrt{313^2-312^2}$ ni hisoblang.

A) 25 B) 35 C) 45 D) 45

Yechimi:

$a^2-b^2=(a-b)(a+b) \Rightarrow \sqrt{313^2-312^2} = \sqrt{(313-312)(313+312)} = \sqrt{1 \cdot 625} = 25$

Javob: A)

2812. $\sqrt{113^2-112^2}$ ni hisoblang.

A) 15 B) 12 C) 25 D) 11

2813. $\sqrt{145^2-144^2}$ ni hisoblang.

A) 14 B) 17 C) 35 D) 90

2814. $\sqrt{82^2-18^2}$ ni hisoblang.

A) 80 B) 10 C) 14 D) 35

✓ $\sqrt{7^4 \cdot 2^6}$ ni hisoblang.

A) 392 B) 395 C) 342 D) 45

Yechimi:

$\sqrt{7^4 \cdot 2^6} = \sqrt{\left(7^2\right)^2 \cdot \left(2^3\right)^2} = \sqrt{\left(7^2\right)^2} \cdot \sqrt{\left(2^3\right)^2} = 7^2 \cdot 2^3 = 49 \cdot 8 = 392$

Javob: 392

2815. $\sqrt{5^4 \cdot 3^2}$ ni hisoblang.

A) 35 B) 50 C) 25 D) 75

2816. $\sqrt{12^2 \cdot 3^4}$ ni hisoblang.

A) 184 B) 108 C) 305 D) 90

2817. $\sqrt{8^2 \cdot 5^4}$ ni hisoblang.

A) 200 B) 100 C) 150 D) 350

2818. $\sqrt{(-5)^6 \cdot (0{,}1)^2}$ ni hisoblang.

A) 12,5 B) 1,25 C) 25 D) 11,5

2819. $\sqrt{(0{,}2)^2 \cdot 4^2}$ ni hisoblang.

A) 1,4 B) 1,6 C) 3,8 D) 0,8

✓ $\left(\sqrt{8}-\sqrt{2}\right)^2$ ni hisoblang.

A) 3 B) 9 C) 2 D) 5

Yechimi:

$(a-b)^2=a^2-2ab+b^2 \Rightarrow \left(\sqrt{8}-\sqrt{2}\right)^2 = \sqrt{8}^2-2\sqrt{8} \cdot \sqrt{2}+\sqrt{2}^2 = 8-2\sqrt{16}+2=10-2 \cdot 4=2$ **J: 2**

2820. $\left(\sqrt{7}-\sqrt{28}\right)^2$ ni hisoblang.

A) 35 B) 7 C) 25 D) 75

2821. $\left(\sqrt{18}+\sqrt{2}\right)^2$ ni hisoblang.

A) 14 B) 10 C) 32 D) 90

2822. $\left(\sqrt{32}+\sqrt{2}\right)^2$ ni hisoblang.

A) 20 B) 100 C) 15 D) 50

2823. $\left(2\sqrt{5}-\sqrt{5}\right)^2$ ni hisoblang.

A) 25 B) 125 C) 5 D) 115

2824. $\left(4\sqrt{3}+2\sqrt{3}\right)^2$ ni hisoblang.

A) 104 B) 110 C) 108 D) 204

✓ $\left(5\sqrt{3}-\sqrt{2}\right)\left(5\sqrt{3}+\sqrt{2}\right)$ ni hisoblang.

A) 73 B) 79 C) 72 D) 75

Yechimi:

$a^2-b^2=(a-b)(a+b)$ | $\left(5\sqrt{3}-\sqrt{2}\right)\left(5\sqrt{3}+\sqrt{2}\right)=\left(5\sqrt{3}\right)^2-\sqrt{2}^2=5^2\cdot3-2=73$

Javob: A)

2825. $\left(\sqrt{7}-\sqrt{2}\right)\left(\sqrt{7}+\sqrt{2}\right)$ ni hisoblang.

A) 3 B) 5 C) 2 D) 7

2826. $\left(\sqrt{23}-\sqrt{22}\right)\left(\sqrt{23}+\sqrt{22}\right)$ ni hisoblang.

A) 14 B) 5 C) 1 D) 0

2827. $\left(\sqrt{3}-3\sqrt{2}\right)\left(\sqrt{3}+3\sqrt{2}\right)$ ni hisoblang.

A) 15 B) 5 C) -15 D) Ø

2828. $\left(5\sqrt{2}-2\sqrt{5}\right)\left(5\sqrt{2}+2\sqrt{5}\right)$ ni hisoblang.

A) 20 B) 70 C) 15 D) 30

2829. $\left(7-3\sqrt{5}\right)\left(7+3\sqrt{5}\right)$ ni hisoblang.

A) 5 B) 89 C) 4 D) 16

✓ O'zaro teskari sonlarni aniqlang.

1) $\frac{\sqrt{7}}{2}$ va $\frac{2\sqrt{7}}{7}$ 2) $\left(\sqrt{6}-\sqrt{5}\right)$ va $\left(\sqrt{6}+\sqrt{5}\right)$

3) $\frac{2\sqrt{5}}{9}$ va $\frac{9\sqrt{5}}{10}$ 4) $\left(\sqrt{3}-1\right)$ va $\left(\sqrt{3}+1\right)$

A) hammasi B) 1;3;4 C) 2; 3; 4 D) 1;2;3

Yechilishi: Ta'rif: ko'paytmasi 1 ga teng sonlar Teskari sonlar deb ataladi.

1) $\frac{\sqrt{7}}{2}$ va $\frac{2\sqrt{7}}{7} \Rightarrow \frac{\sqrt{7}}{2}\cdot\frac{2\sqrt{7}}{7}=\frac{\sqrt{7}}{\cancel{2}}\cdot\frac{\cancel{2}\sqrt{7}}{7}=\frac{\sqrt{7}\cdot\sqrt{7}}{7}=1$

2) $\left(\sqrt{6}-\sqrt{5}\right)$ va $\left(\sqrt{6}+\sqrt{5}\right)$

$\left(\sqrt{6}-\sqrt{5}\right)\cdot\left(\sqrt{6}+\sqrt{5}\right)=\sqrt{6}^2-\sqrt{5}^2=6-5=1$

3) $\frac{2\sqrt{5}}{9}$ va $\frac{9\sqrt{5}}{10}$

$\frac{2\sqrt{5}}{9}\cdot\frac{9\sqrt{5}}{10}=\frac{\cancel{2}\sqrt{5}}{\cancel{9}}\cdot\frac{\cancel{9}\sqrt{5}}{\cancel{10}_{/5}}=\frac{\sqrt{5}\cdot\sqrt{5}}{5}=1$

4) $\left(\sqrt{3}-1\right)$ va $\left(\sqrt{3}+1\right)$

Javob: 1; 2; 3

$\left(\sqrt{3}-1\right)\cdot\left(\sqrt{3}+1\right)=\sqrt{3}^2-1=3-1=2$

2830. O'zaro teskari sonlarni aniqlang.

1) $\frac{\sqrt{5}}{7}$ va $\frac{7\sqrt{5}}{5}$ 2) $\left(3-\sqrt{2}\right)$ va $\left(3+\sqrt{2}\right)$

3) $\frac{2\sqrt{3}}{5}$ va $\frac{5\sqrt{3}}{6}$ 4) $\left(\sqrt{2}+1\right)$ va $\left(\sqrt{2}-1\right)$

A) hammasi B) 1;3;4 C) 2; 3; 4 D) 1;2;3

2831. O'zaro teskari sonlarni aniqlang.

1) $\frac{2\sqrt{11}}{4}$ va $\frac{4\sqrt{11}}{22}$ 2) $\left(5-2\sqrt{6}\right)$ va $\left(5+2\sqrt{6}\right)$

3) $\frac{\sqrt{13}}{4}$ va $\frac{4\sqrt{13}}{13}$ 4) $\left(\sqrt{2}+1\right)$ va $\left(\sqrt{2}-1\right)$

A) hammasi B) 1;3;4 C) 2; 3; 4 D) 1;2;3

2832. O'zaro teskari sonlarni aniqlang.

1) $\frac{9\sqrt{15}}{7}$ va $\frac{7\sqrt{15}}{9}$ 2) $\left(4-\sqrt{15}\right)$ va $\left(4+\sqrt{15}\right)$

3) $\frac{2\sqrt{3}}{5}$ va $\frac{5\sqrt{3}}{6}$ 4) $\left(\sqrt{8}+3\right)$ va $\left(-\sqrt{8}+3\right)$

A) hammasi B) 1;3;4 C) 2; 3; 4 D) 1;2;3

✓ $5\sqrt{2}+2\sqrt{2}-4\sqrt{2}$ ni soddalashtiring.

A) $\sqrt{5}$ B) $2\sqrt{3}$ C) $3\sqrt{2}$ D) Ø

Yechilishi:

$5a+2a-4a=3a$ | $\Leftrightarrow 5\sqrt{2}+2\sqrt{2}-4\sqrt{2}=3\sqrt{2}$

Javob: B)

Izoh: chap tarafda o'xshash had berilgan, o'ng tarafni o'xshash hadlarni ixchamlaganday ixchamlang.

2833. $22\sqrt{3}-5\sqrt{3}+56\sqrt{3}$ ni soddalashtiring.

A) $\sqrt{3}$ B) $4\sqrt{3}$ C) 11 D) $73\sqrt{3}$

2834. $5\sqrt{7}+2\sqrt{5}-24\sqrt{7}+9\sqrt{5}$ ni soddalashtiring.

A) $19\sqrt{5}-11\sqrt{7}$ B) $11\sqrt{7}-19\sqrt{5}$

C) 19 D) $11\sqrt{5}-19\sqrt{7}$

2835. $8\sqrt{6}-19\sqrt{11}-22\sqrt{11}$ ni soddalashtiring.

A) $8\sqrt{6}+42\sqrt{11}$ B) $8\sqrt{6}-41\sqrt{11}$

C) $42\sqrt{6}-8\sqrt{11}$ D) 28

✓ $\sqrt{2x^6}$ ni ildiz belgisi ostidan chiqaring.

A) $x\sqrt{2}$ B) $x^4\sqrt{2}$ C) $x^3\sqrt{2}$ D) $x^2\sqrt{2}$

Yechimi:

$\sqrt{2x^6}=\sqrt{2\left(x^3\right)^2}=x^3\sqrt{2}$ **Javob:** C)

Izoh: berilgan sonlardan qaysi biri ildiz ostidan chiqsa, uni chiqarib yuboramiz.

2836. $\sqrt{11x^2}$ ni ildiz belgisi ostidan chiqaring.

A) $x\sqrt{11}$ B) $x^2\sqrt{11}$ C) $x^3\sqrt{11}$ D) $2x\sqrt{11}$

2837. $\sqrt{5a^4}$ ni ildiz belgisi ostidan chiqaring.

A) $a\sqrt{2}$ B) $a^4\sqrt{5}$ C) $a^3\sqrt{2}$ D) $a^2\sqrt{5}$

2838. $\sqrt{7m^8}$ ni ildiz belgisi ostidan chiqaring.

A) $m\sqrt{2}$ B) $m^4\sqrt{7}$ C) $m^3\sqrt{7}$ D) $m^2\sqrt{7}$

✓ $\sqrt{20}$ ni ildiz belgisi ostidan chiqaring.

A) $2\sqrt{5}$ B) $5\sqrt{5}$ C) $5\sqrt{2}$ D) $4\sqrt{5}$

Yechimi:

$\sqrt{20}=\sqrt{4\cdot5}=2\sqrt{5}$ **Javob:** A)

Izoh: ildiz ostidagi sonni shunday 2 ta sonning ko'paytmasi shaklida yozish kerakki 1 tasi ildizdan chiqsin.

$\sqrt{75}=\sqrt{25\cdot3}=5\sqrt{3}$

$\sqrt{75}=\sqrt{15\cdot5}=\cancel{\sqrt{15\cdot5}}$

2839. $\sqrt{8}$ ni ildiz belgisi ostidan chiqaring.

A) $2\sqrt{2}$ B) $3\sqrt{2}$ C) $4\sqrt{2}$ D) $5\sqrt{2}$

2840. $\sqrt{18}$ ni ildiz belgisi ostidan chiqaring.

A) $5\sqrt{4}$ B) $4\sqrt{3}$ C) $6\sqrt{2}$ D) $3\sqrt{2}$

2841. $\sqrt{45}$ ni ildiz belgisi ostidan chiqaring.

A) $6\sqrt{5}$ B) $3\sqrt{5}$ C) $5\sqrt{8}$ D) $4\sqrt{5}$

2842. $\sqrt{27}$ ni ildiz belgisi ostidan chiqaring.

A) $2\sqrt{3}$ B) $3\sqrt{2}$ C) $3\sqrt{3}$ D) $5\sqrt{3}$

2843. $\sqrt{12}$ ni ildiz belgisi ostidan chiqaring.

A) $5\sqrt{4}$ B) $4\sqrt{3}$ C) $2\sqrt{3}$ D) $3\sqrt{2}$

2844. $\sqrt{48}$ ni ildiz belgisi ostidan chiqaring.

A) $4\sqrt{3}$ B) $3\sqrt{4}$ C) $5\sqrt{3}$ D) $4\sqrt{5}$

2845. $\sqrt{147}$ ni ildiz belgisi ostidan chiqaring.

A) $7\sqrt{3}$ B) $3\sqrt{4}$ C) $5\sqrt{3}$ D) $4\sqrt{7}$

✓ $3\sqrt{48}-\sqrt{75}+\frac{1}{7}\sqrt{147}$ ni soddalashtiring.

A) $\sqrt{5}$ B) $2\sqrt{3}$ C) $3\sqrt{2}$ D) $8\sqrt{3}$

Yechimi:

$3\sqrt{48}-\sqrt{75}+\frac{1}{7}\sqrt{147}=3\sqrt{16\cdot3}-\sqrt{25\cdot3}+\frac{1}{7}\sqrt{49\cdot3}=$

$=3\cdot4\sqrt{3}-5\sqrt{3}+\frac{1}{7}\cdot7\sqrt{3}=12\sqrt{3}-5\sqrt{3}+\sqrt{3}=8\sqrt{3}$

Javob: D)

Izoh: Karrali qilib ildizdan chiqarib o'xshash hadlarni ixchamlang.

2846. $3\sqrt{20}-\sqrt{5}$ ni soddalashtiring.

A) $\sqrt{5}$ B) $4\sqrt{5}$ C) 11 D) $5\sqrt{5}$

2847. $\frac{1}{3}\sqrt{18}+2\sqrt{2}$ ni soddalashtiring.

A) $1{,}5\sqrt{2}$ B) $5\sqrt{2}$ C) 19 D) $3\sqrt{2}$

2848. $2\sqrt{27}-\sqrt{12}$ ni soddalashtiring.

A) $3\sqrt{4}$ B) $4\sqrt{3}$ C) $4\sqrt{6}$ D) 28

2849. $2\sqrt{20}-2\sqrt{45}+\frac{1}{4}\sqrt{16}$ ni soddalashtiring.

A) $2\sqrt{5}-1$ B) $4+\sqrt{5}$ C) 11 D) $1-2\sqrt{5}$

2850. $5\sqrt{8}+\frac{1}{2}\sqrt{2}-2\sqrt{18}$ ni soddalashtiring.

A) $4\sqrt{2}$ B) $9\sqrt{2}$ C) 4,5 D) $4{,}5\sqrt{2}$

2851. $3\sqrt{45}-\sqrt{125}+\sqrt{80}$ ni soddalashtiring.

A) $8\sqrt{5}$ B) $9\sqrt{5}$ C) 2,5 D) $5\sqrt{5}$

2852. $-\frac{2}{3}\sqrt{27}+\frac{1}{5}\sqrt{300}+5\sqrt{3}$ ni soddalashtiring.

A) $4\sqrt{5}$ B) $5\sqrt{3}$ C) 5 D) $4\sqrt{3}$

2853. $5\sqrt{8}+\frac{1}{2}\sqrt{32}-\frac{1}{3}\sqrt{18}$ ni soddalashtiring.

A) $4\sqrt{2}$ B) $9\sqrt{2}$ C) 4,5 D) $11\sqrt{2}$

✓ $|1-\sqrt{5}|+|23-10\sqrt{5}|-|81-13\sqrt{5}|$ ni son qiymatini toping.

A) $4\sqrt{5}-59$ B) 6 C) $4\sqrt{5}+59$ D) 3

Yechimi: qaysi son katta bo'lsa, shu sonni birinchi qilib yozing.

$|1-\sqrt{5}|=\sqrt{5}-1;\quad |23-10\sqrt{5}|=23-10\sqrt{5};\quad |81-13\sqrt{5}|=81-13\sqrt{5}$

$|1-\sqrt{5}|+|23-10\sqrt{5}|-|81-13\sqrt{5}|=\sqrt{5}-1+23-10\sqrt{5}-(81-13\sqrt{5})=$

$=\sqrt{5}-1+23-10\sqrt{5}-81+13\sqrt{5}=4\sqrt{5}-59$

Javob: A)

Izoh: taqqoslashda 2 ta tomonini kvadratga ko'taring.

$\left.\begin{array}{l}|1-\sqrt{5}|=\sqrt{5}-1\\ |23-10\sqrt{5}|=23-10\sqrt{5}\\ |81-13\sqrt{5}|=81-13\sqrt{5}\end{array}\right| \Leftarrow \left|\begin{array}{l}\sqrt{5}^2>1^2\\ 5>1\\ 23^2>(10\sqrt{5})^2\\ 529>500\\ 81^2>(13\sqrt{5})^2\\ 8561>845\end{array}\right.$

2854. $|11-\sqrt{48}|+|\sqrt{225}-10\sqrt{75}|-|19-3\sqrt{3}|$ ni son qiymatini toping.

A) $30\sqrt{5}-\sqrt{3}$ B) $30\sqrt{5}+\sqrt{3}+23$

C) $49\sqrt{3}-23$ D) $-\sqrt{3}-23$

2855. $|12-\sqrt{1000}|+|\sqrt{10}-2|-|4-\sqrt{490}|$ ni son qiymatini toping.

A) $-\sqrt{6}-2$ B) $4\sqrt{10}-10$

C) $-\sqrt{3}+2\sqrt{6}+2$ D) $-\sqrt{3}-2$

2856. $|18-\sqrt{72}|+|2+10\sqrt{128}|-|1-13\sqrt{2}|$ ni son qiymatini toping.

A) $61\sqrt{2}-15$ B) $21+61\sqrt{2}$

C) $15\sqrt{2}+61$ D) 15

✓ $4\sqrt{3}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{48}$ B) $\sqrt{12}$ C) $\sqrt{18}$ D) $\sqrt{24}$

Yechimi:

$4\sqrt{3}=\sqrt{4^2\cdot 3}=\sqrt{16\cdot 3}=\sqrt{48}$ **Javob:** A)

Izoh: ildizning oldida turgan sonni kvadratga ko'tarish lozim. yana bir misol: $a\sqrt{5}=\sqrt{a^2\cdot 5}=\sqrt{5a^2}$

2857. $2\sqrt{2}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{18}$ B) $\sqrt{12}$ C) 11 D) $\sqrt{8}$

2858. $3\sqrt{3}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{18}$ B) $\sqrt{24}$ C) 19 D) $\sqrt{27}$

2859. $a\sqrt{a}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{a^5}$ B) $\sqrt{a^3}$ C) $4\sqrt{a}$ D) a

2860. $a\sqrt{2}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{2a}$ B) $\sqrt{4a}$ C) a D) $\sqrt{2a^2}$

2861. $2\sqrt{\frac{1}{2}}+\frac{1}{2}\sqrt{28}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $7\sqrt{2}$ B) $7-\sqrt{2}$ C) 45 D) $\sqrt{2}+\sqrt{7}$

2862. $10\sqrt{0{,}03}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{3}$ B) $\sqrt{6}$ C) 25 D) $\sqrt{26}$

2863. $a\sqrt{\frac{1}{a}}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{a^2}$ B) $\sqrt{a}$ C) $\sqrt{5a}$ D) $\sqrt{2a}$

2864. $\frac{1}{x}\sqrt{5x^3}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{7x}$ B) $\sqrt{8x}$ C) $\sqrt{5x^2}$ D) $\sqrt{5x}$

2865. $\frac{1}{x^2}\sqrt{3x^5}$ ni ildiz belgisi ostiga kirgizilgani ... ga teng.

A) $\sqrt{6x}$ B) $\sqrt{5x}$ C) $\sqrt{3x^2}$ D) $\sqrt{3x}$

✓ $4\sqrt{3\frac{1}{2}}-0{,}5\sqrt{56}-3\sqrt{1\frac{5}{9}}$ ni soddalashtiring.

A) $2\sqrt{7}$ B) $\sqrt{7}$ C) $2\sqrt{14}$ D) 0

Yechimi:

$$4\sqrt{3\frac{1}{2}}-0{,}5\sqrt{56}-3\sqrt{1\frac{5}{9}}=4\sqrt{\frac{7}{2}}-\frac{1}{2}\sqrt{56}-3\sqrt{\frac{14}{9}}=$$

$$=\sqrt{16\cdot\frac{7}{2}}-\sqrt{\frac{1}{4}\cdot 56}-\sqrt{9\cdot\frac{14}{9}}=\sqrt{8\cdot 7}-\sqrt{14}-\sqrt{14}=$$

$$=2\sqrt{14}-2\sqrt{14}=0$$

Javob: D)

Izoh: Ildiz ostiga kirgizib, keyin o'xshash hadni ixchamlang.

2866. $b\sqrt{\frac{a}{b}}-a\sqrt{\frac{b}{a}}$ ni soddalashtiring. $a,b>0$

A) $\sqrt{b}$ B) $2\sqrt{ab}$ C) 0 D) $\sqrt{ab}$

2867. $\frac{2}{3}\sqrt{9x^3}+6x\sqrt{\frac{x}{4}}-x^2\sqrt{\frac{1}{x}}$ ni soddalashtiring. $x>0$

A) $1{,}5x\sqrt{x}$ B) $5x\sqrt{x}$ C) 19 D) $4x\sqrt{x}$

2868. $15\sqrt{\frac{3}{5}}-0{,}5\sqrt{60}+2\sqrt{3\frac{3}{4}}$ ni soddalashtiring.

A) $4\sqrt{5}$ B) $3\sqrt{15}$ C) $\sqrt{15}$ D) 0

✓ $\sqrt{5\frac{4}{9}}$ ni hisoblang.

A) $1\frac{2}{3}$ B) $2\frac{2}{3}$ C) $\frac{2}{3}$ D) 0

Yechimi: $formula \Rightarrow \sqrt{\frac{a}{b}}=\frac{\sqrt{a}}{\sqrt{b}}$

$\sqrt{5\frac{4}{9}}=\sqrt{\frac{49}{9}}=\frac{\sqrt{49}}{\sqrt{9}}=\frac{7}{3}=2\frac{2}{3}$ **Javob:** B)

Izoh: aralash kasrni noto'g'ri asrga aylantirib, keyin formulani qo'llang.

2869. $\sqrt{\frac{9}{100}}$ ni hisoblang.

A) 0,2 B) 0,3 C) 0,9 D) 0,03

2870. $\sqrt{3\frac{1}{16}}$ ni hisoblang.

A) 3,5 B) 2,75 C) 1,75 D) 1,5

2871. $\sqrt{2\frac{14}{25}}$ ni hisoblang.

A) 1,8 B) 1,4 C) 2,6 D) 1,6

✓ $7\sqrt{\frac{4}{25}}+3\sqrt{\frac{49}{81}}$ ni hisoblang.

A) $5\frac{2}{5}$ B) $5\frac{2}{15}$ C) $\frac{2}{15}$ D) 0

Yechimi: $formula \Rightarrow \sqrt{\frac{a}{b}}=\frac{\sqrt{a}}{\sqrt{b}}$

$7\sqrt{\frac{4}{25}}+3\sqrt{\frac{49}{81}}=7\cdot\frac{\sqrt{4}}{\sqrt{25}}+3\cdot\frac{\sqrt{49}}{\sqrt{81}}=7\cdot\frac{2}{5}+3\cdot\frac{7}{9}=\frac{14}{5}+\frac{7}{3}=$

$=\frac{14\cdot3+7\cdot5}{15}=\frac{77}{15}=5\frac{2}{15}$ **Javob : B)**

Izoh: kasrlarni alohida qilib ildiz olib hisoblang.

2872. $\sqrt{\frac{4}{9}}+\sqrt{\frac{1}{9}}$ ni hisoblang.

A) 1 B) 3 C) 0,9 D) 5

2873. $5\sqrt{\frac{1}{25}}-3\sqrt{\frac{1}{9}}$ ni hisoblang.

A) 0 B) 2 C) 1 D) 1,5

2874. $\sqrt{\frac{25}{64}}+\sqrt{\frac{49}{144}}$ ni hisoblang.

A) $1\frac{5}{12}$ B) $1\frac{5}{24}$ C) $1\frac{5}{18}$ D) 6

2875. $\sqrt{\frac{16}{81}}-\sqrt{\frac{169}{225}}$ ni hisoblang.

A) $-\frac{19}{45}$ B) $\frac{19}{45}$ C) $-\frac{2}{45}$ D) 0

2876. $\sqrt{\frac{16}{25}}-\sqrt{\frac{9}{16}}$ ni hisoblang.

A) 3,5 B) 0,5 C) 0,04 D) 0,05

✓ $\frac{\sqrt{27}}{\sqrt{3}}$ ni hisoblang.

A) $5\frac{2}{5}$ B) $5\frac{2}{15}$ C) $\frac{1}{3}$ D) 3

Yechimi: *formula* $\Rightarrow\frac{\sqrt{a}}{\sqrt{b}}=\sqrt{\frac{a}{b}}\quad\frac{\sqrt{27}}{\sqrt{3}}=\sqrt{\frac{27}{3}}=\sqrt{9}=3$

Javob: 3

Izoh: kasrlarni alohida qilib ildiz olib hisoblang.

2877. $\frac{\sqrt{128}}{\sqrt{8}}$ ni hisoblang.

A) 4 B) 3 C) 49 D) 16

2878. $\frac{4\sqrt{40}}{\sqrt{10}}$ ni hisoblang.

A) 8 B) 2 C) 1 D) 4

2879. $\frac{20\sqrt{18}}{5\sqrt{2}}$ ni hisoblang.

A) $1\frac{5}{12}$ B) 12 C) $1\frac{5}{18}$ D) 6

✓ $\sqrt{5\frac{4}{9}\cdot11\frac{14}{25}}$ ni hisoblang.

A) $5\frac{2}{5}$ B) $7\frac{14}{15}$ C) $\frac{1}{3}$ D) 3

Yechimi:

$\sqrt{5\frac{4}{9}\cdot11\frac{14}{25}}=\sqrt{\frac{49}{9}\cdot\frac{289}{25}}=\sqrt{\frac{7^2}{3^2}\cdot\frac{17^2}{5^2}}=\frac{7}{3}\cdot\frac{17}{5}=\frac{119}{15}=7\frac{14}{15}$

Javob: B)

2880. $\frac{\sqrt{64\cdot49}}{\sqrt{196\cdot324}}$ ni hisoblang.

A) $\frac{2}{5}$ B) $5\frac{2}{9}$ C) $\frac{2}{9}$ D) 0

2881. $\sqrt{\frac{9}{16}\cdot\frac{4}{81}\cdot\frac{36}{169}}$ ni hisoblang.

A) $1\frac{5}{12}$ B) $\frac{1}{13}$ C) $1\frac{3}{4}$ D) 13

2882. $\sqrt{\frac{9}{16}\cdot5^2}$ ni hisoblang.

A) $1\frac{5}{12}$ B) $3\frac{3}{4}$ C) $1\frac{3}{4}$ D) 12

2883. $\sqrt{\frac{64}{81}\cdot7^2}$ ni hisoblang.

A) $6\frac{2}{9}$ B) 6 C) $6\frac{5}{18}$ D) 36

2884. $\sqrt{\frac{121}{225}\cdot8^2}$ ni hisoblang.

A) $4\frac{5}{15}$ B) 6 C) $5\frac{13}{15}$ D) 12

✓ $\left(\sqrt{5}-\sqrt{45}\right)^2-\left(\sqrt{13}-\sqrt{11}\right)\cdot\left(\sqrt{13}+\sqrt{11}\right)$ ni hisoblang.

A) 40 B) 20 C) 27 D) 18

Yechimi:

$\underbrace{\left(\sqrt{5}-\sqrt{45}\right)^2}_{a^2-2ab+b^2}-\underbrace{\left(\sqrt{13}-\sqrt{11}\right)\left(\sqrt{13}+\sqrt{11}\right)}_{a^2-b^2}=$

$=\sqrt{5}^2-2\cdot\sqrt{5\cdot45}+\sqrt{45}^2-\left(\sqrt{13}^2-\sqrt{11}^2\right)=$ **J: D)**

$=5-2\cdot\sqrt{225}+45-13+11=48-30=18$

2885. $\left(\sqrt{11}-\sqrt{7}\right)\cdot\left(\sqrt{11}+\sqrt{7}\right)-\left(\sqrt{12}-\sqrt{3}\right)^2$ ni hisoblang.

A) 2 B) 4 C) 1 D) 6

2886. $\left(\sqrt{2}-\sqrt{18}\right)^2-\left(\sqrt{27}-\sqrt{25}\right)\cdot\left(\sqrt{27}+\sqrt{25}\right)$ ni hisoblang.

A) 8 B) 6 C) 4 D) 12

2887. $\left(\sqrt{9}-\sqrt{13}\right)\cdot\left(\sqrt{13}+\sqrt{9}\right)-\left(\sqrt{28}-\sqrt{7}\right)^2$ ni hisoblang.

A) 11 B) –11 C) 9 D) –12

2888. $15-\left(2\sqrt{2}-3\sqrt{32}\right)^2$ ni hisoblang.

A) –185 B)–150 C) 185 D) –200

2889. $\left(2\sqrt{12}+2\sqrt{3}\right)^2-77$ ni hisoblang.

A) 41 B)–31 C) 185 D) 31

✓ $\sqrt{14}\cdot\left(\sqrt{7}-\sqrt{2}\right)$ ni soddalashtiring.

A) $7\sqrt{2}-2\sqrt{7}$ B) $4+2\sqrt{2}$

C) $3\sqrt{2}+2\sqrt{7}$ D) 4

Yechimi:

$\boxed{\sqrt{14}}\cdot\left(\sqrt{7}-\sqrt{2}\right)=\boxed{\sqrt{14}}\cdot\sqrt{7}-\boxed{\sqrt{14}}\cdot\sqrt{2}=$

$=\sqrt{14\cdot7}-\sqrt{14\cdot2}=7\sqrt{2}-2\sqrt{7}$

Javob: A)

Izoh: qavsni ochib o'xshash hadlarni ixchamlang.

2890. $\left(\sqrt{ab}\right)\cdot\left(\sqrt{a}+\sqrt{ab}\right)$ ni soddalashtiring. $a,b>0$

A) $\sqrt{b}$ B) $2+\sqrt{ab}$

C) $a\sqrt{b}+ab$ D) $\sqrt{ab}$

2891. $\left(\sqrt{12}+\sqrt{3}\right)\cdot\left(-\sqrt{3}\right)$ ni soddalashtiring.

A) $6\sqrt{3}$ B) $3\sqrt{3}$ C) 19 D) –9

2892. $\left(3\sqrt{5}-\sqrt{45}\right)\cdot\sqrt{5}$ ni soddalashtiring.

A) $4\sqrt{5}$ B) $3\sqrt{15}$ C) $\sqrt{15}$ D) 0

✓ $\left(\sqrt{7}+\sqrt{2}-1\right)\cdot\left(\sqrt{7}+1-\sqrt{2}\right)$ 2ni soddalashtiring.

A) $2+\sqrt{7}$ B) $4+2\sqrt{2}$ C) $3\sqrt{2}+2\sqrt{7}$ D) 4

Yechimi:

$\left(\sqrt{7}+\sqrt{2}-1\right)\cdot\left(\sqrt{7}+1-\sqrt{2}\right)=$

$=\sqrt{7}\cdot\left(\sqrt{7}+1-\sqrt{2}\right)+\sqrt{2}\cdot\left(\sqrt{7}+1-\sqrt{2}\right)-1\cdot\left(\sqrt{7}+1-\sqrt{2}\right)=$

$=7+\sqrt{7}-\sqrt{14}+\sqrt{14}+\sqrt{2}-2-\sqrt{7}-1+\sqrt{2}=$

$=4+2\sqrt{2}$

Javob: B)

Izoh: qavsni ochib o'xshash hadlarni ixchamlang.

2893. $\left(\sqrt{2}+\sqrt{3}\right)\cdot\left(5-\sqrt{6}\right)$ ni soddalashtiring.

A) $3\sqrt{2}+3\sqrt{2}$ B) $2\sqrt{2}+3\sqrt{3}$

C) 0 D) $2\sqrt{2}-3\sqrt{3}$

2894. $\left(2\sqrt{2}+\sqrt{4}\right)\cdot\left(\sqrt{2}-1\right)$ ni soddalashtiring.

A) 2 B) $2\sqrt{2}$ C) 0 D) $3\sqrt{2}+1$

2895. $\left(\sqrt{12}+1\right)\cdot\left(\sqrt{3}-2\right)$ ni soddalashtiring.

A) $1{,}5+\sqrt{3}$ B) $5\sqrt{3}$

C) 19 D) $4-3\sqrt{3}$

2896. $\sqrt{xy}\cdot\left(\frac{x}{y}\sqrt{xy}-2\sqrt{\frac{y}{x}}-\sqrt{\frac{1}{xy}}\right)$ ni soddalashtiring.

$x,y>0$

A) x^2-2y^2-1 B) $x-2y$

C) x^2-1 D) x^2-2y-1

2897. $\frac{1}{\sqrt{ab}}\cdot\left(\frac{a}{b}\sqrt{\frac{1}{ab}}-\frac{1}{b}\sqrt{\frac{a}{b}}-b\sqrt{\frac{b}{a}}\right)$ ni soddalashtiring.

$a,b>0$

A) $\frac{a}{b}$ B) $\frac{b}{a}$ C) $-\frac{a}{b}$ D) $-\frac{b}{a}$

2898. $\left(2\sqrt{\frac{2}{3}}-8\sqrt{\frac{3}{8}}+3\sqrt{\frac{3}{20}}\right)\cdot3\sqrt{\frac{3}{2}}$ ni soddalashtiring.

A) $\frac{27\sqrt{10}}{2}$ B) $-12+\frac{27}{2\sqrt{10}}$

C) $12+\frac{27}{2\sqrt{10}}$ D) 0

✓ $\frac{3}{\sqrt{5}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{3\sqrt{5}}{5}$ B) $\frac{9\sqrt{5}}{5}$ C) $\frac{\sqrt{5}}{5}$ D) 3

Yechimi:

ildizdan chiqmaydigan sonlar **IRRATSIONAL** sonlar deyiladi.

masalan:

$\sqrt{2};\sqrt{10};\sqrt{29}...$

$\frac{3}{\sqrt{5}}=\frac{3\cdot\sqrt{5}}{\sqrt{5}\cdot\sqrt{5}}=\frac{3\sqrt{5}}{\sqrt{5^2}}=\frac{3\sqrt{5}}{5}$ **Javob:** A)

Izoh: maxrajda qanday son turgan bo'lsa shu sonni suratga ham, maxrajga ham ko'paytiring.

yana bir misol:

$\frac{2}{\sqrt{6}}=\frac{2\cdot\sqrt{6}}{\sqrt{6}\cdot\sqrt{6}}=\frac{2\sqrt{6}}{\sqrt{6^2}}=\frac{2\sqrt{6}}{6}=\frac{\sqrt{6}}{3}$

2899. $\frac{11}{\sqrt{7}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{7}}{7}$ B) $\frac{11\sqrt{7}}{7}$ C) $\frac{2\sqrt{7}}{11}$ D) 11

2900. $\frac{20}{\sqrt{15}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{15}}{15}$ B) $\frac{20\sqrt{15}}{3}$ C) $\frac{4\sqrt{15}}{3}$ D) 15

2901. $\frac{14}{\sqrt{14}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{7}}{7}$ B) $\sqrt{14}$ C) $\frac{2\sqrt{14}}{11}$ D) 14

2902. $\frac{35}{\sqrt{10}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $35\sqrt{10}$ B) $3,5\sqrt{10}$ C) $\sqrt{10}$ D) 11

✓ $\frac{5}{\sqrt{13}-2}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{13}+10}{9}$ B) $\frac{5\sqrt{13}+10}{9}$ C) $\frac{\sqrt{5}}{5}$ D) 9

Yechimi:

$$\frac{5}{\sqrt{13}-2}=\frac{5\cdot\left(\sqrt{13}+2\right)}{\left(\sqrt{13}-2\right)\left(\sqrt{13}+2\right)}=\frac{5\cdot\left(\sqrt{13}+2\right)}{\sqrt{13}^2-2^2}=$$

$$=\frac{5\sqrt{13}+10}{13-4}=\frac{5\sqrt{13}+10}{9}$$

Javob:B)

Izoh: maxrajda "+" turgan bo'lsa, "–" ga ko'paytiriladi. Maqsad formulaga tushurish. yana bir misol:

$$\frac{3}{\sqrt{5}+\sqrt{2}}=\frac{3\cdot\left(\sqrt{5}-\sqrt{2}\right)}{\left(\sqrt{5}+\sqrt{2}\right)\left(\sqrt{5}-\sqrt{2}\right)}=\frac{3\cdot\left(\sqrt{5}-\sqrt{2}\right)}{\sqrt{5}^2-\sqrt{2}^2}=$$

$$=\frac{3\cdot\left(\sqrt{5}-\sqrt{2}\right)}{3}=\left(\sqrt{5}-\sqrt{2}\right)$$

2903. $\frac{1}{2-\sqrt{3}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt{3}$ B) $2+\sqrt{3}$ C) $\frac{2+\sqrt{3}}{11}$ D) 5

2904. $\frac{1}{3+\sqrt{2}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $3+\sqrt{2}$ B) $3\sqrt{2}$ C) $\frac{3-\sqrt{2}}{7}$ D) 5

2905. $\frac{4}{\sqrt{7}-\sqrt{3}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt{7}-\sqrt{3}$ B) $\sqrt{7}+\sqrt{3}$ C) $\frac{2\sqrt{7}-2\sqrt{3}}{5}$ D) 10

2906. $\frac{\sqrt{10}+\sqrt{8}}{\sqrt{10}-\sqrt{8}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $9+2\sqrt{5}$ B) $9+4\sqrt{5}$ C) $\frac{18+2\sqrt{5}}{2}$ D) 14

2907. $\frac{\sqrt{5}-\sqrt{7}}{\sqrt{5}+\sqrt{7}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $6+\sqrt{35}$ B) $-6+\sqrt{35}$ C) $-6-\sqrt{35}$ D) 6,5

✓ $\frac{3}{\sqrt{7}-2}-\frac{2}{\sqrt{7}+3}-2\sqrt{7}$ ni hisoblang.

A) 4 B) 0 C) 2 D) –1

Yechimi: avval maxrajni irratsionalikdan yo'qatamiz.

$$\frac{3}{\sqrt{7}-2}=\frac{3\cdot\left(\sqrt{7}+2\right)}{\sqrt{7}^2-2^2}=\frac{3\left(\sqrt{7}+2\right)}{3}=\sqrt{7}+2$$

$$\frac{2}{\sqrt{7}+3}=\frac{2\cdot\left(\sqrt{7}-3\right)}{\sqrt{7}^2-3^2}=\frac{2\left(\sqrt{7}-3\right)}{-2}=-\sqrt{7}+3$$

$$\frac{3}{\sqrt{7}-2}-\frac{2}{\sqrt{7}+3}-2\sqrt{7}=\sqrt{7}+2-\left(-\sqrt{7}+3\right)-2\sqrt{7}=$$

$$=\sqrt{7}+2+\sqrt{7}-3-2\sqrt{7}=-1$$

Javob: –1

2908. $\frac{2}{\sqrt{11}-3}-\frac{7}{\sqrt{11}-2}$ ni hisoblang.

A) 2 B) 4 C) 1 D) 6

2909. $\frac{3}{\sqrt{3}+\sqrt{6}}+\frac{2}{\sqrt{6}+2}$ ni hisoblang.

A) $-\sqrt{6}-2$ B) $-\sqrt{3}+2\sqrt{6}-2$

C) $-\sqrt{3}+2\sqrt{6}+2$ D) $-\sqrt{3}-2$

2910. $\frac{1}{3-\sqrt{5}}-\frac{1}{2-\sqrt{5}}-\frac{3\sqrt{5}}{4}$ ni hisoblang.

A) $\frac{4-\sqrt{5}}{2}$ B) $\frac{11+2\sqrt{5}}{4}$ C) $\frac{11+\sqrt{5}}{4}$ D) $-\sqrt{5}-2$

✓ $\frac{1}{1+\sqrt{2}-\sqrt{3}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{2}-2-\sqrt{6}}{4}$ B) $\frac{\sqrt{2}+2+\sqrt{6}}{4}$

C) $\frac{\sqrt{2}+2-\sqrt{6}}{4}$ D) 9

Yechimi:

$$\frac{1}{1+\sqrt{2}-\sqrt{3}}=\frac{1\cdot\left(\left(1+\sqrt{2}\right)+\sqrt{3}\right)}{\left(\left(1+\sqrt{2}\right)-\sqrt{3}\right)\left(\left(1+\sqrt{2}\right)+\sqrt{3}\right)}=$$

$$=\frac{1\cdot\left(\left(1+\sqrt{2}\right)+\sqrt{3}\right)}{\left(1+\sqrt{2}\right)^2-\sqrt{3}^2}=\frac{\left(1+\sqrt{2}\right)+\sqrt{3}}{1+2\sqrt{2}+2-3}=$$

$$=\frac{1+\sqrt{2}+\sqrt{3}}{2\sqrt{2}}=\frac{\left(1+\sqrt{2}+\sqrt{3}\right)\cdot\sqrt{2}}{2\sqrt{2}\cdot\sqrt{2}}=\frac{\sqrt{2}+2+\sqrt{6}}{4}$$

Javob: B)

Izoh: maxrajdagi irratsionallikdan ikki marta yo'qatamiz.

2911. $\frac{1}{\sqrt{3}+\sqrt{2}-\sqrt{5}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{2\sqrt{3}+3\sqrt{2}-\sqrt{30}}{12}$ B) $\frac{2\sqrt{3}+3\sqrt{2}+\sqrt{30}}{12}$

C) $\frac{3\sqrt{2}+3\sqrt{3}+\sqrt{30}}{12}$ D) 12

2912. $\frac{1}{\sqrt{13}-\sqrt{2}-\sqrt{11}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{\sqrt{286}+2\sqrt{11}+11\sqrt{2}}{44}$ B) $\frac{\sqrt{286}-2\sqrt{11}-11\sqrt{2}}{44}$

C) $-\frac{\sqrt{286}+2\sqrt{11}+11\sqrt{2}}{44}$ D) 44

✓ $\frac{2-\sqrt{7}}{2+\sqrt{7}}+\frac{2+\sqrt{7}}{2-\sqrt{7}}$ ni hisoblang.

A) $-7\frac{1}{3}$ B) $-6\frac{1}{3}$ C) 2 D) 1

Yechimi: umumiy maxraj berib yechamiz.

$$\frac{2-\sqrt{7}}{2+\sqrt{7}}+\frac{2+\sqrt{7}}{2-\sqrt{7}}=\frac{\left(2-\sqrt{7}\right)^2+\left(2+\sqrt{7}\right)^2}{\left(2+\sqrt{7}\right)\left(2-\sqrt{7}\right)}=$$

$$=\frac{4-4\sqrt{7}+7+4+4\sqrt{7}+7}{2^2-\sqrt{7}^2}=\frac{22}{4-7}=-\frac{22}{3}=-7\frac{1}{3}$$

Javob: A)

2913. $\frac{3-\sqrt{5}}{3+\sqrt{5}}+\frac{3+\sqrt{5}}{3-\sqrt{5}}$ ni hisoblang.

A) 4,5 B) 2 C) 7 D) 6

2914. $\frac{4-\sqrt{6}}{4+\sqrt{6}}-\frac{4+\sqrt{6}}{4-\sqrt{6}}$ ni hisoblang.

A) $-8\sqrt{6}$ B) $-\frac{8\sqrt{6}}{5}$ C) $-\frac{8\sqrt{6}}{15}$ D) $-\frac{4\sqrt{6}}{5}$

✓ $\frac{11}{\sqrt{12}-1}-2\sqrt{3}+9$ ni soddalashtiring.

A) $2+\sqrt{3}$ B) $4+2\sqrt{3}$ C) $3\sqrt{2}+2\sqrt{7}$ D) 10

Yechimi: avval maxrajni irratsionalikdan yo'qatamiz.

$$\frac{11}{\sqrt{12}-1}=\frac{11\cdot\left(\sqrt{12}+1\right)}{\left(\sqrt{12}-1\right)\left(\sqrt{12}+1\right)}=\frac{11\cdot\left(\sqrt{12}+1\right)}{\sqrt{12}^2-1^2}=\frac{11\cdot\left(\sqrt{12}+1\right)}{11}=\sqrt{12}+1$$

$$\frac{11}{\sqrt{12}-1}=\sqrt{12}+1 \Rightarrow \left|\begin{array}{l}\frac{11}{\sqrt{12}-1}-2\sqrt{3}+9=\sqrt{12}+1-2\sqrt{3}+9=\\ =2\sqrt{3}+1-2\sqrt{3}+9=10\end{array}\right.$$

Javob: 10

2915. $\frac{19}{\sqrt{20}-1}-2\sqrt{5}+3$ ni soddalashtiring.

A) $4+2\sqrt{5}$ B) 4 C) 0 D) $4-3\sqrt{5}$

2916. $-2\sqrt{2}+6+\frac{1}{3-\sqrt{8}}$ ni soddalashtiring.

A) 9 B) $2\sqrt{2}$ C) 8 D) $3\sqrt{2}+1$

✓ $\left(\frac{\sqrt{3-\sqrt{8}}}{\sqrt{3+\sqrt{8}}}+\frac{\sqrt{3+\sqrt{8}}}{\sqrt{3-\sqrt{8}}}\right)^2$ ni hisoblang.

A) 49 B) 44 C) 36 D) 25

Yechimi: umumiy maxraj berib yechamiz.

$$\boxed{1}\Rightarrow \frac{\sqrt{3-\sqrt{8}}}{\sqrt{3+\sqrt{8}}}+\frac{\sqrt{3+\sqrt{8}}}{\sqrt{3-\sqrt{8}}}=\frac{\sqrt{3-\sqrt{8}}^2+\sqrt{3+\sqrt{8}}^2}{\sqrt{3-\sqrt{8}}\cdot\sqrt{3+\sqrt{8}}}=$$

$$=\frac{3-\sqrt{8}+3+\sqrt{8}}{\sqrt{3^2-\sqrt{8}^2}}=\frac{6}{1}=6$$

Javob: C)

$$\boxed{2}\Rightarrow (6)^2=36$$

2917. $\left(\frac{\sqrt{2-\sqrt{3}}}{\sqrt{2+\sqrt{3}}}+\frac{\sqrt{2+\sqrt{3}}}{\sqrt{2-\sqrt{3}}}\right)^2$ ni hisoblang.

A) 45 B) 12 C) 17 D) 16

2918. $\left(\frac{\sqrt{\sqrt{5}-2}}{\sqrt{\sqrt{5}+2}}-\frac{\sqrt{\sqrt{5}+2}}{\sqrt{\sqrt{5}-2}}\right)^3$ ni hisoblang.

A) $-8\sqrt{5}$ B) $-\frac{8\sqrt{5}}{5}$ C) -64 D) -8

2919. $\left(\frac{\sqrt{4-\sqrt{15}}}{\sqrt{4+\sqrt{15}}}-\frac{\sqrt{4+\sqrt{15}}}{\sqrt{4-\sqrt{15}}}\right)^{-2}$ ni hisoblang.

A) 60 B) $\frac{\sqrt{15}}{5}$ C) $\frac{1}{60}$ D) $\sqrt{15}$

✓ Agar $x=\frac{\sqrt{7}-5}{2}$ bo'lsa, $(x+1)(x+2)(x+3)(x+4)$ ni hisoblang.

A) 0,75 B) $-0,75$ C) 3 D) $-1,5$

Yechimi: berilgan soni "x" ni o'rniga qo'yib hisoblab chiqish lozim:.

$$\left|\begin{array}{l}x+1=\frac{\sqrt{7}-5}{2}+1=\frac{\sqrt{7}-5+2}{2}=\frac{\sqrt{7}-3}{2}\\ x+2=\frac{\sqrt{7}-5}{2}+2=\frac{\sqrt{7}-5+4}{2}=\frac{\sqrt{7}-1}{2}\\ x+3=\frac{\sqrt{7}-5}{2}+3=\frac{\sqrt{7}-5+6}{2}=\frac{\sqrt{7}+1}{2}\\ x+3=\frac{\sqrt{7}-5}{2}+4=\frac{\sqrt{7}-5+8}{2}=\frac{\sqrt{7}+3}{2}\end{array}\right|$$

$$(x+1)(x+2)(x+3)(x+4)=$$

$$\frac{\sqrt{7}-3}{2}\cdot\frac{\sqrt{7}-1}{2}\cdot\frac{\sqrt{7}+1}{2}\cdot\frac{\sqrt{7}+3}{2}=\frac{\left(\sqrt{7}^2-3^2\right)}{4}\cdot\frac{\left(\sqrt{7}^2-1^2\right)}{4}=$$

$$=\frac{-2}{4}\cdot\frac{6}{4}=-0,75$$ **Javob: B)**

2920. Agar $m=\frac{\sqrt{11}-5}{2}$ bo'lsa, $(m+1)(m+2)(m+3)(m+4)$ ni hisoblang.

A) 4,5 B) 1,2 C) 1,7 D) 1,25

2921. Agar $y=\frac{\sqrt{13}-5}{2}$ bo'lsa, $(y+1)(y+2)(y+3)(y+4)$ ni hisoblang.

A) 4 B) 2 C) 3 D) 8

✓ Agar $x=\sqrt{3}+\sqrt{2};\ y=\sqrt{3}-\sqrt{2}$ bo'lsa, $x^2-3xy+y^2$ ni hisoblang.

A) 0,5 B) –7 C) 7 D) –5

Yechimi:

$$\underline{x=\sqrt{3}+\sqrt{2},\ y=\sqrt{3}-\sqrt{2}}$$

$$\Downarrow$$

$$x^2-3xy+y^2=$$

$$=\left(\sqrt{3}+\sqrt{2}\right)^2-3\left(\sqrt{3}+\sqrt{2}\right)\left(\sqrt{3}-\sqrt{2}\right)+\left(\sqrt{3}-\sqrt{2}\right)^2=$$

$$=5+2\sqrt{6}-3+5-2\sqrt{6}=7$$

Javob: C)

2922. Agar $a=1+\sqrt{2}, b=1-\sqrt{2}$ bo'lsa, $a^2-4ab+2b^2$ ni hisoblang.

A) $13-2\sqrt{2}$ B) 12 C) $13+2\sqrt{2}$ D) $13-\sqrt{2}$

2923. Agar $a=\sqrt{7}+\sqrt{6}, b=\sqrt{7}-\sqrt{6}$ bo'lsa, $2a^2-5ab+2b^2$ ni hisoblang.

A) 47 B) 57 C) 3 D) 49

✓ $\left[\sqrt{1}\right]+\left[\sqrt{2}\right]+...+\left[\sqrt{6}\right]$ ni hisoblang.

A) 0,75 B) –0,75 C) 3 D) –1,5

Yechimi: yoyib yozib olamiz.

$$\left[\sqrt{1}\right]+\left[\sqrt{2}\right]+\left[\sqrt{3}\right]+\left[\sqrt{4}\right]+\left[\sqrt{5}\right]+\left[\sqrt{6}\right]=$$

$$=1+1+1+2+2+2=9$$

Javob: 9

Izoh: bu turdagi misollarni ishlashda butun qismlarni topib qo'shib chiqamiz.

2924. $\left[\sqrt{1}\right]+\left[\sqrt{2}\right]+...+\left[\sqrt{7}\right]$ ni hisoblang.

A) 13 B) 11 C) 17 D) 9

2925. $\left(\left[\sqrt{1}\right]+\left[\sqrt{2}\right]+...+\left[\sqrt{10}\right]\right)^2$ ni hisoblang.

A) 351 B) 324 C) 19 D) 361

✓ Agar $x:y=\sqrt{7}$ bo'lsa, x^2-7y^2 ni hisoblang.

A) 0 B) 0,75 C) 3 D) 1,5

Yechimi:

$$\underline{x:y=\sqrt{7}}\Rightarrow\left|\frac{x}{y}=\sqrt{7}\Rightarrow x=y\sqrt{7}\right.$$

$$\Downarrow$$

$$x^2-7y^2=\left(y\sqrt{7}\right)^2-7y^2=0$$

Javob: 0

2926. Agar $a:b=\sqrt{5}$ bo'lsa, a^2-5b^2 ni hisoblang.

A) 0 B) 1 C) 17 D) 5

2927. Agar $a:b=-\sqrt{11}$ bo'lsa, $2a^2-22b^2$ ni hisoblang.

A) 0 B) 5 C) 3 D) 4

✓ Agar $x>0, y<0$ *va* $z<0$ bo'lsa, to'g'ri tenglikni toping.

A) $\sqrt{x^2\cdot y^2\cdot z^2}=x|y|z$ B) $\sqrt{x^2\cdot y^2\cdot z^2}=-x|y||z|$

C) $\sqrt{x^2\cdot y^2\cdot z^2}=xyz$ D) $\sqrt{x^2\cdot y^2\cdot z^2}=xy|z|$

Yechimi:

$\sqrt{x^2\cdot y^2\cdot z^2}$ *da* $x>0, y<0$ *va* $z<0$ *larni*

$+\quad -\quad -$

e'tiborga olib.

$\sqrt{x^2\cdot y^2\cdot z^2}=xyz$ *yoki* $\sqrt{x^2\cdot y^2\cdot z^2}=x|y||z|$

$+\ -\ -\ +$

Javob: (C)

Izoh: ildizdan chiqqanda "+" hosil qilinadigan javobni qidirish lozim.

2928. Agar $a>0, b>0$ *va* $c<0$ bo'lsa, to'gri tenglikni toping.

A) $\sqrt{a^2\cdot b^2\cdot c^2}=a|b|c$ B) $\sqrt{a^2\cdot b^2\cdot c^2}=abc$

C) $\sqrt{a^2\cdot b^2\cdot c^2}=-ab|c|$ D) $\sqrt{a^2\cdot b^2\cdot c^2}=-abc$

2929. Agar $a<0, b>0$ *va* $c<0$ bo'lsa, to'gri tenglikni toping.

A) $\sqrt{a^2\cdot b^2\cdot c^2}=a|b|c$ B) $\sqrt{a^2\cdot b^2\cdot c^2}=-|a|b|c|$

C) $\sqrt{a^2\cdot b^2\cdot c^2}=ab|c|$ D) $\sqrt{a^2\cdot b^2\cdot c^2}=-abc$

✓ Agar $\sqrt{5}=m, \sqrt{7}=n$ bo'lsa, $\sqrt{560}$ ni m,n orqali ifodalang.

A) $4nm$ B) $2nm$ C) $6nm$ D) $8nm$

Yechilishi:

$\sqrt{5}=m, \sqrt{7}=n$

$$\sqrt{560}=\sqrt{5\cdot 112}=\sqrt{5}\cdot\sqrt{112}=\sqrt{5}\cdot\sqrt{7\cdot 16}=\sqrt{5}\cdot\sqrt{7}\cdot\sqrt{16}=$$

$=4nm$ **Javob: (A)**

2930. Agar $\sqrt{3}=a, \sqrt{5}=b$ bo'lsa, $\sqrt{15}$ ni a,b orqali ifodalang.

A) $5ab$ B) $6ab$ C) $8ab$ D) ab

2931. Agar $\sqrt{3}=a, \sqrt{8}=b$ bo'lsa, $\sqrt{600}$ ni a,b orqali ifodalang.

A) $5ab$ B) $6ab$ C) $8ab$ D) $7ab$

2932. Agar $\sqrt{5}=c, \sqrt{7}=d$ bo'lsa, $\sqrt{2835}$ ni c,d orqali ifodalang.

A) $4cd$ B) $5cd$ C) $9cd$ D) $6cd$

✓ $[[3x-2]]=5$ tenglamani yeching.

A) $1\le x<2\frac{1}{3}$ B) $1\le x<1\frac{1}{3}$

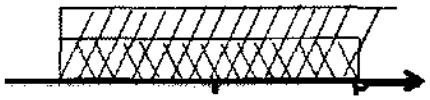
C) $0\le x<1\frac{1}{3}$ D) $3\le x<6\frac{1}{3}$

Yechimi:

$[[3x+2]]=5$

$5\le 3x+2<6$

$\begin{cases}5\le 3x+2\\3x+2<6\end{cases}\Leftrightarrow\begin{cases}-3x\le -3\\3x<4\end{cases}\Leftrightarrow\begin{cases}x\ge 1\\x<\frac{4}{3}\end{cases}$



$\left[1;1\frac{1}{3}\right)$

Javob: B)

2933. $[[x+6]]=29$ tenglamani yeching.

A) $25\le x<28$ B) $26\le x<27$

C) $19\le x<20$ D) $23\le x<24$

2934. $[[4x-11]]=17$ tenglamani yeching.

A) $7\le x\le 7\frac{1}{4}$ B) $6\le x<7$

C) $7\le x<8$ D) $7\le x<7\frac{1}{4}$

2935. $\left[\left[\frac{x+6}{3}\right]\right]=5$ tenglamani yeching.

A) $25\le x<28$ B) $9\le x<12$

C) $19\le x<20$ D) $13\le x<15$

✓ $\{-2,3\}$ ni hisoblang.

A) 0,75 B) –0,75 C) 0,7 D) –1,5

Yechimi: shu sonning o'zidan uning butun qismini ayriymiz. $\{-2,3\}=-2,3-(-3)=-2,3+3=0,7$

Javob: C)

2936. $\{7,6\}$ ni hisoblang.

A) 0,6 B) 1,1 C) 0,4 D) 0,9

2937. $\{-7,6\}$ ni hisoblang.

A) 0,6 B) 1,4 C) 0,4 D) 0,1

2938. $\{-1,03\}$ ni hisoblang.

A) 0,7 B) 0,97 C) 0,9 D) 0,44

✓ $\{-2,3\}+\{2,3\}$ ni hisoblang.

A) 0,75 B) –0,75 C) 3 D) 1

Yechimi:

$\{-2,3\}+\{2,3\}=0,7+0,3=1$ **Javob:** D)

2939. $\{-7,6\}+\{7,6\}$ ni hisoblang.

A) 13 B) 1 C) 17 D) 9

2940. $\{-6,6\}+\{6,6\}$ ni hisoblang.

A) 5 B) 324 C) 19 D) 1

2941. $\{-\sqrt{5}\}+\{\sqrt{5}\}$ ni hisoblang.

A) 351 B) 4 C) 19 D) 1

Chala kvadrat tenglamalar

✓ $x^2=81$ ni ildizlarini toping.

A) 0,75 B) ± 9 C) 3 D) ± 1

Yechimi:

formula: $x^2=d$

$x_1=-\sqrt{d}\quad x_2=\sqrt{d}$

yoki $x_{12}=\pm\sqrt{d}$

misol:

$x^2=81$

$x_{12}=\pm\sqrt{81}$

$x_{12}=\pm 9$

Javob: B)

Izoh: berilgan sondan ildiz olish lozim. yana bir misol:

$x^2=29$

$x_{12}=\pm\sqrt{29}$

2942. $x^2=\frac{9}{16}$ ni ildizlarini toping.

A) $\pm\frac{4}{3}$ B) $\pm\frac{3}{4}$ C) 17 D) ± 9

2943. $x^2=\frac{16}{49}$ ni ildizlarini toping.

A) $\pm\frac{7}{4}$ B) ± 4 C) 19 D) $\pm\frac{4}{7}$

2944. $x^2=1\frac{7}{9}$ ni katta ildizini toping.

A) $\frac{4}{3}$ B) ±4 C) 19 D) $\pm\frac{4}{3}$

2945. $x^2=2\frac{1}{4}$ ni kichik ildizini toping.

A) $\frac{3}{2}$ B) ± 4 C) $\pm\frac{3}{2}$ D) $-\frac{3}{2}$

2946. $x^2=5$ ni ildizlarini toping.

A) $\varnothing$ B) ± 4 C) $\pm\sqrt{5}$ D) ±2,5

2947. $x^2=13$ ni ildizlarini toping.

A) $\varnothing$ B) ± 4 C) $\pm\sqrt{13}$ D) ±6,5

2948. $x^2=10$ ni ildizlarini yig'indisini toping.

A) 0 B) ±4 C) $\pm\sqrt{10}$ D) $2\sqrt{10}$

2949. $x^2=\frac{25}{49}$ ni ildizlarini ko'paytmasini toping.

A) 0 B) ± 4 C) $\pm\frac{25}{49}$ D) $-\frac{25}{49}$

✓ $x^2-144=0$ ni ildizlarini toping.

A) 0,5 B) ± 9 C) 12 D) ± 12

Yechilishi:

formula $x^2=d$

$x_1=-\sqrt{d}$ $x_2=\sqrt{d}$

yoki $x_{12}=\pm\sqrt{d}$

$x^2-144=0$

$x^2=144$

$x_{12}=\pm\sqrt{144}$

$x_{12}=\pm 12$

J: ±12

Izoh: berilgan sonni o'ng tomonga o'tkazib ildiz olish lozim. yana bir misol:

$x^2+121=0$

$x^2=-121$

$\varnothing$

2950. $x^2-49=0$ ni ildizlarini toping.

A) ± 49 B) ± 7 C) 17 D) ± 9

2951. $x^2+12=0$ ni ildizlarini toping.

A) $\pm\sqrt{12}$ B) ± 4 C) 19 D) $\varnothing$

2952. $x^2-729=0$ ni katta ildizini toping.

A) 27 B) ± 4 C) 19 D) ± 27

2953. $x^2+225=0$ ni kichik ildizini toping.

A) $\frac{3}{2}$ B) ± 4 C) $\pm\sqrt{15}$ D) $\varnothing$

✓ $\frac{1}{3}x^2=0$ ni ildizlarini toping.

A) 0 B) ± 9 C) 12 D) ± 12

Yechilishi: **Javob: 0**

$\frac{1}{3}x^2=0$

$x^2=0\cdot 3$

$x^2=0$

$x=\pm\sqrt{0}$ $x=0$

Izoh: "±0" degan yozuv yo'q, "0" deb javob qidirish lozim.

2954. $\frac{x^2}{5}=0$ ni ildizlarini toping.

A) $\pm\frac{4}{3}$ B) ± 7 C) 0 D) ± 9

2955. $2x^2=0$ ni ildizlarini toping.

A) $\pm\sqrt{12}$ B) ± 4 C) 0 D) $\varnothing$

✓ $0,01x^2=4$ ni ildizlarini toping.

A) 0 B) ± 9 C) 12 D) ± 20

Yechilishi:

$0,01x^2=4$

$x^2=4:0,01$

$x^2=400$

$x_{12}=\pm\sqrt{400}=\pm 20$

Javob:D)

2956. $\frac{x^2}{5}=125$ tenglamani yeching.

A) $\pm\frac{4}{3}$ B) ± 15 C) 0 D) ± 25

2957. $2x^2=\frac{1}{8}$ tenglamani yeching.

A) $\pm\frac{4}{3}$ B) ± 15 C) 0 D) $\pm 0,25$

2958. $9x^2=81$ ni ildizlarini toping.

A) $\pm\sqrt{12}$ B) ± 3 C) 0 D) $\varnothing$

2959. $3x^2=15$ ni ildizlarini toping.

A) ± 5 B) $\pm\sqrt{5}$ C) 0 D) $\varnothing$

2960. $4x^2=81$ tenglamani yeching.

A) $\pm\frac{9}{2}$ B) $\pm 1,5$ C) 0 D) $\pm 2,5$

2961. $3x^2=5\frac{1}{3}$ tenglamani yeching.

A) $\pm\frac{4}{3}$ B) $\pm 1,5$ C) 0 D) $\pm 2,5$

2962. $9x^2+1=0$ tenglamani yeching.

A) $\pm\frac{9}{2}$ B) $\pm 1,5$ C) 0 D) $\varnothing$

2963. $0,04x^2=16$ ni ildizlarini yig'indisini toping.

A) $\pm\sqrt{12}$ B) ± 20 C) 0 D) $\varnothing$

2964. $4x^2-192=0$ ni kichik ildizini toping

A) $-4\sqrt{3}$ B) $\pm 1,5$ C) 0 D) $\pm 2,5$

2965. $x^2-27=0$ ni katta ildizini toping.

A) $\pm 3\sqrt{3}$ B) ± 9 C) 0 D) $3\sqrt{3}$

2966. $16x^2+3=0$ tenglamani yeching.

A) $\pm\frac{3}{16}$ B) $\pm 1,5$ C) 0 D) $\varnothing$

✓ $\frac{16-x^2}{4}=3$ ni ildizlarini toping.

A) 0 B) ± 9 C) 12 D) ± 2

Yechilishi:

$\frac{16-x^2}{4}=3 \quad (\cdot 4)$ $\qquad -x^2=-4$

$16-x^2=3\cdot 4$ $\qquad x^2=4$

$-x^2=12-16$ $\qquad x_{12}=\pm\sqrt{4}$

$x_{12}=\pm 2$

Javob:D)

2967. $\frac{x^2-1}{3}=5$ *tenglamani yeching.*

A) $\pm\frac{4}{3}$ B)± 15 C) 0 D) ± 4

2968. $\frac{9-x^2}{5}=1$ tenglamani katta ildizi 14 dan qancha kam.

A) $\pm\frac{4}{3}$ B)± 2 C) 16 D) 12

2969. $4=\frac{x^2-5}{5}$ tenglamani kichik ildizi 14 dan qancha kam.

A) ±5 B) 19 C) 11 D) ∅

2970. $3=\frac{9x^2-4}{4}$ *ni ildizlarini toping.*

A) ± 5 B) ±4/3 C) 0 D) ∅

✓ $(5x-2)^2=0$ ni ildizlarini toping.

A) 0 B) ± 9 C) 0,4 D) ± 2

Yechilishi:

$(5x-2)^2=0$

$5x-2=0$

$5x=2$ **Javob:C)**

$x=2:5$

$x=0,4$

2971. $(x-7)^2=0$ tenglamani yeching.

A) $\pm\frac{4}{3}$ B)± 7 C) 0 D) 7

2972. $\left(\frac{4}{5}x-2\right)^2=0$ tenglamani yeching.

A) $\pm\frac{5}{2}$ B)± 7 C) 0 D) 2,5

2973. $25x^2+10x+1=0$ tenglamani ildizi x_0 ni kubini toping.

A) $-\frac{1}{125}$ B) $\frac{1}{125}$ C) 16 D) 125

✓ $4x^2-0,16x=0$ ni ildizlarini toping.

A) 0; 0,04 B) ± 9 C) 12 D) ± 2

Yechimi:

$4x^2-0,16x=0$

$x(4x-0,16)=0$

$x_1=0$ $\quad 4x-0,16=0$ **Javob:A)**

$x=0,16:4$

$x_2=0,04$

Izoh: ko'paytuvchilarga ajratib keyin "0" ga tenglab yechishlozim.

2974. $x^2-x=0$ tenglamani yeching.

A)$\pm\frac{4}{3}$ B)±15 C) 0; 1 D) ±1

2975. $x^2+2x=0$ tenglamani yeching.

A) 0 B)± 15 C) 0; –2 D) ± 1

2976. $3x^2+5x=0$ tenglamani yeching.

A) $0;-\frac{5}{3}$ B)± 15 C) 0; 1 D) ± 1

2977. $5x^2-3x=0$ tenglamani yeching.

A) 0; 0,6 B) 15 C) 0; 1 D) 1

2978. $3x^2+6x=8x^2-15x$ *tenglamani yeching.*

A) $\pm\frac{4}{3}$ B) 0; 4,2 C) 0; –2 D) ± 1

2979. $10x+7x^2=2x^2+8x$ tenglamani yeching.

A) 0;2,5 B)± 15 C) 0; 1 D) 0; –0,4

2980. $9x^2+15x=7x^2+10x$ tenglamani yeching.

A) 0; 0,6 B) 15 C) 0; –2,5 D) 1

Kvadrat tenglamalar

✓ Qaysi kvadrat tenglamaning ozod hadi 5 ga teng.

A) $3x^2+11x+6=0$ B) $5x^2+12x+10=0$

C) $2x^2+5x+2=0$ D) $2x^2+12x+5=0$

Yechimi: $ax^2+bx+c=0$ kvadrat tenglamaning koeffitsiyentlari :

a — *birinchi yoki bosh koefitsiyentidir.*

b — ikkinchi koefitsiyentidir.

c— ozod hadidir.

$(D)\ 2x^2+12x+5=0$

↗ **Javob: D**

ozod hadi

Izoh: Kvadrat tenglamaning hadlarini nomini eslab qoling yana bir misol:

$x^2+5x+6=0$ kvadrat tenglamaning koeffitsiyentlari :
1 — birinchi yoki bosh koefitsiyentidir.
5 — ikkinchi koefitsiyentidir.
6 — ozod hadidir.

2981. Qaysi kvadrat tenglamaning bosh koefitsiyenti 0,25 ga teng.

A) $3x^2+11x+0,25=0$ B) $\frac{1}{4}x^2+12x+10=0$

C) $2x^2+0,25x+2=0$ D) $2x^2+12x+5=0$

2982. Qaysi kvadrat tenglamaning ozod hadi -8 ga teng.

A) $3x^2-8x+6=0$ B) $5x^2+12x+8=0$

C) $-8x^2+5x+2=0$ D) $5x^2+12x-8=0$

2983. Qaysi kvadrat tenglamaning ikkinchi koefitsiyenti 0,8 ga teng.

A) $3x^2+11x+6=0$ B) $5x^2+12x+10=0$

C) $2x^2+\frac{4}{5}x+2=0$ D) $2x^2+12x+5=0$

✓ $2x^2+3x+1=0$ tenglamani yeching.

A) $-1;-0,5$ B) 0,5 C) 12 D) 0,2

Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$2x^2+3x+1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{3^2-4\cdot2\cdot1}=1$
$x_{12}=\frac{-b\pm D}{2a}$	$x_{12}=\frac{-3\pm1}{2\cdot2}$

$$x_{12}=\frac{-3\pm1}{2\cdot2}$$

$$x_1=\frac{-3-1}{4}=-1 \qquad x_2=\frac{-3+1}{4}=-\frac{1}{2}$$

Javob: $-1;-0,5$

Izoh: formuladagi harflarning o'rniga misoldagi sonlarni qo'yib chiqib hisoblash lozim.

2984. $2x^2+5x+2=0$ tenglamani yeching.

A) $\pm\frac{1}{2}$ B) $\pm1,5$ C) $-2;-0,5$ D) ±1

2985. $2x^2+12x+10=0$ tenglamani yeching.

A) $-5;-1$ B) ±1 C) 0; 1 D) ±5

2986. $3x^2+11x+6=0$ tenglamani yeching.

A) $\pm\frac{2}{3}$ B) $-\frac{2}{3};-3$ C) 0; -3 D) ±3

✓ $2x^2-3x+1=0$ ni ildizlarini toping.

A) 1; 0,5 B) 0,5 C) 12 D) 0,2

Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$2x^2-3x+1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-3)^2-4\cdot2\cdot1}=1$
$x_{12}=\frac{-b\pm D}{2a}$	$x_{12}=\frac{-(-3)\pm1}{2\cdot2}=\frac{3\pm1}{4}$

$$x_{12}=\frac{3\pm1}{2\cdot2} \qquad x_1=\frac{3-1}{4}=\frac{1}{2} \qquad x_2=\frac{3+1}{4}=1$$

Javob: A)

Izoh: e'tibor bering "–3" bo'lgani uchun "–(–3)= 3" bo'lgan.

2987. $x^2-5x+6=0$ tenglamani yeching.

A) 2; -3 B) $\pm1,5$ C) 2; 3 D) ±1

2988. $2x^2-7x+3=0$ tenglamani yeching.

A) $3;\frac{1}{2}$ B) 0; 3 C) 0; 1 D) 0,5

2989. $4x^2-11x+6=0$ tenglamani yeching.

A) $-\frac{3}{4};2$ B) $\frac{3}{4};2$ C) 2 D) ±3

✓ $2x^2+5x-3=0$ tenglamani yeching.

A) 3; 0,5 B) -3; 0,5 C) 12 D) 0,2

Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$2x^2+5x-3=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{5^2-4\cdot2\cdot(-3)}=\sqrt{25+24}=7$
$x_{12}=\frac{-b\pm D}{2a}$	$x_{12}=\frac{-5\pm7}{2\cdot2}$

$$x_{12}=\frac{-5\pm7}{2\cdot2}$$

Javob: B)

$$x_1=\frac{-5+7}{4}=\frac{1}{2}\ ; \quad x_2=\frac{-5-7}{4}=-3$$

Izoh: e'tibor bering "–3" bo'lgani uchun

$D=\sqrt{5^2-4\cdot2\cdot(-3)}=\sqrt{25+24}=7$ bo'lgan.

2990. $2x^2-7x-4=0$ tenglamani yeching.

A) $-\frac{1}{2};4$ B) 1,5 C) 0,5; 4 D) ±1

2991. $3x^2+x-4=0$ tenglamani yeching.

A) 1 B) $1;-\frac{4}{3}$ C) $-1;\frac{4}{3}$ D) 0,5

2992. $x^2-3x-4=0$ tenglamani yeching.

A) $-1;4$ B) $1;-4$ C) 1 D) ±4

✓ $-2x^2+x+1=0$ tenglamani yeching.

A) 1; $-0,5$ B) 0,5 C) 12 D) 0,2

Yechilishi:

formula	*misol*
$ax^2+bx+c=0$	$-2x^2+x+1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{1^2-4\cdot1\cdot(-2)}=\sqrt{1+8}=3$
$x_{12}=\frac{-b\pm D}{2a}$	$x_{12}=\frac{-1\pm3}{2\cdot(-2)}$

$$x_{12}=\frac{-1\pm3}{2\cdot(-2)}$$

Javob: –0,5; 1

$$x_1=\frac{-1+3}{-4}=-\frac{1}{2} \qquad x_2=\frac{-1-3}{-4}=1$$

Izoh: e'tibor bering "–2" bo'lgani uchun

$D=\sqrt{1^2-4\cdot1\cdot(-2)}=\sqrt{1+8}=3$ bo'lgan.

2993. $-3x^2-x+4=0$ tenglamani yeching.

A) $-\frac{4}{3};1$ B) 1; 5 C) 0,5; 4 D) ±1

2994. $-x^2+7x+18=0$ tenglamani yeching.

A) 2; 4 B) $1;-\frac{4}{2}$ C) 9; –2 D) 0,5

2995. $-x^2+11x+12=0$ tenglamani yeching.

A) 1; –4 B) $\frac{3}{4};2$ C) 12; –1 D) ±1

✓ $4x^2-2x-3=0$ tenglamani yeching.

A) $\frac{1\pm\sqrt{13}}{8}$ B) 0,5 C) 13 D) $\frac{1\pm\sqrt{13}}{4}$

Yechilishi:

formula	*misol*
$ax^2+bx+c=0$	$4x^2-2x-3=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-2)^2-4\cdot4\cdot(-3)}=$
$x_{12}=\frac{-b\pm D}{2a}$	$=\sqrt{4+48}=\sqrt{52}=2\sqrt{13}$
	$x_{12}=\frac{2\pm2\sqrt{13}}{2\cdot4}$

J:D

$$x_{12}=\frac{2\pm2\sqrt{13}}{8}=\frac{2\left(1\pm\sqrt{13}\right)}{8}=\frac{1\pm\sqrt{13}}{4}$$

$$x_1=\frac{1+\sqrt{13}}{4}= \qquad x_2=\frac{1-\sqrt{13}}{4}$$

Izoh: Agar ildizdan chiqmasa shunday qoladi.

$D=\sqrt{(-2)^2-4\cdot4\cdot(-3)}=\sqrt{4+48}=\sqrt{52}=2\sqrt{13}$

2996. $9x^2-3x-4=0$ tenglamani yeching.

A) $\frac{1\pm\sqrt{17}}{6}$ B) 1; 5 C) $\frac{3\pm\sqrt{17}}{12}$ D) $\frac{3\pm\sqrt{17}}{18}$

2997. $4x^2-8x-1=0$ tenglamani yeching.

A) $\frac{2\pm\sqrt{5}}{4}$ B) $\frac{2\pm\sqrt{5}}{2}$ C) $\frac{4\pm\sqrt{5}}{4}$ D) $\frac{8\pm\sqrt{5}}{8}$

2998. $3x^2+4x-1=0$ tenglamani yeching.

A) $\frac{-4\pm\sqrt{7}}{6}$ B) $\frac{-2\pm\sqrt{7}}{3}$ C) –12; 1 D) $\frac{-2\pm\sqrt{7}}{6}$

2999. $x^2+6x-3=0$ tenglamani yeching.

A) $\frac{-4\pm\sqrt{3}}{6}$ B) $\frac{-3\pm\sqrt{6}}{2}$

C) $-3\pm2\sqrt{3}$ D) $\frac{-6\pm\sqrt{3}}{2}$

✓ $9x^2-6x+1=0$ tenglamani yeching.

A) $\frac{1\pm\sqrt{13}}{8}$ B) $\frac{1}{3}$ C) 13 D) $\frac{1\pm\sqrt{13}}{4}$

Yechilishi:

formula	*misol*
$ax^2+bx+c=0$	$9x^2-6x+1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-6)^2-4\cdot9\cdot1}=\sqrt{36-36}=0$
$x_{12}=\frac{-b\pm D}{2a}$	$x_{12}=\frac{6\pm0}{2\cdot9}=\frac{6}{18}=\frac{1}{3}$

J:B)

Izoh: Agar $D=0$ bo'lsa, 1 ta yechim bo'ladi.

3000. $16x^2+8x+1=0$ tenglamani yeching.

A) $-\frac{1}{4}$ B) 1,5 C) $\frac{-8\pm\sqrt{17}}{32}$ D) $\frac{1}{4}$

3001. $5x(x-4)=(x-8)^2-65$ tenglamani yeching.

A) $\pm\frac{1}{2}$ B) $\frac{1}{2}$ C) –12; 1 D) $\frac{3}{2}$

3002. $x(x+1)-7=15x-56$ tenglamani yeching.

A) $\frac{-4\pm\sqrt{3}}{6}$ B) $\frac{-14\pm\sqrt{6}}{2}$ C) 7 D) $\varnothing$

✓ $7x^2-6x+2=0$ tenglamani yeching.

A) $\frac{1\pm\sqrt{13}}{8}$ B) 0,5 C) 13 D) $\varnothing$

Yechilishi:

formula	*misol*
$ax^2+bx+c=0$	$7x^2-6x+2=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-6)^2-4\cdot7\cdot2}=$
$x_{12}=\frac{-b\pm D}{2a}$	$=\sqrt{36-56}=\sqrt{-20}$
	$\varnothing$

Javob: $\varnothing$

Izoh: Agar $D<0$ bo'lsa, yechim yo'q $(\varnothing)$ bo'ladi.

3003. $3x^2-5x+4=0$ tenglamani yeching.

A) $\varnothing$ B) 1,5 C) $\frac{-8\pm\sqrt{17}}{32}$ D) $\frac{1}{4}$

3004. $\frac{5x^2+9}{6}-\frac{4x^2-9}{5}=3$ tenglamani yeching.

A) $\pm\frac{1}{2}$ B) $\varnothing$ C) $-12;\ 1$ D) $\frac{3}{2}$

3005. $(x-1)(x+1)+(x+4)^2=3$ tenglamani yeching.

A) $\frac{-4\pm\sqrt{3}}{6}$ B) $\frac{-14\pm\sqrt{6}}{2}$ C) 7 D) $\varnothing$

✓ $(x-3)^2+(x+4)^2-(x-5)^2=17x+24$ tenglamani yeching.

A) $\frac{1\pm\sqrt{13}}{8}$ B) $-3;\ 8$ C) 13 D) $\varnothing$

Yechilishi:

$(x-3)^2+(x+4)^2-(x-5)^2=17x+24$

$x^2-6x+9+x^2+8x+16-x^2+10x-25=17x+24$

$x^2-5x-24=0$ **J: -3; 8**

$D=\sqrt{25+4\cdot1\cdot24}=11$

$x_1=-3;\quad x_2=8$

Izoh: Qavslarni ochib ixchamlab kvadrat tenglama ko'rinishiga keltiring.

3006. $(x+5)^2+(x-2)^2+(x-7)(x+7)=11x+30$ tenglamani yeching.

A) $\varnothing$ B) 1,5 C) $-3\frac{1}{3};\ 5$ D) $\frac{1}{4}$

3007. $(x+3)(x-2)+(x+2)^2-3x-10=0$ tenglamani yeching.

A) $\pm\frac{1}{2}$ B) $\varnothing$ C) $-3;\ 2$ D) $\frac{3}{2}$

3008. $(x-5)^2+(3-x)^2-4(x+5)(3-x)=(x+1)^2+48$ tenglamani yeching.

A) $-3;\ 5$ B) $\frac{-14\pm\sqrt{6}}{2}$ C) 7 D) $\varnothing$

✓ $\frac{x^2+3x}{2}=\frac{x+7}{4}$ tenglamani yeching.

A) $\frac{1\pm\sqrt{13}}{8}$ B) $-3;\ 8$ C) $-2;\ -0,5$ D) $\varnothing$

Yechilishi: **Javob: C)**

$\frac{x^2+3x}{2}=\frac{x+7}{4}\quad(\cdot4)$

$2x^2+6x=x+7$

$2x^2+5x-7=0$

$2x^2+5x-7=0$

$D=\sqrt{25+56}=9$

$x_{12}=\frac{-5\pm3}{4}$

$x_1=-0,5\qquad x_2=-2$

Izoh: Qavslarni ochib ixchamlab kvadrat tenglama ko'rinishiga keltiring.

3009. $\frac{x^2-3x}{7}+x=11$ tenglamani yeching.

A) $-11;7$ B) 1,5 C) $11;-7$ D) $\frac{1}{4}$

3010. $\frac{2x^2+x}{3}-\frac{2-3x}{4}=\frac{x^2-6}{6}$ tenglamani yeching.

A) $-\frac{3}{2};-\frac{2}{3}$ B) $\varnothing$ C) $-3;\ 2$ D) $\frac{3}{2}$

3011. $\frac{x^2+x}{4}-\frac{3-7x}{20}=0,3$ tenglamani yeching.

A) $-3;\ 5$ B) $-3;\ 0,6$ C) 7 D) $\varnothing$

Hisoblashga oid misollar

✓ $\sqrt{5+2\sqrt{6}}\cdot\sqrt{5-2\sqrt{6}}$ ni hisoblang.

A) 75 B) 5 C) 1 D) 6

Yechilishi:

$\sqrt{5+2\sqrt{6}}\cdot\sqrt{5-2\sqrt{6}}=\sqrt{(5+2\sqrt{6})\cdot(5-2\sqrt{6})}=\sqrt{5^2-(2\sqrt{6})^2}=$

$=\sqrt{25-24}=1$

Izoh: formulaga tushurish lozim.

$a^2-b^2=(a-b)(a+b)$

3012. $\sqrt{7-4\sqrt{3}}\cdot\sqrt{7+4\sqrt{3}}$ ni hisoblang.

A) 1 B) 11 C) 4 D) 9

3013. $\sqrt{11+6\sqrt{2}}\cdot\sqrt{11-6\sqrt{2}}$ ni hisoblang.

A) 18 B) 14 C) 7 D) 12

3014. $\sqrt{23-8\sqrt{7}}\cdot\sqrt{23+8\sqrt{7}}$ ni hisoblang.

A) 14 B) 9 C) 6 D) 4

3015. $\sqrt{\frac{\sqrt{25^2-24^2}}{21,5^2-14,5^2}}$ ni hisoblang.

A) 14 B) 9 C) $\frac{1}{6}$ D) 6

3016. $\sqrt{\frac{23^2-22^2}{\sqrt{13^2-12^2}}}$ ni hisoblang.

A) 14 B) 9 C) 45 D) 3

✓ $\left(\sqrt{3+\sqrt{5}}-\sqrt{3-\sqrt{5}}\right)^2$ ni hisoblang.

A) 0,75 B) –0,75 C) 10 D) –1,5

Yechilishi: formulaga ko'ra qavs ochish lozim.

$$\left(\sqrt{3+\sqrt{5}}+\sqrt{3-\sqrt{5}}\right)^2=\underbrace{3+\sqrt{5}+2\sqrt{3+\sqrt{5}}\cdot\sqrt{3-\sqrt{5}}+3-\sqrt{5}}_{a^2+2ab+b^2}=$$

$$=6+2\sqrt{9-5}=10$$

Javob: 10

3017. $\left(\sqrt{7+3\sqrt{5}}-\sqrt{7-3\sqrt{5}}\right)^2$ ni hisoblang.

A) 18 B) 14 C) 10 D) 12

3018. $\left(\sqrt{13+5\sqrt{4,2}}+\sqrt{13-5\sqrt{4,2}}\right)^2$ ni hisoblang.

A) 42 B) 52 C) 10 D) 9

3019. $\left(\sqrt{9+2\sqrt{20}}-\sqrt{9-2\sqrt{20}}\right)^2$ ni hisoblang.

A) 14 B) 16 C) 9 D) 4

✓ $\sqrt{9-2\sqrt{20}}-\sqrt{9+2\sqrt{20}}$ ni hisoblang.

A) 5 B) –5 C) 10 D) – 4

Yechilishi: bu turdagi misollarni yechishda "= x" qilib belgilab 2 ta tomonini kvadratga ko'taramiz.

$$\sqrt{9-2\sqrt{20}}-\sqrt{9+2\sqrt{20}}=x$$

$$\left(\sqrt{9-2\sqrt{20}}-\sqrt{9+2\sqrt{20}}\right)^2=x^2$$

$$\sqrt{9-2\sqrt{20}}^2-2\sqrt{9-2\sqrt{20}}\cdot\sqrt{9+2\sqrt{20}}+\sqrt{9+2\sqrt{20}}^2=x^2$$

$$18-2\sqrt{81-80}=x^2$$

$$16=x^2$$

$$x=\pm4$$

$\sqrt{9-2\sqrt{20}}-\sqrt{9+2\sqrt{20}}<0$ bo'lgani uchun $x=-4$

Javob: –4

Izoh: $x=\pm4$ 2 ta javobda $\sqrt{9-2\sqrt{20}}-\sqrt{9+2\sqrt{20}}<0$ manfiy bo'lgani uchun "–4" olindi.

3020. $\sqrt{4-\sqrt{7}}+\sqrt{4+\sqrt{7}}$ ni hisoblang.

A) 18 B) 14 C) $\sqrt{14}$ D) $-\sqrt{14}$

3021. $\sqrt{19+8\sqrt{3}}-\sqrt{19-8\sqrt{3}}$ ni hisoblang.

A) $-\sqrt{12}$ B) $2\sqrt{3}$ C) 7 D) 12

3022. $\sqrt{52-30\sqrt{3}}-\sqrt{52+30\sqrt{3}}$ ni hisoblang.

A) –10 B) –16 C) –9 D) –4

✓ $\sqrt{52+30\sqrt{3}}$ ni hisoblang.

A) $3\sqrt{3}+5$ B) –5 C) 10 D) $5\sqrt{3}+3$

Yechilishi:

$$\sqrt{52+30\sqrt{3}}\Rightarrow\frac{30\sqrt{3}}{2}=15\sqrt{3}$$

$$15\sqrt{3}=\begin{vmatrix}3 & 5\sqrt{3}\\ \boxed{5 \quad 3\sqrt{3}} & =5^2+27=52\\ 15 & \sqrt{3}\\ 1 & 15\sqrt{3}\end{vmatrix}$$

$$\sqrt{52+30\sqrt{3}}=\sqrt{\left(3\sqrt{3}+5\right)^2}=3\sqrt{3}+5$$

Javob: $3\sqrt{3}+5$

Izoh: ildizli sonni yarmini olib

$\sqrt{52+30\sqrt{3}}\Rightarrow\frac{30\sqrt{3}}{2}=15\sqrt{3}$ ko'paytmasi shu son $15\sqrt{3}$ chiqadigan qilib kombinatsiyalar tuzib chiqamiz. shu kombinatsiyalar ichidan kvadratlari yig'indisi "52" ga tengini topamiz.

3023. $\sqrt{9+4\sqrt{2}}$ ni hisoblang.

A) $1+2\sqrt{2}$ B) $3+2\sqrt{2}$ C) $4+2\sqrt{2}$ D) $1-2\sqrt{2}$

3024. $\sqrt{11-6\sqrt{2}}$ ni hisoblang.

A) $3+\sqrt{2}$ B) $3-2\sqrt{2}$ C) $2-3\sqrt{2}$ D) $3-\sqrt{2}$

3025. $\sqrt{7-4\sqrt{3}}$ ni hisoblang.

A) $2+\sqrt{3}$ B) $\sqrt{3}-2$ C) $2-\sqrt{3}$ D) $3-2\sqrt{3}$

3026. $\sqrt{19+8\sqrt{3}}$ ni hisoblang.

A) $1+4\sqrt{3}$ B) $4-\sqrt{3}$ C) $19+\sqrt{3}$ D) $4+\sqrt{3}$

3027. $\sqrt{29-6\sqrt{20}}$ ni hisoblang.

A) $2\sqrt{5}-3$ B) $3-2\sqrt{5}$ C) $\sqrt{5}-6$ D) $3\sqrt{5}-2$

3028. $\sqrt{7-2\sqrt{10}}$ ni hisoblang.

A) $\sqrt{5}+\sqrt{2}$ B) $1-\sqrt{10}$ C) $\sqrt{5}-2\sqrt{2}$ D) $\sqrt{5}-\sqrt{2}$

3029. $\sqrt{5+2\sqrt{6}}$ ni hisoblang.

A) $\sqrt{3}-\sqrt{2}$ B) $1+\sqrt{6}$ C) $\sqrt{3}+\sqrt{2}$ D) $6+\sqrt{2}$

3030. $\sqrt{6-4\sqrt{2}}$ ni hisoblang.

A) $2-2\sqrt{2}$ B) $1+2\sqrt{6}$ C) $2-\sqrt{2}$ D) $6+\sqrt{2}$

3031. $\sqrt{\sqrt{28-16\sqrt{3}}}$ ni hisoblang.

A) $3+\sqrt{2}$ B) $2-\sqrt{3}$ C) $3-\sqrt{3}$ D) $\sqrt{3}-1$

3032. $\sqrt{\sqrt{17+12\sqrt{2}}}$ ni hisoblang.

A) $1+\sqrt{2}$ B) $3+2\sqrt{2}$ C) $4+2\sqrt{2}$ D) $1-2\sqrt{2}$

✓ $\sqrt{5+\sqrt{6}}\cdot\sqrt{5-\sqrt{20+\sqrt{6}}}\cdot\sqrt{5+\sqrt{20+\sqrt{6}}}$ ni hisoblang.

A) 75 B) 19 C) $\sqrt{19}$ D) 6

Yechilishi:

$$\sqrt{5+\sqrt{6}}\cdot\underbrace{\sqrt{5-\sqrt{20+\sqrt{6}}}\cdot\sqrt{5+\sqrt{20+\sqrt{6}}}}_{\sqrt{5^2-\sqrt{20+\sqrt{6}}^2}}=$$

$$\sqrt{5+\sqrt{6}}\cdot\sqrt{25-20-\sqrt{6}}=\sqrt{5+\sqrt{6}}\cdot\sqrt{5-\sqrt{6}}=\sqrt{25-6}=$$

$$=\sqrt{19}$$

Javob:C) **Izoh:** formulaga tushurish lozim.

$a^2-b^2=(a-b)(a+b)$

3033. $\sqrt{3+\sqrt{3}}\cdot\sqrt{4-\sqrt{13+\sqrt{3}}}\cdot\sqrt{4+\sqrt{13+\sqrt{3}}}$ ni hisoblang.

A) $\sqrt{6}$ B) $\sqrt{7}$ C) 3 D) $\sqrt{8}$

3034. $\sqrt{8+\sqrt{7}}\cdot\sqrt{3-\sqrt{1+\sqrt{7}}}\cdot\sqrt{3+\sqrt{1+\sqrt{7}}}$ ni hisoblang.

A) $\sqrt{19}$ B) $\sqrt{67}$ C) $\sqrt{57}$ D) 57

3035. $\sqrt{7+\sqrt{45}}\cdot\sqrt{3-\sqrt{2+\sqrt{45}}}\cdot\sqrt{3+\sqrt{2+\sqrt{45}}}$ ni hisoblang.

A) 14 B) 2 C) 6 D) 4

3036. $\sqrt{2+\sqrt{3}}\cdot\sqrt{2+\sqrt{2+\sqrt{3}}}\cdot\sqrt{2+\sqrt{2+\sqrt{2+\sqrt{3}}}}\cdot\sqrt{2-\sqrt{2+\sqrt{2+\sqrt{3}}}}$ ni hisoblang.

A) 14 B) 9 C) 1 D) 6

✓ $\sqrt{3-\sqrt{29-12\sqrt{5}}}$ ni hisoblang.

A) $\sqrt{5}-1$ B) 19 C) $\sqrt{19}$ D) $\sqrt{5}+1$

Yechilishi:

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=?$$

$$\sqrt{29-12\sqrt{5}}=?$$

$\sqrt{29-12\sqrt{5}}=$

$\frac{12\sqrt{5}}{2}=6\sqrt{5}$

1 $6\sqrt{5}$

2 $3\sqrt{5}$

3 $2\sqrt{5}$

6 $\sqrt{5}$

$\Rightarrow$

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=\sqrt{3-\sqrt{\left(2\sqrt{5}-3\right)^2}}=$$

$$=\sqrt{3-\left(2\sqrt{5}-3\right)}=\sqrt{3-2\sqrt{5}+3}=$$

$$=\sqrt{6-2\sqrt{5}}=\sqrt{\left(\sqrt{5}-1\right)^2}=\sqrt{5}-1$$

Javob: A)

Izoh: ichidan hisoblab chiqish lozim. qisqacha ko'rinishi

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=\sqrt{3-\sqrt{\left(2\sqrt{5}-3\right)^2}}=$$

$$=\sqrt{6-2\sqrt{5}}=\sqrt{\left(\sqrt{5}-1\right)^2}=\sqrt{5}-1$$

3037. $\sqrt{2+\sqrt{9+4\sqrt{2}}}$ ni hisoblang.

A) $\sqrt{2}+1$ B) $1-\sqrt{2}$ C) 1 D) $3\sqrt{2}+1$

3038. $\sqrt{21+2\sqrt{19-6\sqrt{2}}}$ ni hisoblang.

A) $3\sqrt{2}+2$ B) $\sqrt{2}+3$ C) $3\sqrt{2}+1$ D) 5

3039. $\sqrt{13+30\sqrt{3+2\sqrt{2}}}$ ni hisoblang.

A) $\sqrt{2}+5$ B) $5+3\sqrt{2}$ C) $3\sqrt{2}-5$ D) 4

3040. $\sqrt{\sqrt{5}-\sqrt{6-2\sqrt{5}}}$ ni hisoblang.

A) 14 B) 9 C) 1 D) Ø

3041. $\sqrt{21-2\sqrt{19+6\sqrt{2}}}$ ni hisoblang.

A) $3\sqrt{2}-1$ B) $\sqrt{2}$ C) 3 D) $\sqrt{2}-1$

✓ $\sqrt{\sqrt{5}-\sqrt{3-\sqrt{29-12\sqrt{5}}}}$ ni hisoblang.

A) $\sqrt{5}-1$ B) 1 C) $\sqrt{19}$ D) $\sqrt{5}+1$

Yechilishi:

$$\sqrt{\sqrt{5}-\sqrt{3-\sqrt{29-12\sqrt{5}}}}=?$$

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=?$$

$$\sqrt{29-12\sqrt{5}}=?$$

ichidan hisoblab chiqish lozim.

$$\sqrt{29-12\sqrt{5}}=2\sqrt{5}-3$$

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=\sqrt{5}-1$$

$$\sqrt{\sqrt{5}-\sqrt{3-\sqrt{29-12\sqrt{5}}}}=1$$

$\sqrt{29-12\sqrt{5}}=$

$\frac{12\sqrt{5}}{2}=6\sqrt{5}$

1 $6\sqrt{5}$

2 $3\sqrt{5}$

3 $2\sqrt{5}$

6 $\sqrt{5}$

$\Rightarrow$

$$\sqrt{3-\sqrt{29-12\sqrt{5}}}=$$

$$=\sqrt{3-\sqrt{\left(2\sqrt{5}-3\right)^2}}=$$

$$=\sqrt{3-\left(2\sqrt{5}-3\right)}=\sqrt{3-2\sqrt{5}+3}=$$

$$=\sqrt{6-2\sqrt{5}}=\sqrt{\left(\sqrt{5}-1\right)^2}=\sqrt{5}-1$$

$$\sqrt{\sqrt{5}-\left(\sqrt{5}-1\right)}=\sqrt{\sqrt{5}-\sqrt{5}+1}=1$$

Javob: 1

3042. $\sqrt{13+30\sqrt{2+\sqrt{9+4\sqrt{2}}}}$ ni hisoblang.

A) $\sqrt{2}+1$ B) $1-\sqrt{2}$ C) $5+3\sqrt{2}$ D) $3\sqrt{2}+1$

3043. $\sqrt{5-5\sqrt{3}+\sqrt{9+3\sqrt{3}-\sqrt{7-4\sqrt{3}}}}$ ni hisoblang.

A) $3\sqrt{2}+2$ B) $\sqrt{3}+2$ C) $2-\sqrt{3}$ D) $1+\sqrt{3}$

3044. $\sqrt{9+3\sqrt{3}-\sqrt{9-3\sqrt{3}-\sqrt{7+4\sqrt{3}}}}$ ni hisoblang.

A) $3\sqrt{2}+2$ B) $\sqrt{3}+2$ C) $2-\sqrt{3}$ D) $1+\sqrt{3}$

3045. $\sqrt{8-3\sqrt{2}-\sqrt{4+5\sqrt{2}+\sqrt{6-4\sqrt{2}}}}$ ni hisoblang.

A) $3\sqrt{2}-1$ B) $2-\sqrt{2}$ C) 3 D) $\sqrt{2}+2$

✓ $\sqrt{\frac{65^3+35^3}{100}-35\cdot 65}$ ni hisoblang.

A) 50 B) 30 C) 40 D) 20

Yechilishi:

$$\sqrt{\frac{65^3+35^3}{100}-35\cdot 65}=\sqrt{\frac{(65+35)\left(65^2-65\cdot 35+35^2\right)}{100}-35\cdot 65}=$$

$$=\sqrt{\frac{(65+35)\left(65^2-65\cdot 35+35^2\right)}{100}-35\cdot 65}=$$

$$=\sqrt{65^2-65\cdot 35+35^2-35\cdot 65}=$$

$$=\sqrt{65^2-2\cdot 65\cdot 35+35^2}=\sqrt{(65-35)^2}=\sqrt{30^2}=30$$

Javob: 30

Izoh: formulaga tushushiga e'tibor bering.

$$a^3+b^3=(a+b)\left(a^2-ab+b^2\right)\Leftrightarrow(65+35)\left(65^2-65\cdot 35+35^2\right)$$

3046. $\sqrt{\frac{68^3-32^3}{36}+68\cdot 32}$ ni hisoblang.

A) 85 B) 100 C) 120 D) 10

3047. $\sqrt{\frac{59^3+41^3}{100}-59\cdot 41}$ ni hisoblang.

A) 18 B) 100 C) 12 D) 10

3048. $\sqrt{\frac{82^3-18^3}{64}+82\cdot 18}$ ni hisoblang.

A) 85 B) 100 C) 12 D) 10

✓ Quyidagi sonlardan qaysi biri $\sqrt{\frac{5}{48}}$ ga teng emas.

A) $\frac{\sqrt{5}}{\sqrt{16}\sqrt{3}}$ B) $\frac{1}{12}\sqrt{15}$ C) $\frac{1}{12}\sqrt{5}$ D) $\frac{\sqrt{5}}{4\sqrt{3}}$

Yechilishi: maxrajni irratsionallikdan yo'qatib fikr yuritish lozim.

$$\sqrt{\frac{5}{48}}=\frac{\sqrt{5}}{\sqrt{48}}=\frac{\sqrt{5}}{\sqrt{16\cdot 3}}=\frac{\sqrt{5}}{\sqrt{16}\sqrt{3}}=\frac{\sqrt{5}}{4\sqrt{3}}=\frac{\sqrt{5}\cdot\sqrt{3}}{4\sqrt{3}\cdot\sqrt{3}}=\frac{\sqrt{15}}{12}$$

Javob: (C)

3049. Quyidagi sonlardan qaysi biri $\sqrt{\frac{23}{44}}$ ga teng emas.

A) $\frac{\sqrt{23}}{\sqrt{4}\sqrt{11}}$ B) $\frac{1}{22}\sqrt{253}$ C) $\frac{1}{22}\sqrt{23}$ D) $\frac{\sqrt{23}}{2\sqrt{11}}$

3050. Quyidagi sonlardan qaysi biri $\sqrt{\frac{13}{80}}$ ga teng emas.

A) $\frac{\sqrt{13}}{\sqrt{16}\sqrt{5}}$ B) $\frac{1}{20}\sqrt{65}$ C) $\frac{\sqrt{13}}{4\sqrt{5}}$ D) $\frac{1}{20}\sqrt{13}$

3051. Quyidagi sonlardan qaysi biri $\sqrt{\frac{7}{108}}$ ga teng emas.

A) $\frac{1}{18}\sqrt{7}$ B) $\frac{1}{18}\sqrt{21}$ C) $\frac{\sqrt{7}}{\sqrt{36}\sqrt{3}}$ D) $\frac{\sqrt{7}}{6\sqrt{3}}$

✓ $c=\sqrt{4}+\sqrt{7}$ *va* $d=\sqrt{5}+\sqrt{6}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

Yechilishi:

$c=\sqrt{4}+\sqrt{7}$ *va* $d=\sqrt{5}+\sqrt{6}$

$\left(\sqrt{4}+\sqrt{7}\right)^2 \quad \left(\sqrt{5}+\sqrt{6}\right)^2$ **Javob: (B)**

$11+2\sqrt{28} \quad < \quad 11+2\sqrt{30}$

$c \quad < \quad d$

Izoh: murakkab ko'rinishda quyidagicha bo'ladi:

$c=\sqrt{2004}+\sqrt{2007}$ *va* $d=\sqrt{2005}+\sqrt{2006}$

$c=\sqrt{\underline{\underline{2004}}}+\sqrt{\underline{\underline{2007}}}$ *va* $d=\sqrt{\underline{\underline{2005}}}+\sqrt{\underline{\underline{2006}}}$

$c=\sqrt{4}+\sqrt{7}$ *va* $d=\sqrt{5}+\sqrt{6}$

$\left(\sqrt{4}+\sqrt{7}\right)^2 \quad \left(\sqrt{5}+\sqrt{6}\right)^2$

$11+2\sqrt{28} \quad < \quad 11+2\sqrt{30}$

$c \quad < \quad d$

3052. $c=\sqrt{11}+\sqrt{7}$ *va* $d=\sqrt{10}+\sqrt{8}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

3053. $c=\sqrt{13}+\sqrt{11}$ *va* $d=\sqrt{19}+\sqrt{5}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

3054. $a=\sqrt{1995}+\sqrt{1997}$ *va* $b=2\sqrt{1996}$ sonlar uchun qaysi munosabat o'rinli?

A) $a>b$ B) $a=b$ C) $a=b-1$ D) $a<b$

3055. $a=\sqrt{2016}+\sqrt{2018}$ *va* $b=2\sqrt{2017}$ sonlar uchun qaysi munosabat o'rinli?

A) $a>b$ B) $a=b$ C) $a=b-1$ D) $a<b$

3056. $a=\sqrt{1997}-\sqrt{1995}$ *va* $b=2\sqrt{1996}$ sonlar uchun qaysi munosabat o'rinli?

A) $a=b-1$ B) $a=b$ C) $a>b$ D) $a<b$

3057. $c=\sqrt{11}-\sqrt{7}$ *va* $d=\sqrt{10}-\sqrt{8}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

3058. $c=\sqrt{13}-\sqrt{11}$ va $d=\sqrt{19}-\sqrt{5}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

✓ $c=\sqrt{4}-\sqrt{6}$ va $d=\sqrt{5}-\sqrt{7}$ sonlar uchun qaysi munosabat o'rinli?

A) $c=d$ B) $c<d$ C) $c=d-1$ D) $c>d$

Yechilishi:

$c=\sqrt{4}-\sqrt{6}$ va $d=\sqrt{5}-\sqrt{7}$

$\sqrt{4}-\sqrt{6}$ va $\sqrt{5}-\sqrt{7}$

$\sqrt{4}+\sqrt{7}$ va $\sqrt{5}+\sqrt{6}$

$(\sqrt{4}+\sqrt{7})^2 \quad (\sqrt{5}+\sqrt{6})^2$

$11+2\sqrt{28} < 11+2\sqrt{30}$

$c < d$

Javob: (B)

Izoh: chapdan o'ngga yoki o'ngdan chapga nega aynan shu sonlar o'tgani sababi:

$\sqrt{4}-\sqrt{6}$ va $\sqrt{5}-\sqrt{7}$	$\sqrt{4}+\sqrt{7}$ va $\sqrt{5}+\sqrt{6}$
$4+6=10 \quad 5+7=12$	$4+7=11 \quad 5+6=11$
$10\neq 12$	$11=11$

3059. $a=\sqrt{13}-\sqrt{12}$ va $b=\sqrt{14}-\sqrt{13}$ sonlar uchun qaysi munosabat o'rinli?

A) $a>b$ B) $a=b$ C) $a=b-1$ D) $a<b$

3060. $a=\sqrt{88}-\sqrt{87}$ va $b=\sqrt{84}-\sqrt{83}$ sonlar uchun qaysi munosabat o'rinli?

A) $a<b$ B) $a=b$ C) $a=b-1$ D) $a>b$

✓ Agar $\sqrt{t^5+3}-\sqrt{t^5-2}=7$ bo'lsa, $\sqrt{t^5+3}+\sqrt{t^5-2}$ ning qiymati nechiga teng bo'ladi?

A) $\frac{1}{7}$ B) $\frac{2}{7}$ C) $\frac{5}{7}$ D) $\frac{4}{7}$

Yechilish: $\times\begin{cases}\sqrt{t^5+3}-\sqrt{t^5-2}=7\\ \sqrt{t^5+3}+\sqrt{t^5-2}=x\end{cases}$

$\left(\sqrt{t^5+3}-\sqrt{t^5-2}\right)\cdot\left(\sqrt{t^5+3}+\sqrt{t^5-2}\right)=7x$

$\sqrt{t^5+3}^2-\sqrt{t^5-2}^2=7x$

$t^5+3-\left(t^5-2\right)=7x$

$t^5+3-t^5+2=7x$

$5=7x$

$x=\frac{5}{7}$ **Javob**: (C)

Izoh: siste ma qilib ikkita tomonini ko'paytirib yuboring.

3061. Agar $\sqrt{n^3+13}-\sqrt{n^3-9}=5$ bo'lsa, $\sqrt{n^3+13}+\sqrt{n^3-9}$ ning qiymati nechiga teng bo'ladi?

A) $\frac{6}{5}$ B) $\frac{4}{5}$ C) $\frac{22}{5}$ D) $\frac{32}{5}$

3062. Agar $\sqrt{k^4+35}-\sqrt{k^4-7}=14$ bo'lsa, $\sqrt{k^4+35}+\sqrt{k^4-7}$ ning qiymati nechiga teng bo'ladi?

A) $\frac{1}{2}$ B) 3 C) $\frac{5}{14}$ D) 2

Ikkinchi tartibli tenglamalar sistemasi

✓ $\begin{cases}x+y=3\\ x^2-y^2=6\end{cases}$ sistemaning yechimini toping.

A) $(2,5;\,0,5)$ B) $(4;-2)va(-4;-2)$

C) $(-4;\,2)$ D) $(2;4)$

Yechilishi: **Javob: (A)**

$\begin{cases}x+y=3\\ x^2-y^2=6\end{cases}\Leftrightarrow\begin{cases}x+y=3\\ (x-y)(x+y)=6\end{cases}\Leftrightarrow\begin{cases}x+y=3\\ (x-y)\,3=6\end{cases}$

$\Rightarrow\begin{cases}x+y=3\\ x-y=2\end{cases}+\begin{cases}x+y=3\\ x-y=2\end{cases}$

$2x=5$

$x=2,5$

$x+y=3$

$2,5+y=3\Rightarrow y=0,5 \quad (2,5;0,5)$

Izoh: sistemani formulaga kora 2 taga ajratib berilganini qo'yamiz.

$\begin{cases}x+y=3\\ x^2-y^2=6\end{cases}\Leftrightarrow\begin{cases}x+y=3\\ (x-y)\underbrace{(x+y)}_{3}=6\end{cases}\Leftrightarrow\begin{cases}x+y=3\\ (x-y)\,3=6\end{cases}\Leftrightarrow\begin{cases}x+y=3\\ x-y=2\end{cases}$

3063. $\begin{cases}x+y=7\\ x^2-y^2=35\end{cases}$ sistemaning yechimini toping.

A) $(4;\,3)$ B) $(-3;-3)$ C) $(1;\,6)$ D) $(6;1)$

3064. $\begin{cases}x^2-y^2=33\\ x+y=11\end{cases}$ sistemaning yechimini toping.

A) $(-5;\,1)$ B) $(11;\,-5)$ C) $(7;\,4)$ D) $(-1;-4)$

✓ $\begin{cases}y+4=2\\ x^2y=-2\end{cases}$ sistemaning yechimini toping.

A) $(2,5;\,0,5)$ va $(0,5;\,2,5)$ B) $(4;-2)va(-4;-2)$

C) $(-4;\,2)$ D) $(2;4)$

Yechilishi:

$\begin{cases} y+4=2 \\ x^2 y=-32 \end{cases} \Leftrightarrow \begin{cases} y=-2 \\ x^2 y=-32 \end{cases}$

$x^2 y=-32$

$-2x^2=-32$

$x^2=16$

$x_{12}=\pm 4$

$(4;-2)$ va $(-4;-2)$

Javob: (B)

3065. $\begin{cases} x+17=14 \\ y^2 x=-27 \end{cases}$ sistemaning yechimini toping.

A) $(-3;-3)$ va $(3;-3)$ B) $(-3;3)$ va $(-3;-3)$

C) $(4;1)$ va $(-1;-4)$ D) $(-1;-3)$

3066. $\begin{cases} x+23=34 \\ y^2 x=275 \end{cases}$ sistemaning yechimini toping.

A) $(-5;11)$ va $(5;11)$ B) $(11;-5)$ va $(11;5)$

C) $(5;1)$ va $(-1;-5)$ D) $(-1;-4)$

3067. $\begin{cases} x+17=22 \\ y^2 x=-25 \end{cases}$ sistemaning yechimini toping.

A) $(-1;8)$ va $(5;-4)$ B) $\varnothing$

C) $(-1;5)$ va $(8;-4)$ D) $(5;-4)$

✓ $\begin{cases} xy^2=-25 \\ x^2-1=0 \end{cases}$ sistemaning yechimini toping.

A) $(2,5;0,5)$ va $(0,5;2,5)$ B) $(4;-2)$va$(-4;-2)$

C) $(-4;2)$ D) $(-1;5)$va$(-1;-5)$

Yechilishi:

$\begin{cases} xy^2=-25 \\ x^2-1=0 \end{cases} \Leftrightarrow \begin{cases} xy^2=-25 \\ x^2=1 \end{cases} \Leftrightarrow \begin{cases} xy^2=-25 \\ x=\pm 1 \end{cases}$

$xy^2=-25$
$1y^2=-25$
$\varnothing$

$\Leftrightarrow$

$xy^2=-25$
$-1y^2=-25$
$y^2=25$
$y_{12}=\pm 5$

$(-1;5)$ va $(-1;-5)$

Javob: (D)

3068. $\begin{cases} yx^2=-\frac{32}{25} \\ y^2-4=0 \end{cases}$ sistemaning yechimini toping.

A) $(-0,8;-2)$ va $(0,8;-2)$ B) $(-0,4;3)$ va $(-3;-2)$

C) $(4;1)$ va $(-1;-4)$ D) $(-0,4;-2)$

3069. $\begin{cases} x^2-16=0 \\ y^2 x=64 \end{cases}$ sistemaning yechimini toping.

A) $(4;4)$ va $(-4;-4)$ B) $(11;-5)$ va $(11;5)$

C) $(4;4)$ va $(4;-4)$ D) $(-1;-4)$

✓ $\begin{cases} x^2+y^2-2xy=4 \\ x+y=3 \end{cases}$ sistemaning yechimini toping.

A) $(2,5;0,5)$ va $(0,5;2,5)$ B) $(2,5;0,5)$

C) $(0,5;2,5)$ D) $(2;5)$

Yechilishi:

$\begin{cases} x^2+y^2-2xy=4 \\ x+y=3 \end{cases} \Leftrightarrow \begin{cases} (x-y)^2=4 \\ x+y=3 \end{cases}$

$\begin{cases} (x-y)^2=4 \\ x+y=3 \end{cases}$ $\searrow x-y=\pm\sqrt{4}$, $x-y=\pm 2$

$\swarrow$ $\searrow$

$+\begin{cases} x-y=2 \\ x+y=3 \end{cases}$

$2x=5$
$x=2,5$
$2,5+y=3$
$y=0,5$

$+\begin{cases} x-y=-2 \\ x+y=3 \end{cases}$

$2x=1$
$x=0,5$
$0,5+y=3$
$y=2,5$

$(2,5;0,5)$ $(0,5;2,5)$ **Javob: (A)**

Izoh: Sistemani formulaga tushgani uchun yeg'ib olib, ildizdan chiqarib ishlash lozim.

3070. $\begin{cases} x^2+y^2+2xy=25 \\ x-y=3 \end{cases}$ sistemaning yechimini toping.

A) $(-4;-1)$ va $(1;4)$ B) $(4;1)$

C) $(4;1)$ va $(-1;-4)$ D) $(-1;-4)$

3071. $\begin{cases} x^2+y^2-2xy=121 \\ x+y=7 \end{cases}$ sistemaning yechimini toping.

A) $(9;-2)$ va $(-2;9)$ B) $(4;1)$

C) $(4;1)$ va $(-1;-4)$ D) $(-1;-4)$

3072. $\begin{cases} x^2+y^2-2xy=81 \\ 2x+y=6 \end{cases}$ sistemaning yechimini toping.

A) $(-1;8)$ va $(5;-4)$ B) $(-1;8)$

C) $(-1;5)$ va $(8;-4)$ D) $(5;-4)$

✓ $\begin{cases} x^2-y^2-3x=12 \\ x-y=0 \end{cases}$ sistemaning yechimini toping.

A) $(4;4)$ B) $(-4;-4)$ C) $(0,5;2,5)$ D) $(2;4)$

Yechilishi:

$$\begin{cases} x^2-y^2-3x=12 \\ x-y=0 \end{cases} \begin{cases} x^2-y^2-3x=12 \\ x=y \end{cases} \Rightarrow \begin{array}{l} x^2-y^2-3x=12 \\ y^2-y^2-3y=12 \\ -3y=12 \\ y=-4 \\ x=y \quad x=-4 \end{array}$$

$(-4;-4)$

Javob: (B)

3073. $\begin{cases} y^2-x^2-5y=-45 \\ x-y=0 \end{cases}$ sistemaning yechimini toping.

A) $(-9;9)$ B) $(4;-9)$ C) $(9;9)$ D) $(-9;-9)$

3074. $\begin{cases} x^2-y^2-4x=32 \\ x+y=0 \end{cases}$ sistemaning yechimini toping.

A) $(-8;8)$ B) $(4;8)$ C) $(4;1)$ D) $(-1;-4)$

✓ $\begin{cases} x^2+y^2=9 \\ y-x=-3 \end{cases}$ sistemasi nechta yechimga ega.

A) 1 B) 2 C) 4 D) 3

Yechilishi:

$$\begin{cases} x^2+y^2=9 \\ y-x=-3 \end{cases} \begin{cases} x^2+y^2=9 \\ y=x-3 \end{cases} \Rightarrow \begin{array}{l} x^2+y^2=9 \\ x^2+(x-3)^2=9 \\ 2x^2-6x+9=9 \\ 2x^2-6x=0 \\ 2x(x-3)=0 \\ x_1=0 \quad x_2=3 \end{array}$$

$x_1=0 \begin{cases} y=x-3 \\ y=0-3 \\ y=-3 \end{cases} (0;-3)$ $x_1=3 \begin{cases} y=x-3 \\ y=3-3 \\ y=0 \end{cases} (3;0)$

$(0;-3)$ *va* $(3;0)$

1 2 $\Rightarrow$ 2 *ta*

J (B)

Izoh: Sistemani yakkalab o'rniga qoyib yechish lozim.

3075. $\begin{cases} x^2+y^2=4 \\ x-y=-2 \end{cases}$ sistemasi nechta yechimga ega.

A) 4 **B) 3** **C) 2** D) 1

3076. $\begin{cases} x^2+y^2=25 \\ x-y=5 \end{cases}$ sistemasi nechta yechimga ega.

A) 4 B) 3 C) 2 D) 1

✓ $\begin{cases} x^2+y^2=7 \\ x\cdot y=1 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x+y=?$

A) 1 B) ± 2 C) 4 D) ± 3

Yechilishi:

$$\begin{cases} x^2+y^2=7 \\ x\cdot y=1 \quad (\cdot 2) \end{cases} \Leftrightarrow + \begin{cases} x^2+y^2=7 \\ 2x\cdot y=2 \end{cases}$$

$$x^2+2x\cdot y+y^2=9$$

$$(x+y)^2=9$$

$$x+y=\pm 3$$

Javob: (D)

Izoh: Sistemani $(\cdot 2)$ sababi formulaga tushurishdir.

3077. $\begin{cases} x^2+y^2=17 \\ x\cdot y=4 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x+y=?$

A) ± 5 B) ± 3 C) 2 D) ± 4

3078. $\begin{cases} x\cdot y=3 \\ x^2+y^2=55 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x-y=?$

A) ± 4 B) ± 7 C) ± 2 D) 1

3079. $\begin{cases} x^2+xy=41 \\ xy+y^2=23 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x+y=?$

A) 4 B) ± 3 C) ± 7 D) ± 8

3080. $\begin{cases} -xy+x^2=2 \\ y^2-yx=98 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x-y=?$

A) 10 B) ± 10 C) ± 7 D) ± 8

3081. $\begin{cases} x^2-2xy+y^2=9 \\ yx=10 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x+y=?$

A) 10 B) ± 7 C) ± 9 D) ± 8

3082. $\begin{cases} x^2+2xy+y^2=188 \\ yx=11 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x-y=?$

A) ± 12 B) ± 11 C) ± 7 D) ± 10

✓ $\begin{cases} xy=6 \\ xz=1 \\ yz=8 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x\cdot y\cdot z=?$

A) $\pm 4\sqrt{3}$ B) ± 2 C) 48 D) 3

Yechilishi:

$$\times\begin{cases} xy=6 \\ xz=1 \\ yz=8 \end{cases} \Rightarrow \begin{vmatrix} x^2y^2z^2=6\cdot1\cdot8 \\ xyz=\pm\sqrt{48} \\ xyz=\pm4\sqrt{3} \end{vmatrix}$$ **Javob: (A)**

Izoh: Sistemani 2 ta tomonini ko'paytirib yuborish usulida ishlanadi.

3083. $\begin{cases} xy=7 \\ xz=14 \\ yz=2 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x\cdot y\cdot z=?$

A) 15 B) $\pm\sqrt{15}$ C) $\pm\sqrt{14}$ D) ±14

3084. $\begin{cases} xy=3 \\ xz=15 \\ yz=5 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $x\cdot y\cdot z=?$

A) 15 B) ±15 C) $\pm\sqrt{14}$ D) ±4

3085. $\begin{cases} xy=8 \\ xz=4 \\ yz=2 \end{cases}$ sistemaning yechimi $(x;y)$ bo'lsa, $\sqrt{x\cdot y\cdot z}=?$

A) $2\sqrt{2}$ B)±8 C) ±2 D) $\pm2\sqrt{2}$

✓ Agar ushbu $2x^2+3xy+4y^2=2x^2+3xy+\beta y^2$ ifoda ayniyat bo'lsa, $\beta=?$

A) $\pm4\sqrt{3}$ B) ±2 C) 48 D) 4

Yechilishi: ayniyat 2 ta tarafi teng ifodadir.

$$\underline{\underline{2x^2}}+\underline{3xy}+\underline{\underline{4y^2}}=\underline{\underline{2x^2}}+\underline{3xy}+\underline{\underline{\beta y^2}}$$

$$\Downarrow$$

$$4=\beta$$

Javob: (D)

Izoh: 2 ta tarafi teng bo'lgani uchun oxirlari ham tengdir.

3086. Agar ushbu $x^2+\alpha xy+9y^2=x^2+15xy+9y^2$ ifoda ayniyat bo'lsa, $\alpha-?$

A) 15 B) $\pm\sqrt{15}$ C) $\pm\sqrt{14}$ D) ±4

3087. Agar ushbu $-x^2-2xy+6y^2=\gamma x^2-2xy+6y^2$ ifoda ayniyat bo'lsa, $\gamma-?$

A) 15 B) -1 C) $\pm\sqrt{14}$ D) 0

3088. Agar ushbu $4x^2-5xy-4y^2=4x^2-5xy+\mu y^2$ ifoda ayniyat bo'lsa, $\mu-?$

A) 15 B) -4 C) $\pm\sqrt{14}$ D) 0

3089. Agar ushbu $a^2+\alpha xy-\frac{1}{2}b^2=a^2-2xy+\lambda b^2$ ifoda ayniyat bo'lsa, $\alpha\cdot\lambda-?$

A) 15 B) 2 C) 1 D) ±4

3090. Agar ushbu $\mu m^5-\frac{3}{5}xy-\frac{4}{5}b^2=m^5+\alpha xy+\lambda b^2$ ifoda ayniyat bo'lsa, $\mu+\alpha+\lambda-?$

A) 1,5 B) 2 C) $-0,4$ D) $\pm0,4$

✓ Agar ushbu $(-3x+ay)(\beta x-2y)=\gamma x^2+7xy+2y^2$ ifoda ayniyat bo'lsa, $\beta=?$

A) $\pm4\sqrt{3}$ B) -1 C) 48 D) 4

Yechilishi: ayniyat 2 ta tarafi teng ifodadir.

$$(-3x+ay)(\beta x-2y)=\gamma x^2+7xy+2y^2$$

$$-3\beta x^2+6xy+a\beta xy-2ay^2=\gamma x^2+7xy+2y^2$$

$$-3\beta x^2+(6+a\beta)xy-2ay^2=\gamma x^2+7xy+2y^2$$

$$\begin{cases} -3\beta=\gamma \\ 6+a\beta=7 \\ -2a=2 \end{cases} \Leftrightarrow \begin{cases} \gamma=3 \\ \beta=-1 \\ a=-1 \end{cases}$$

Javob: (B)

Izoh: qavs ochib 2 ta tarafini tenglaymiz.

3091. Agar ushbu $(-5x+\alpha y)(\beta x-2y)=\gamma x^2+9xy+2y^2$ ifoda ayniyat bo'lsa, $\beta=?$

A)-3 B) 1 C) -1 D) ±4

3092. Agar ushbu $(5x+ay)(\beta x-2y)=\gamma x^2-6xy+20y^2$ ifoda ayniyat bo'lsa, $\gamma=?$

A)-10 B) 2 C) $\pm\sqrt{14}$ D) -2

3093. Agar ushbu $(\alpha x+2y)(3x+by)=cx^2+7xy+y^2$ ifoda ayniyat bo'lsa, $c=?$

A) 6 B) 2 C) 4 D) 0

✓ Agar ushbu $\frac{1}{(x+1)^2\cdot(x+2)}=\frac{a}{x+1}+\frac{b}{(x+1)^2}+\frac{c}{x+2}$ ifoda ayniyat bo'lsa, $a,b,c=?$

A) $a=-1, b=1, c=1$ B) $a=-1, b=-1, c=-1$

C) $a=-1, b=-1, c=1$ D) $a=-1, b=1, c=-1$

Yechilishi: ayniyat 2 ta tarafi teng ifodadir. umumiy mahraj beramiz.

$$\frac{1}{(x+1)^2\cdot(x+2)}=\frac{a}{x+1}+\frac{b}{(x+1)^2}+\frac{c}{x+2}$$

$$\frac{a}{x+1}+\frac{b}{(x+1)^2}+\frac{c}{x+2}=\frac{a(x+1)(x+2)+b(x+2)+c(x+1)^2}{(x+1)^2\cdot(x+2)}$$

$$\frac{1}{(x+1)^2\cdot(x+2)}=\frac{a(x+1)(x+2)+b(x+2)+c(x+1)^2}{(x+1)^2\cdot(x+2)}$$

ularning maxrajlari teng ekan suratlarini tenglaymiz.

$$a(x+1)(x+2)+b(x+2)+c(x+1)^2=1$$

$x=-1$ | $a(x+1)(x+2)+b(x+2)+c(x+1)^2$; $a\cdot 0\cdot 1+b\cdot 1+c\cdot 0=1$

$b=1$

$x=-2$ | $a(x+1)(x+2)+b(x+2)+c(x+1)^2$; $a\cdot -1\cdot 0+b\cdot 0+c\cdot 1=1$

$c=1$

$x=0$ | $a(x+1)(x+2)+b(x+2)+c(x+1)^2$; $a\cdot 1\cdot 2+b\cdot 2+c\cdot 1=1$; $2a+2+1=1$; $2a=-2$; $a=-1$

$a=-1$

Javob: (A)

Izoh: "x" ga shunday son beringki qavs nolga aylansin.

3094. Agar ushbu $\frac{1}{x^2-5x-6}=\frac{a}{x-6}+\frac{b}{x+1}$ ifoda ayniyat bo'lsa, $a,b=?$

A) $a=-1, b=1$ B) $a=-\frac{1}{7}, b=\frac{1}{7}$

C) $a=\frac{1}{7}, b=-\frac{1}{7}$ D) $a=7, b=-1$

3095. Agar ushbu $\frac{2}{x^2+x-6}=\frac{a}{x-2}+\frac{b}{x+3}$ ifoda ayniyat bo'lsa, $a,b=?$

A) $a=\frac{2}{5}, b=-\frac{2}{5}$ B) $a=-\frac{1}{5}, b=\frac{3}{5}$

C) $a=1, b=1$ D) $a=5, b=-5$

3096. Agar ushbu $\frac{1}{4x^2-1}=\frac{a}{2x-1}-\frac{b}{2x+1}$ ifoda ayniyat bo'lsa, $a,b-?$

A) $a=-1, b=-0,5$ B) $a=-1, b=1$

C) $a=\frac{1}{2}, b=-\frac{1}{2}$ D) $a=\frac{1}{2}, b=\frac{1}{2}$

✓ $9-a$ ni ko'paytuvchilarga ajrating$(a\geq 0)$.

A) $\left(3-\sqrt{a}\right)\left(3+\sqrt{a}\right)$ B) $\left(3-\sqrt{a}\right)(3+a)$

C) $(3-a)(3+a)$ D) $(3-a)\left(3+\sqrt{a}\right)$

Yechilishi:

$9-a=3^2-\sqrt{a}^2=\left(3-\sqrt{a}\right)\left(3+\sqrt{a}\right)$ **J: (A)**

Izoh: formulaga tushushini solishtiring.

$$\underbrace{3^2-\sqrt{a}^2}_{a^2-b^2}=\underbrace{\left(3-\sqrt{a}\right)}_{(a-b)}\underbrace{\left(3+\sqrt{a}\right)}_{(a+b)}$$

3097. $25-x$ ni ko'paytuvchilarga ajrating$(x\geq 0)$.

A) $\left(5-\sqrt{x}\right)(5+x)$ B) $\left(5-\sqrt{x}\right)\left(5+\sqrt{x}\right)$

C) $(5-x)\left(5+\sqrt{x}\right)$ D) $(5-x)(5+x)$

3098. $b-16$ ni ko'paytuvchilarga ajrating$(b\geq 0)$.

A) $\left(4-\sqrt{b}\right)\left(\sqrt{b}+4\right)$ B) $\left(\sqrt{b}+4\right)\left(\sqrt{b}+4\right)$

C) $\left(\sqrt{b}-4\right)\left(\sqrt{b}+4\right)$ D) $(b-4)(b+4)$

3099. $y-\frac{9}{49}$ ni ko'paytuvchilarga ajrating$(y\geq 0)$.

A) $\left(\sqrt{y}-\frac{3}{7}\right)\left(y+\frac{3}{7}\right)$ B) $\left(\sqrt{y}-\frac{3}{7}\right)\left(\sqrt{y}+\frac{3}{7}\right)$

C) $\left(y-\frac{3}{7}\right)\left(\sqrt{y}+\frac{3}{7}\right)$ D) $\left(y-\frac{3}{7}\right)\left(y+\frac{3}{7}\right)$

3100. $0,01-m$ ni ko'paytuvchilarga ajrating$(m\geq 0)$.

A) $\left(0,1-\sqrt{m}\right)\left(0,1+\sqrt{m}\right)$ B) $(0,1+m)\left(0,1-\sqrt{m}\right)$

C) $\left(0,1-\sqrt{m}\right)(0,1+m)$ D) $\left(0,1-\sqrt{m}\right)\left(0,01+\sqrt{m}\right)$

✓ $\frac{25-a}{5+\sqrt{a}}$ ni qisqartiring$(a\geq 0)$.

A) $5+\sqrt{a}$ B) $5-a$ C) $5+a$ D) $5-\sqrt{a}$

Yechilishi:

$\frac{25-a}{5+\sqrt{a}}=\frac{\left(5-\sqrt{a}\right)\left(5+\sqrt{a}\right)}{5+\sqrt{a}}=5-\sqrt{a}$ **J: (D)**

Izoh: ko'paytuvchilarga ajratib keyin qisqartiring. yana bir misol:

$$\frac{\sqrt{15}-5}{\sqrt{6}-\sqrt{10}}=\frac{\sqrt{5\cdot 3}-\sqrt{5}^2}{\sqrt{2\cdot 3}-\sqrt{2\cdot 5}}=\frac{\sqrt{5}\left(\sqrt{3}-\sqrt{5}\right)}{\sqrt{2}\left(\sqrt{3}-\sqrt{5}\right)}=\frac{\sqrt{5}}{\sqrt{2}}=\frac{\sqrt{10}}{2}$$

3101. $\frac{0,49-x}{0,7-\sqrt{x}}$ ni qisqartiring$(x\geq 0, x\neq 0,49)$.

A) $7+\sqrt{x}$ B) $0,7+\sqrt{x}$ C) $0,7+x$ D) $0,7-x$

3102. $\frac{0,81-b}{0,9+\sqrt{b}}$ ni qisqartiring$(b\geq 0)$.

A) $9-\sqrt{b}$ B) $0,3+\sqrt{b}$ C) $0,9-\sqrt{b}$ D) $0,9-b$

3103. $\frac{x-y}{\sqrt{y}+\sqrt{x}}$ ni qisqartiring$(x,y\geq 0)$.

A) $\sqrt{y}-\sqrt{x}$ B) $\sqrt{x}+\sqrt{y}$

C) $\sqrt{x}-\sqrt{y}$ D) $\sqrt{y}-x$

3104. $\frac{5a^2-35}{a-\sqrt{7}}$ ni qisqartiring $(a\geq 0)$.

A) $5(a+\sqrt{7})$ B) $a+\sqrt{7}$ C) $\frac{1}{5(a+\sqrt{7})}$ D) $5(\sqrt{a}+\sqrt{7})$

3105. $\frac{x^3-3x}{x+\sqrt{3}}$ ni qisqartiring $(x\geq 0)$.

A) $x(x+\sqrt{3})$ B) $x(x-\sqrt{3})$ C) $\frac{1}{x(x+\sqrt{3})}$ D) $x(\sqrt{x}-\sqrt{3})$

3106. $\frac{5x-5\sqrt{3}}{3-x^2}$ ni qisqartiring $(x\geq 0)$.

A) $x(x+\sqrt{3})$ B) $5(x-\sqrt{3})$

C) $-\frac{5}{\sqrt{3}+x}$ D) $-\frac{5}{\sqrt{3}-x}$

3107. $\frac{4\sqrt{a}+\sqrt{b}}{b-16a}$ ni qisqartiring $(a,b\geq 0)$.

A) $4(a+\sqrt{b})$ B) $5(a-\sqrt{b})$

C) $\frac{1}{4\sqrt{a}-\sqrt{b}}$ D) $-\frac{1}{4\sqrt{a}-\sqrt{b}}$

3108. $\frac{9-2\sqrt{3}}{3\sqrt{6}-2\sqrt{2}}$ ni qisqartiring.

A) $\sqrt{6}$ B) $\frac{\sqrt{6}}{2}$ C) $\frac{2}{\sqrt{6}}$ D) $-\frac{\sqrt{6}}{2}$

✓ $\frac{a-6\sqrt{a}+9}{\sqrt{a}-3}$ ni qisqartiring $(a\geq 0)$.

A) $3+\sqrt{a}$ B) $3-a$ C) $3+a$ D) $\sqrt{a}-3$

Yechilishi:

$\frac{a-6\sqrt{a}+9}{\sqrt{a}-3}=\frac{(\sqrt{a}-3)^2}{\sqrt{a}-3}=\sqrt{a}-3$ **Javob: (D)**

Izoh: ko'paytuvchilarga ajratib keyin qisqartiring.

3109. $\frac{x+2\sqrt{x}+1}{1+\sqrt{x}}$ ni qisqartiring $(x\geq 0)$.

A) $1-\sqrt{x}$ B) $1+\sqrt{x}$ C) $1+x$ D) $1-x$

3110. $\frac{\sqrt{n}-\sqrt{m}}{m-2\sqrt{m\cdot n}+n}$ ni qisqartiring $(n,m\geq 0)$.

A) $m-\sqrt{n}$ B) $m+\sqrt{n}$ C) $\frac{1}{\sqrt{n}-\sqrt{m}}$ D) $\frac{1}{\sqrt{m}-\sqrt{n}}$

3111. $\frac{x-y}{y-2\sqrt{yx}+x}$ ni qisqartiring $(x,y\geq 0)$.

A) $\sqrt{y}-\sqrt{x}$ B) $\frac{\sqrt{x}+\sqrt{y}}{\sqrt{x}-\sqrt{y}}$ C) $\frac{\sqrt{x}+\sqrt{y}}{\sqrt{y}-\sqrt{x}}$ D) $\sqrt{y}-x$

✓ $\frac{a-36}{\sqrt{a}-6}-\sqrt{a}$ ni soddalashtiring $(a\geq 0)$.

A) 6 B) $3-a$ C) $3+a$ D) $\sqrt{a}-3$

Yechilishi:

$\frac{a-36}{\sqrt{a}-6}-\sqrt{a}=\frac{(\sqrt{a}-6)(\sqrt{a}+6)}{\sqrt{a}-6}-\sqrt{a}=\sqrt{a}+6-\sqrt{a}=6$

Javob: (A)

Izoh: Qisqartiring keyin soddalashtiring.

3112. $\frac{a-b}{\sqrt{a}-\sqrt{b}}-\sqrt{b}$ ni soddalashtiring $(a,b\geq 0)$.

A) $\sqrt{b}$ B) $\sqrt{a}$ C) $1+b$ D) $1-\sqrt{a}$

3113. $2(\sqrt{x}+\sqrt{y})-\frac{y-x}{\sqrt{x}+\sqrt{y}}$ ni soddalashtiring $(x,y\geq 0)$.

A) $\sqrt{y}+3\sqrt{x}$ B) $\sqrt{x}+4\sqrt{y}$

C) $\sqrt{x}+3\sqrt{y}$ D) $\frac{1}{\sqrt{y}-\sqrt{x}}$

3114. $\frac{a-b}{\sqrt{a}+\sqrt{b}}-\sqrt{b}$ ni soddalashtiring $(a,b\geq 0)$.

A) $\sqrt{b}$ B) $\sqrt{a}-2\sqrt{b}$ C) $1+b$ D) $1-\sqrt{a}$

✓ $\frac{\sqrt{a^3}}{\sqrt{a}+\sqrt{b}}-\frac{a\sqrt{b}}{\sqrt{b}-\sqrt{a}}-\frac{2a^2-4ab}{a-b}$ ni soddalashtiring $(a,b\geq 0)$.

A) 6 B) $\frac{a^2+5ab}{a-b}$ C) $\frac{-a^2+5ab}{a-b}$ D) $\sqrt{a}-3$

Yechilishi:

$\frac{\sqrt{a^3}}{\sqrt{a}+\sqrt{b}}-\frac{a\sqrt{b}}{\sqrt{b}-\sqrt{a}}-\frac{2a^2-4ab}{a-b}=$

$=\frac{(\sqrt{a}-\sqrt{b})\sqrt{a^3}}{\sqrt{a}+\sqrt{b}}+\frac{(\sqrt{a}+\sqrt{b})a\sqrt{b}}{\sqrt{a}-\sqrt{b}}-\frac{1/2a^2-4ab}{a-b}=$ **J: (C)**

$=\frac{a^2-a\sqrt{ab}+a\sqrt{ab}+ab-2a^2+4ab}{(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b})}=\frac{-a^2+5ab}{a-b}$

Izoh: umumiy mahraj berib ishlash lozim.

3115. $\left(\frac{1}{\sqrt{n}}-\sqrt{n}\right)\cdot\frac{\sqrt{nm}}{1+\sqrt{n}}$ ni soddalashtiring $(n,m\geq 0)$.

A) $\sqrt{n}$ B) $\sqrt{m}$ C) $1+\sqrt{n}$ D) $\sqrt{m}-\sqrt{nm}$

3116. $\frac{a+2\sqrt{ac}+c}{c}:\frac{\sqrt{ac}-c}{a-c}$ ni soddalashtiring $(a,c\geq 0)$.

A) $\frac{\sqrt{a}+\sqrt{c}}{\sqrt{c}}$ B) $\frac{\sqrt{a}+\sqrt{c}}{c}$ C) $\frac{c+\sqrt{a}}{\sqrt{c}}$ D) $\frac{\sqrt{a}-\sqrt{c}}{\sqrt{c}}$

3117. $\left(\sqrt{ab}-\frac{ab}{a+\sqrt{ab}}\right):\frac{a^2b}{a-b}$ ni soddalashtiring.

A) $\frac{\sqrt{a}-\sqrt{b}}{a\sqrt{b}}$ B) $\sqrt{a}-2\sqrt{b}$ C) $1+b$ D) $1-\sqrt{a}$

3118. $\left(\frac{a+\sqrt{b}}{a-\sqrt{b}}+\frac{a-\sqrt{b}}{a+\sqrt{b}}\right)\cdot\frac{a-\sqrt{b}}{a^2+b}$ ni soddalashtiring.

A) $\sqrt{b}$ B) $\frac{2}{a+\sqrt{b}}$ C) $1+b$ D) $1-\sqrt{a}$

3119. $\left(\frac{c-\sqrt{d}}{c+\sqrt{d}}-\frac{c+\sqrt{d}}{c-\sqrt{d}}\right):\frac{2c\sqrt{d}}{c+\sqrt{d}}$ ni soddalashtiring.

A) $\sqrt{c}$ B) $c-2\sqrt{d}$ C) $-\frac{2}{c-\sqrt{d}}$ D) $1-\sqrt{c}$

3120. $\left(2+\sqrt{b}\right)\left(\frac{2}{2+\sqrt{b}}-\frac{2}{2-\sqrt{b}}+\frac{2b}{4-b}\right)$ ni soddalashtiring $(a,b\geq 0)$.

A) $\sqrt{b}$ B) $\sqrt{a}-2\sqrt{b}$ C) $1+b$ D) $-2\sqrt{b}$

✓ $\left(\frac{a+1}{\sqrt{a}-1}-\sqrt{a+1}\right):\left(\frac{1}{\sqrt{a+1}}-\frac{1}{\sqrt{a}-1}\right)$ ni soddalashtiring $(a\geq 1)$.

A) 0 B) $-a-1$ C) $a-1$ D) $\sqrt{a}-3$

Yechilishi:

$\left(\frac{a+1}{\sqrt{a}-1}-\sqrt{a+1}\right):\left(\frac{1}{\sqrt{a+1}}-\frac{1}{\sqrt{a}-1}\right)$

$\left(\frac{a+1-\sqrt{a+1}\sqrt{a-1}}{\sqrt{a-1}}\right):\left(\frac{\sqrt{a-1}-\sqrt{a+1}}{\sqrt{a+1}\cdot\sqrt{a-1}}\right)$

$\left(\frac{\sqrt{a+1}^2-\sqrt{a+1}\sqrt{a-1}}{\sqrt{a-1}}\right)\cdot\left(\frac{\sqrt{a-1}\cdot\sqrt{a+1}}{\sqrt{a-1}-\sqrt{a+1}}\right)$

$\left(\frac{\sqrt{a+1}\left(\sqrt{a+1}-\sqrt{a-1}\right)}{\sqrt{a-1}}\right)\cdot\left(\frac{\sqrt{a-1}\cdot\sqrt{a+1}}{\sqrt{a-1}-\sqrt{a+1}}\right)$

$\left(\sqrt{a+1}\right)\cdot\left(-\sqrt{a+1}\right)=-a-1$

Javob: (B)

3121. $\left(\frac{1}{\sqrt{a+\sqrt{a+1}}}-\frac{1}{\sqrt{a-\sqrt{a+1}}}\right):\frac{\sqrt{a+1}}{\sqrt{a-1}}$ ni soddalashtiring $(a\geq 0)$.

A) $-2\sqrt{a-1}$ B) $\sqrt{a+1}$ C) $1+\sqrt{a}$ D) $2\sqrt{a-1}$

3122. $\left(\frac{1}{\sqrt{1-a}}-\sqrt{1+a}\right):\left(\frac{1}{\sqrt{1-a^2}}-1\right)$ ni soddalashtiring $(a,c\geq 0)$.

A) $\sqrt{1+a}$ B) $1+\sqrt{a}$ C) $\sqrt{a-1}$ D) $\sqrt{a^2-1}$

3123. $\left(\frac{a+1}{\sqrt{a}}+\frac{1}{a-\sqrt{a}}-\frac{a}{1+\sqrt{a}}\right)\cdot\frac{\sqrt{3}-a\sqrt{3}}{a+1}$ ni soddalashtiring $(a,b\geq 0)$.

A) $-\sqrt{3}$ B) $\sqrt{a}-2\sqrt{b}$ C) $1+b$ D) $1-\sqrt{a}$

Ratsional ko'rsatkichli daraja

✓ $\sqrt[5]{32}$ ni hisoblang.

A) 6 B) 2 C) 5 D) 8

Yechilishi: "n"chi ildiz ostidagi sonlar $\sqrt[n]{a^n}=a$

$\sqrt[5]{32}=\sqrt[5]{2^5}=2$ **Javob: 2**

Izoh: Agar toq ildiz bo'lsa, "–" mumkin. ya'ni

$\sqrt[3]{-0,027}=-\sqrt[3]{0,3^3}=-0,3$

3124. $\sqrt[4]{0,0016}$ ni hisoblang.

A) 0,2 B) 11 C) 2 D) 0,02

3125. $\sqrt[3]{-125}+\sqrt[4]{81}$ ni hisoblang.

A) 5 B) – 1 C) 8 D) –2

3126. $\sqrt[5]{-1}+\sqrt[4]{16}$ ni hisoblang.

A) 2 B) 1 C) 4 D) 12

3127. $\sqrt[3]{27}-\sqrt[4]{\frac{16}{625}}$ ni hisoblang.

A) 2,9 B) 1 C) 2,6 D) 1,2

3128. $\sqrt[3]{-125}+\frac{1}{8}\sqrt[6]{64}$ ni hisoblang.

A) –4,75 B) 4,5 C) –3.8 D) 1,2

3129. $\sqrt[5]{32}-0,5\sqrt[3]{-216}$ ni hisoblang.

A) 9 B) 5 C) 8 D) 4

3130. $-\frac{1}{3}\sqrt[4]{81}+\sqrt[4]{625}$ ni hisoblang.

A) 4 B) 1,1 C) 8 D) 1,2

3131. $\sqrt[3]{-1000}-\frac{1}{4}\sqrt[4]{256}$ ni hisoblang.

A) 6,4 B) 11 C) 0,64 D) –11

3132. $\sqrt[4]{0,0001}-2\sqrt{0,25}+\sqrt[5]{\frac{1}{32}}$ ni hisoblang.

A) –0,9 B) 3,7 C) –0,4 D) 2,3

3133. $\sqrt[5]{\frac{1}{243}}+\sqrt[3]{-0,001}-\sqrt[4]{0,0016}$ ni hisoblang.

A) $\frac{1}{30}$ B) 30 C) 8 D) 12

✓ $\sqrt[6]{36^3}$ ni hisoblang.

A) 6 B) 2 C) 5 D) 8

Yechilishi: "n"chi ildiz ostidagi sonlar $\sqrt[n]{a^n}=a$

$\sqrt[6]{36^3}=\sqrt[6]{\left(6^2\right)^3}=\sqrt[6]{6^6}=6$ **Javob: 6**

3134. $\sqrt[12]{64^2}$ ni hisoblang.

A) 2 B) 4 C) 0,2 D) 0,02

3135. $\sqrt[4]{\left(\frac{1}{25}\right)^2}$ ni hisoblang.

A) 5 B) 1 C) 8 D) 0,2

3136. $\sqrt[8]{225^4}$ ni hisoblang.

A) 25 B) 15 C) 4 D) 12

3137. $\sqrt[3]{10^6}$ ni hisoblang.

A) 10 B) 50 C) 100 D) 25

3138. $\sqrt[3]{3^{12}}$ ni hisoblang.

A) 81 B) 30 C) 27 D) 9

3139. $\sqrt[4]{\left(\frac{1}{2}\right)^{12}}$ ni hisoblang.

A) $\frac{1}{8}$ B) $\frac{1}{16}$ C) 8 D) 12

3140. $\sqrt[4]{\left(\frac{1}{2}\right)^{16}}$ ni hisoblang.

A) 2 B) $\frac{1}{16}$ C) 4 D) 16

3141. $\sqrt[3]{x^6}$ ni soddalashtiring.

A) x^3 B) x^2 C) x^5 D) x^4

3142. $\left(\sqrt[8]{y^6}\right)^4$ ni soddalashtiring.

A) y^3 B) y^4 C) Ø D) y^6

✓ $\sqrt[3]{343\cdot0{,}125}$ ni hisoblang.

A) 3,6 B) 2,5 C) 3,5 D) 8,5

Yechilishi: formula $\sqrt[n]{ab}=\sqrt[n]{a}\sqrt[n]{b}$

$\sqrt[3]{343\cdot0{,}125}=\sqrt[3]{343}\cdot\sqrt[3]{0{,}125}=\sqrt[3]{7^3}\cdot\sqrt[3]{0{,}5^3}=7\cdot0{,}5=3{,}5$

Izoh: formulaga tushurish lozim. **Javob: 3,5**

3143. $\sqrt[4]{256\cdot0{,}0081}$ ni hisoblang.

A) 1,2 B) 4 C) 0,2 D) 0,02

3144. $\sqrt[5]{32\cdot100000}$ ni hisoblang.

A) 20 B) 2 C) 10 D) $\frac{1}{2}$

3145. $\sqrt[3]{5^3\cdot7^3}+\sqrt[4]{11^4\cdot3^4}$ ni hisoblang.

A) 68 B) 35 C) 33 D) 12

3146. $\sqrt[5]{(0{,}2)^5\cdot8^5}-\sqrt[7]{\left(\frac{1}{3}\right)^7\cdot21^7}$ ni hisoblang.

A) 7 B) – 5,4 C) 10 D) –2,5

3147. $\sqrt[5]{3^{10}\cdot2^{15}}$ ni hisoblang.

A) 81 B) 78 C) 72 D) 56

3148. $\sqrt[10]{3^{30}\cdot\left(\frac{1}{2}\right)^{20}}$ ni hisoblang.

A) 6,25 B) 6,45 C) 6,75 D) 9

3149. $\sqrt[3]{2^3\cdot5^6}$ ni hisoblang.

A) $\frac{1}{8}$ B) $\frac{1}{16}$ C) 25 D) 50

3150. $\sqrt[4]{3^{12}\cdot\left(\frac{1}{3}\right)^8}$ ni hisoblang.

A) 27 B) $\frac{1}{3}$ C) 9 D) 3

3151. $\sqrt[4]{x^8b^{12}}$ ni soddalashtiring.

A) x^3b B) x^2b^3 C) x^5b D) x^4b

3152. $\sqrt[5]{32x^{10}y^{20}}$ ni soddalashtiring.

A) $2x^2y^4$ B) $2x^2y$ C) $2x^2y^3$ D) $2x^2y^6$

✓ $\sqrt[4]{324}\cdot\sqrt[4]{4}$ ni hisoblang.

A) 36 B) 6 C) 3 D) 5

Yechilishi: formula $\sqrt[n]{a}\sqrt[n]{b}=\sqrt[n]{ab}$

$\sqrt[4]{324}\cdot\sqrt[4]{4}=\sqrt[4]{324\cdot4}=\sqrt[4]{81\cdot4\cdot4}=3\cdot2=6$

Javob: 6

Izoh: formulaga tushurish lozim.

3153. $\sqrt[3]{2}\cdot\sqrt[3]{500}$ ni hisoblang.

A) 40 B) 10 C) 12 D) 22

3154. $\sqrt[3]{0{,}2}\cdot\sqrt[3]{0{,}04}$ ni hisoblang.

A) 0,2 B) 2 C) 0,1 D) $\frac{1}{2}$

3155. $\sqrt[5]{2}\cdot\sqrt[5]{16}$ ni hisoblang.

A) 6 B) 32 C) 2 D) 12

3156. $\sqrt[3]{-\frac{3}{2}}\cdot\sqrt[3]{2\frac{1}{4}}$ ni hisoblang.

A) 27 B) – 1,5 C) 8 D) –2,5

3157. $\sqrt[4]{\frac{3}{4}}\cdot\sqrt[4]{6\frac{3}{4}}$ ni hisoblang.

A) 8,1 B) 2,5 C) 1,5 D) 1,56

3158. $\sqrt[3]{2ab^2}\cdot\sqrt[3]{4a^2b}$ ni soddalashtiring.

A) $3ab$ B) ab C) $2ab$ D) 9

3159. $\sqrt[4]{3a^2b^3}\cdot\sqrt[4]{27a^2b}$ ni soddalashtiring.

A) ab B) $\frac{3}{ab}$ C) 3 D) $3ab$

3160. $\sqrt[3]{\frac{16a}{b^2}}\cdot\sqrt[3]{\frac{1}{2ab}}$ ni soddalashtiring.

A) $2b$ B) $\frac{2}{b}$ C) $2b^3$ D) $2a^4b$

3161. $\sqrt[4]{\frac{ab}{c}}\cdot\sqrt[4]{\frac{a^3c}{b}}$ ni soddalashtiring.

A) a B) $2a^2$ C) c D) $2c^2a$

✓ $\sqrt[3]{3\frac{3}{8}}$ ni hisoblang.

A) 3,6 B) 6 C) 1,3 D) 1,5

Yechilishi: formula $\sqrt[n]{\frac{a}{b}}=\frac{\sqrt[n]{a}}{\sqrt[n]{b}}$

$\sqrt[3]{3\frac{3}{8}}=\sqrt[3]{\frac{27}{8}}=\frac{\sqrt[3]{27}}{\sqrt[3]{8}}=\frac{3}{2}=1{,}5$ **Javob: 1,5**

Izoh: formulaga tushurish lozim.

3162. $\sqrt[5]{7\frac{19}{32}}$ ni hisoblang.

A) 1,4 B) 10 C) 1,2 D) 1,5

3163. $\sqrt[4]{\frac{16}{81}}+\sqrt[3]{\frac{64}{125}}$ ni hisoblang.

A) 0,2 B) 2,15 C) 0,1 D) $1\frac{7}{15}$

✓ $\sqrt[4]{15\frac{5}{8}}:\sqrt[4]{\frac{2}{5}}$ ni hisoblang.

A) 3,6 B) 6 C) 1,3 D) 1,25

Yechilishi: formula $\frac{\sqrt[n]{a}}{\sqrt[n]{b}}=\sqrt[n]{\frac{a}{b}}$

$\sqrt[4]{15\frac{5}{8}}:\sqrt[4]{\frac{2}{5}}=\sqrt[4]{15\frac{5}{8}:\frac{2}{5}}=\sqrt[4]{\frac{125}{8}\cdot\frac{5}{2}}=\sqrt[4]{\frac{625}{16}}=\frac{\sqrt[4]{625}}{\sqrt[4]{16}}=$

$=\frac{5}{4}=1{,}25$ **Javob: B)**

Izoh: formulaga tushurish lozim.

3164. $\frac{\sqrt[5]{256}}{\sqrt[5]{8}}$ ni hisoblang.

A) 1,5 B) 4 C) 12 D) 2

3165. $\frac{\sqrt[3]{16}}{\sqrt[3]{2}}$ ni hisoblang.

A) 2 B) 4 C) 12 D) 8

3166. $\sqrt[3]{128}:\sqrt[3]{2000}$ ni hisoblang.

A) 0,2 B) 2,15 C) 0,4 D) $1\frac{7}{15}$

3167. $\sqrt[4]{324}:\sqrt[4]{4}$ ni hisoblang.

A) 6 B) 3 C) 2 D) 12

3168. $\left(\sqrt{20}-\sqrt{45}\right):\sqrt{5}$ ni hisoblang.

A) 3 B) – 1,5 C) –1 D) –2,5

3169. $\left(\sqrt[3]{625}-\sqrt[3]{5}\right):\sqrt[3]{5}$ ni hisoblang.

A) 8 B) 4 C) 1 D) 3

3170. $\sqrt[5]{a^6b^7}:\sqrt[5]{ab^2}$ ni soddalashtiring.

A) ab B) a^2b C) $2ab$ D) 9

3171. $\frac{\sqrt[3]{49}\cdot\sqrt[3]{112}}{\sqrt[3]{250}}$ ni hisoblang.

A) 3 B) – 1,8 C) 2,8 D) –2,5

3172. $\frac{\sqrt[4]{54}\cdot\sqrt[4]{120}}{\sqrt[4]{5}}$ ni hisoblang.

A) 8 B) 6 C) 1 D) 3

3173. $\sqrt[3]{81x^4y}:\sqrt[3]{3xy}$ ni soddalashtiring.

A) $3x$ B) $\frac{3}{x}$ C) 3 D) x

3174. $\sqrt[3]{\frac{3x}{y^2}}:\sqrt[3]{\frac{y}{9x^2}}$ ni soddalashtiring.

A) $3xy$ B) $\frac{3x}{y}$ C) $3x^3$ D) $3x^4y$

3175. $\sqrt[4]{\frac{2b}{a^3}}:\sqrt[4]{\frac{a}{8b^3}}$ ni soddalashtiring.

A) ab B) $2a^2b$ C) $\frac{2b}{a}$ D) $2b^2a$

3176. $\sqrt[3]{2ab}\cdot\sqrt[3]{4a^2b}\cdot\sqrt[3]{27b}$ ni soddalashtiring.

A) $6ab$ B) ab C) 6 D) a^2b

3177. $\frac{\sqrt[4]{8x^2y^5}\cdot\sqrt[4]{4x^3y}}{\sqrt[4]{2xy^2}}$ ni soddalashtiring.

A) $3xy$ B) $2xy$ C) $3x^3$ D) $2x^4y$

3178. $\sqrt[4]{abc}\cdot\sqrt[4]{a^3b^2c}\cdot\sqrt[4]{b^5c^2}$ ni soddalashtiring.

A) abc B) $2a^2bc$ C) ab^2c D) $2b^2ac$

3179. $\frac{\sqrt[5]{a^3b^2}\cdot\sqrt[5]{3a^2b^3}}{\sqrt[5]{3ab}}$ ni soddalashtiring.

A) $\sqrt[5]{a^4b^4}$ B) a^2b C) $2ab$ D) 9

✓ $\sqrt[3]{\sqrt{64}}$ ni hisoblang.

A) 6 B) 4 C) 2 D) 1,25

Yechilishi: formula $\sqrt[n]{\sqrt[m]{a}}=\sqrt[n\cdot m]{a}$

$\sqrt[3]{\sqrt{64}} = \sqrt[6]{64} = \sqrt[6]{2^6} = 2$ **Javob: 2**

Izoh: formulaga tushurish lozim.

yana bir misol: $\sqrt{\sqrt{81}} = \sqrt[4]{81} = \sqrt[4]{3^4} = 3$

3180. $\sqrt{\sqrt[3]{729}}$ ni hisoblang.

A) 1,5 B) 4 C) 12 D) 3

3181. $\sqrt{\sqrt{16}}$ ni hisoblang.

A) 2 B) 4 C) 12 D) 8

3182. $\sqrt[3]{\sqrt[3]{9}} \cdot \sqrt[9]{3^7}$ ni hisoblang.

A) 0,3 B) 2,15 C) 3 D) $\frac{1}{3}$

3183. $\sqrt[4]{\sqrt[3]{25}} \cdot \sqrt[6]{5^5}$ ni hisoblang.

A) 6 B) 5 C) 2 D) 12

3184. $\left(\sqrt{\sqrt[3]{16}}\right)^3$ ni hisoblang.

A) 2 B) 25 C) 4 D) 6

3185. $\left(\sqrt[3]{\sqrt{27}}\right)^2$ ni hisoblang.

A) 4 B) 15 C) 3 D) 25

3186. $\sqrt{\sqrt{1024}}$ ni hisoblang.

A) $4\sqrt{2}$ B) 4 C) 12 D) 8

✓ $\sqrt[3]{\sqrt[3]{a^{18}}} + \left(\sqrt{\sqrt[3]{a^4}}\right)^3$ ni soddalashtiring.

A) $2a^2$ B) $2a^3$ C) a^2 D) 1

Yechilishi: formula $\sqrt[n]{\sqrt[m]{a}} = \sqrt[n \cdot m]{a}$

$$\sqrt[3]{\sqrt[3]{a^{18}}} + \left(\sqrt{\sqrt[3]{a^4}}\right)^3 = \sqrt[9]{a^{18}} + \left(\sqrt[6]{a^4}\right)^3 = \sqrt[9]{a^{18}} + \sqrt[6]{a^{12}} =$$

$$= \sqrt[9]{\left(a^2\right)^9} + \sqrt[6]{\left(a^2\right)^6} = a^2 + a^2 = 2a^2$$

Javob: $2a^2$

Izoh: formulaga tushurish lozim.

3187. $2\sqrt{\sqrt{a^4b^8}} - \left(\sqrt[3]{\sqrt{a^3b^6}}\right)^2$ ni soddalashtiring.

A) ab^2 B) $3ab^2$ C) 0 D) a^2b

3188. $\sqrt[3]{\sqrt{x^6y^{12}}} - \left(\sqrt[5]{xy^2}\right)^5$ ni soddalashtiring.

A) $3xy^2$ B) 0 C) $3x^3$ D) $2xy^2$

3189. $\left(\sqrt{\sqrt[3]{x^2}}\right)^3 + 2\left(\sqrt[4]{\sqrt{x}}\right)^8$ ni soddalashtiring.

A) x B) $5x$ C) $3x$ D) $-x$

3190. $\left(\sqrt{\sqrt[4]{x^8y^2}}\right)^4 - \left(\sqrt[4]{x^2y^8}\right)^2$ ni soddalashtiring.

A) $x^4y - xy^4$ B) $x^8y - xy^8$ C) $x^3y - xy^3$ D) 0

✓ Quyidagilardan qaysilari ratsional ko'rsatkichli daraja shaklida tasvirlangan.

1) $\sqrt{x^3} = x^{\frac{3}{2}}$; 2) $\sqrt[3]{a^4} = a^{\frac{3}{4}}$; 3) $\sqrt[6]{b^5} = b^{\frac{5}{6}}$; 4) $\sqrt[5]{y^{-1}} = y^{-\frac{1}{5}}$

A) 1;2;4 B) 1;2 C) 1;3;4 D) 2;4

Yechilishi: formula $\sqrt[n]{a^m} = a^{\frac{m}{n}}$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}} \Rightarrow \begin{cases} \sqrt{x^3} = x^{\frac{3}{2}} \text{ to'g'ri} \\ \quad \text{(ildiz o'zi "2"dir.)} \\ \sqrt[3]{a^4} = a^{\frac{3}{4}} \text{ noto'g'ri} \\ \sqrt[6]{b^5} = b^{\frac{5}{6}} \text{ to'g'ri} \\ \sqrt[5]{y^{-1}} = y^{-\frac{1}{5}} \text{ to'g'ri} \end{cases}$$

Javob: (C)

3191. Quyidagilardan qaysilari ratsional ko'rsatkichli daraja shaklida tasvirlangan.

1) $\sqrt[7]{x^{-3}} = x^{-\frac{3}{7}}$; 2) $\sqrt[6]{a} = a^{\frac{1}{6}}$; 3) $\sqrt[9]{b^4} = b^{\frac{9}{4}}$; 4) $\sqrt{y} = y^{\frac{1}{2}}$

A) 1;2;4 B) 1;2 C) 1;3;4 D) 2;4

3192. Quyidagilardan qaysilari ratsional ko'rsatkichli daraja shaklida tasvirlangan.

1) $\sqrt[3]{x} = x^{\frac{1}{3}}$; 2) $\sqrt[6]{a^{-5}} = a^{-\frac{5}{6}}$; 3) $\sqrt[5]{b^8} = b^{\frac{8}{5}}$; 4) $\sqrt[3]{y^2} = y^{\frac{3}{2}}$

A) 1; 2; 4 B) 1; 2; 3 C) 1; 3; 4 D) 2; 4

3193. Quyidagilardan qaysilari ratsional ko'rsatkichli daraja shaklida tasvirlangan.

1) $\sqrt{x} = x^{\frac{1}{2}}$; 2) $\sqrt[6]{a^2} = a^{\frac{1}{3}}$; 3) $\sqrt[5]{b^{-6}} = b^{-\frac{3}{5}}$; 4) $\sqrt[5]{y^6} = y^{\frac{5}{6}}$

A) 1; 2; 4 B) 1; 2; 3 C) 1; 3; 4 D) 1; 2

✓ Quyidagilardan qaysilari butun ko'rsatkichli darajaning ildizi shaklida tasvirlangan.

1) $x^{\frac{1}{4}} = \sqrt{x^4}$; 2) $a^{\frac{2}{5}} = \sqrt[5]{a^2}$; 3) $b^{-\frac{5}{6}} = \sqrt[6]{b^{-5}}$; 4) $y^{\frac{1}{2}} = \sqrt{y}$

A) 1; 2; 4 B) 1; 2 C) 2; 3; 4 D) 2; 4

Yechilishi: formula $a^{\frac{m}{n}} = \sqrt[n]{a^m}$

$$\boxed{a^{\frac{m}{n}}=\sqrt[n]{a^m}} \Rightarrow \begin{cases} \boxed{x^{\frac{1}{4}}=\sqrt{x^4}} \ noto'g'ri \\ \boxed{a^{\frac{2}{5}}=\sqrt[5]{y^2}} \ to'g'ri \\ \boxed{b^{-\frac{5}{6}}=\sqrt[6]{b^{-5}}} \ to'g'ri \\ \boxed{y^{\frac{1}{2}}=\sqrt{y}} \ to'g'ri \ (\text{ildiz o'zi "2"dir.}) \end{cases}$$

Javob: (C)

3194. Quyidagilardan qaysilari butun ko'rsatkichli darajaning ildizi shaklida tasvirlangan.

1) $x^{\frac{5}{4}}=\sqrt[5]{x^4}$; 2) $a^{\frac{6}{5}}=\sqrt[5]{a^6}$; 3) $b^{\frac{1}{2}}=\sqrt[16]{b^8}$; 4) $y^{\frac{3}{2}}=\sqrt{y^3}$

A) 1;2;4 B) 1;2 C) 1;3;4 D) 2;3; 4

3195. Quyidagilardan qaysilari butun ko'rsatkichli darajaning ildizi shaklida tasvirlangan.

1) $x^{\frac{5}{9}}=\sqrt[9]{x^5}$; 2) $a^{\frac{9}{20}}=\sqrt[20]{a^9}$; 3) $b^{\frac{7}{3}}=\sqrt[3]{b^7}$; 4) $y^{\frac{3}{4}}=\sqrt[4]{y^3}$

A) 1; 2; 4 B) barchasi C) 1; 3; 4 D) 2; 4

3196. Quyidagilardan qaysilari butun ko'rsatkichli darajaning ildizi shaklida tasvirlangan.

1) $x^{\frac{7}{4}}=\sqrt{x^4}$; 2) $a^{\frac{1}{5}}=\sqrt{a^5}$; 3) $b^{\frac{3}{6}}=\sqrt[6]{b^{-5}}$; 4) $y^{-\frac{1}{2}}=\sqrt{y}$

A) 1; 2; 4 B) 1; 2; 3 C) 1; 3; 4 D) hech biri

✓ $64^{\frac{2}{3}}$ ni hisoblang.

A) 16 B) 4 C) 2 D) 1,25

Yechilishi: formula $a^{\frac{m}{n}}=\sqrt[n]{a^m}$

$$64^{\frac{2}{3}}=\sqrt[3]{64^2}=\sqrt[3]{\left(4^3\right)^2}=\sqrt[3]{4^6}=\sqrt[3]{\left(4^2\right)^3}=4^2=16$$

Javob: 16

Izoh: formulaga tushurish lozim. yana bir misol:

$$64^{0,5}=64^{\frac{1}{2}}=\sqrt{64}=8$$

3197. $81^{\frac{1}{2}}$ ni hisoblang.

A) 1,5 B) 4 C) 12 D) 9

3198. $27^{\frac{1}{3}}$ ni hisoblang.

A) 3 B) 4 C) 12 D) 8

3199. $8^{\frac{2}{3}}$ ni hisoblang.

A) 0,3 B) 2 C) 4 D) $\frac{1}{3}$

3200. $9^{-0,5}$ ni hisoblang.

A) 0,3 B) 2 C) 4 D) $\frac{1}{3}$

3201. $36^{-1,5}$ ni hisoblang.

A) $\frac{1}{216}$ B) 216 C) 4 D) 6

3202. $81^{0,75}+16^{-0,75}$ ni hisoblang.

A) 27,25 B) $27\frac{1}{8}$ C) 27,5 D) 12

✓ $27^{\frac{2}{5}}\cdot 9^{\frac{2}{5}}$ ni hisoblang.

A) 16 B) 9 C) 2 D) 1,25

Yechilishi: formula $a^{\frac{m}{n}}=\sqrt[n]{a^m}$

$$27^{\frac{2}{5}}\cdot 9^{\frac{2}{5}}=\left(3^3\right)^{\frac{2}{5}}\cdot\left(3^2\right)^{\frac{2}{5}}=3^{3\cdot\frac{2}{5}}\cdot 3^{2\cdot\frac{2}{5}}=3^{\frac{6}{5}}\cdot 3^{\frac{4}{5}}=$$

$$=3^{\frac{6+4}{5}}=3^2=9$$

Javob: 9

Izoh: darajaning Quyidagi formulalarini esga tushuring.

$$\boxed{a^n\cdot a^m=a^{n+m}} \Rightarrow \boxed{7^{\frac{1}{4}}\cdot 7^{\frac{3}{4}}=7^{\frac{1}{4}+\frac{3}{4}}=7}$$

$$\boxed{a^n:a^m=a^{n-m}} \Rightarrow \boxed{9^{\frac{2}{3}}:9^{\frac{1}{6}}=9^{\frac{2}{3}-\frac{1}{6}}=9^{\frac{1}{2}}=\sqrt{9}=3}$$

$$\boxed{(a^n)^m=a^{n\cdot m}} \Rightarrow \boxed{\left(16^{\frac{1}{3}}\right)^{\frac{9}{4}}=16^{\frac{1}{3}\cdot\frac{9}{4}}=16^{\frac{3}{4}}=(2^4)^{\frac{3}{4}}=2^{4\cdot\frac{3}{4}}=2^3=8}$$

$$\boxed{(ab)^n=a^nb^n} \Rightarrow \boxed{24^{\frac{2}{3}}=\left(2^3\cdot 3\right)^{\frac{2}{3}}=2^{3\cdot\frac{2}{3}}\cdot 3^{\frac{2}{3}}=4\sqrt[3]{9}}$$

$$\boxed{\left(\frac{a}{b}\right)^n=\frac{a^n}{b^n}} \Rightarrow \boxed{\left(\frac{8}{27}\right)^{\frac{1}{3}}=\frac{8^{\frac{1}{3}}}{27^{\frac{1}{3}}}=\frac{\left(2^3\right)^{\frac{1}{3}}}{\left(3^3\right)^{\frac{1}{3}}}=\frac{2}{3}}$$

3203. $2^{\frac{4}{5}}\cdot 2^{\frac{11}{5}}$ ni hisoblang.

A) 16 B) 4 C) 12 D) 8

3204. $5^{\frac{2}{7}}\cdot 5^{\frac{5}{7}}$ ni hisoblang.

A) 5 B) 25 C) 12 D) 8

3205. $9^{\frac{2}{3}}:9^{\frac{1}{6}}$ ni hisoblang.

A) 0,3 B) 2 C) 3 D) $\frac{1}{3}$

3206. $4^{\frac{1}{3}}:4^{\frac{5}{6}}$ ni hisoblang.

A) 0,25 B) 2 C) 4 D) $\frac{1}{2}$

3207. $\left(7^{-3}\right)^{-\frac{2}{3}}$ ni hisoblang.

A) 49 B) 216 C) 4 D) 7

3208. $\left(8^{\frac{1}{12}}\right)^{-4}$ ni hisoblang.

A) 27,25 B) $\frac{1}{4}$ C) 0,5 D) 12

3209. $7^{\frac{2}{3}} \cdot 49^{\frac{2}{3}}$ ni hisoblang.

A) 1,5 B) 7 C) 12 D) 49

3210. $144^{\frac{3}{4}} : 9^{\frac{3}{4}}$ ni hisoblang.

A) 8 B) 4 C) 12 D) 2

3211. $150^{\frac{3}{2}} : 6^{\frac{3}{2}}$ ni hisoblang.

A) 0,3 B) 5 C) 125 D) $\frac{1}{3}$

3212. $\frac{\sqrt{3} \cdot 9^{\frac{1}{3}}}{\sqrt[6]{3}}$ ni hisoblang.

A) 3 B) 4 C) 12 D) 2

3213. $\frac{\sqrt[4]{343} \cdot 7^{\frac{1}{3}}}{\sqrt[12]{7}}$ ni hisoblang.

A) 0,7 B) 49 C) 7 D) $\frac{1}{7}$

3214. $\left(\frac{1}{16}\right)^{-0,75} + \left(\frac{1}{8}\right)^{-\frac{4}{3}}$ ni hisoblang.

A) 0,3 B) 2 C) 8 D) 24

3215. $(0,04)^{-1,5} - (0,125)^{-\frac{2}{3}}$ ni hisoblang.

A) 121 B) 216 C) 125 D) 124

3216. $8^{\frac{9}{7}} : 8^{\frac{2}{7}} - 3^{\frac{6}{5}} \cdot 3^{\frac{4}{5}}$ ni hisoblang.

A) 25 B) –1 C) 11 D) 1

3217. $\left(5^{-\frac{2}{5}}\right)^{-5} + \left((0,2)^{\frac{3}{4}}\right)^{-4}$ ni hisoblang.

A) 150 B) $27\frac{1}{8}$ C) 250 D) 155

✓ $a^{\frac{1}{3}} \cdot \sqrt[6]{a^5} \cdot \sqrt{a}$ ni soddalashtiring.

A) $\sqrt[3]{a^5}$ B) $2\sqrt[3]{a^5}$ C) a^2 D) 1

Yechilishi: formula $\sqrt[n]{\sqrt[m]{a}} = \sqrt[n \cdot m]{a}$

$a^{\frac{1}{3}} \cdot \sqrt[6]{a^5} \cdot \sqrt{a} = a^{\frac{1}{3}} \cdot a^{\frac{5}{6}} \cdot a^{\frac{1}{2}} = a^{\frac{1}{3}+\frac{5}{6}+\frac{1}{2}} = a^{\frac{5}{3}} = \sqrt[3]{a^5}$

Javob: $\sqrt[3]{a^5}$

3218. $a^{\frac{1}{3}} \cdot \sqrt{a}$ ni soddalashtiring.

A) $\sqrt[6]{a^5}$ B) $\sqrt[5]{a^6}$ C) $\sqrt[5]{a^3}$ D) $\sqrt[3]{a^2}$

3219. $b^{\frac{1}{3}} \cdot \sqrt[6]{b} \cdot b^{\frac{1}{2}}$ ni soddalashtiring.

A) $3b^2$ B) $\cdot b$ C) 1 D) b^2

3220. $\sqrt[3]{b} : b^{\frac{1}{6}}$ ni soddalashtiring.

A) $\sqrt[6]{b^5}$ B) $\sqrt[3]{b^2}$ C) $\sqrt[6]{b}$ D) $-b$

3221. $a^{\frac{4}{3}} : \sqrt[3]{a}$ ni soddalashtiring.

A) a B) $\sqrt[3]{a^2}$ C) $\sqrt[5]{a^3}$ D) 1

3222. $x^{1,7} \cdot x^{2,8} : \sqrt{x^5}$ ni soddalashtiring.

A) $x^{6,5}$ B) x^2 C) x D) x^6

3223. $y^{-3,8} \cdot y^{-2,3} : \sqrt{y^3}$ ni soddalashtiring.

A) y B) $y^{-4,6}$ C) $y^{-7,6}$ D) $-y$

3224. $\left(a^4\right)^{-\frac{3}{4}} \cdot \left(b^{-\frac{2}{3}}\right)^{-6}$ ni soddalashtiring.

A) $\frac{b^4}{a^3}$ B) $3ab^4$ C) 1 D) a^3b^2

3225. $\left(\left(\frac{a^6}{b^{-3}}\right)^4\right)^{\frac{1}{12}}$ ni soddalashtiring.

A) ba^2 B) $3ab^2$ C) 1 D) b^2a

✓ Agar $a = 0,09$ bo'lsa, u holda $\sqrt[3]{a} \cdot \sqrt[6]{a}$ ning qiymatini hisoblang.

A) 1,2 B) 3,4 C) 0,3 D) 0,4

Yechilishi: $\sqrt[3]{a} \cdot \sqrt[6]{a} = a^{\frac{1}{3}} \cdot a^{\frac{1}{6}} = a^{\frac{1}{3}+\frac{1}{6}} = \sqrt{a}$

$a = 0,09 \Rightarrow \sqrt{a} = \sqrt{0,09} = 0,3$

Javob: 0,3

3226. Agar $b = 27$ bo'lsa, u holda $\sqrt[3]{b} : \sqrt[6]{b}$ ning qiymatini hisoblang.

A) $\sqrt[3]{3}$ B) $\sqrt{3}$ C) 6 D) 3

3227. Agar $b = 1,3$ bo'lsa, u holda $\frac{\sqrt{b} \cdot \sqrt[3]{b^2}}{\sqrt[6]{b}}$ ning qiymatini hisoblang.

A) 13 B) 1,3 C) 2,6 D) 1,4

3228. Agar $a = 2,7$ bo'lsa, u holda $\sqrt[3]{a} \cdot \sqrt[4]{a} \cdot \sqrt[12]{a^5}$ ning qiymatini hisoblang.

A) 18 B) 2,7 C) 5,4 D) 1,2

✓ Quyidagilardan qaysilari noto'g'ri taqqoslangan.

1) $2^{\frac{1}{3}} < 3^{\frac{1}{3}}$; 2) $5^{-\frac{4}{5}} > 3^{-\frac{4}{5}}$; 3) $5^{\sqrt{3}} < 7^{\sqrt{3}}$; 4) $21^{-\sqrt{2}} < 31^{-\sqrt{2}}$

A) 1; 2; 4 B) 1; 3 C) 2; 3; 4 D) 2; 4

Yechilishi: formula

$a > b$

↙ ↘

bir xil $a > b$	*bir xil*	$-$*bir xil* $a < b$	$-$*bir xil*

1) $2^{\frac{1}{3}} < 3^{\frac{1}{3}}$ *to'g'ri*

2) $5^{-\frac{4}{5}} > 3^{-\frac{4}{5}}$ *noto'g'ri*

3) $5^{\sqrt{3}} < 7^{\sqrt{3}}$ *to'g'ri*

4) $21^{-\sqrt{2}} < 31^{-\sqrt{2}}$ *noto'g'ri*

Javob: (B)

Izoh: Agar darajasi "–" bo'lsa, u holda, kichigi katta bo'ladi.

3229. Quyidagilardan qaysilari to'g'ri taqqoslangan.

1) $16^{\frac{1}{3}} < 23^{\frac{1}{3}}$; 2) $16^{-\frac{1}{7}} > 23^{-\frac{1}{7}}$; 3) $55^{\sqrt{3}} < 17^{\sqrt{3}}$; 4) $55^{-\sqrt{2}} < 17^{-\sqrt{2}}$

A) 1; 2; 4 B) 1; 2 C) 1; 3; 4 D) 2; 3; 4

3230. Quyidagilardan qaysilari noto'g'ri taqqoslangan.

1) $21^{\frac{1}{3}} < 12^{\frac{1}{3}}$; 2) $0,5^{-\frac{4}{5}} > 0,4^{-\frac{4}{5}}$; 3) $42^{\sqrt{3}} < 24^{\sqrt{3}}$; 4) $24^{-\sqrt{2}} < 42^{-\sqrt{2}}$

A) 1; 2; 4 B) barchasi C) 1; 3; 4 D) 2; 4

3231. Quyidagilardan qaysilari noto'g'ri taqqoslangan.

1) $25^{\frac{1}{3}} < 35^{\frac{1}{3}}$; 2) $25^{-\frac{4}{5}} < 15^{-\frac{4}{5}}$; 3) $3^{\sqrt{3}} = 3^{\sqrt{3}}$; 4) $14^{-\sqrt{2}} > 16^{-\sqrt{2}}$

A) 1; 2; 4 B) 1; 2; 3 C) 1; 3; 4 D) hech biri

3232. $a = (0,88)^{\frac{1}{6}}$ *va* $b = \left(\frac{6}{11}\right)^{\frac{1}{6}}$ sonlar uchun qaysi munosabat o'rinli?

A) $a > b$ B) $a = b$ C) $a = b - 1$ D) $a < b$

3233. $a = (0,41)^{-\frac{1}{4}}$ *va* $b = \left(\frac{5}{12}\right)^{-\frac{1}{4}}$ sonlar uchun qaysi munosabat o'rinli?

A) $a > b$ B) $a = b$ C) $a = b - 1$ D) $a < b$

3234. $a = \left(\frac{11}{12}\right)^{-\sqrt{5}}$ *va* $b = \left(\frac{12}{13}\right)^{-\sqrt{5}}$ sonlar uchun qaysi munosabat o'rinli?

A) $a > b$ B) $a = b$ C) $a = b - 1$ D) $a < b$

3235. $a = (4,09)^{\sqrt[3]{2}}$ *va* $b = \left(4\frac{3}{25}\right)^{\sqrt[3]{2}}$ sonlar uchun qaysi munosabat o'rinli?

A) $a > b$ B) $a = b$ C) $a = b - 1$ D) $a < b$

✓ Quyidagilardan qaysilari ildiz ostiga to'g'ri kiritilgan.

1) $3\sqrt[4]{4} = \sqrt[4]{324}$; 2) $\frac{3xy^2}{2}\sqrt[3]{\frac{8}{xy}} = \sqrt[3]{27x^2y^5}$

3) $4\sqrt[3]{2} = \sqrt[3]{128}$; 4) $2m\sqrt[4]{\frac{1}{m^3} + \frac{1}{m^4}} = \sqrt{16m+16}$

A) 1; 2; 4 B) 1; 3 C) 2; 3; 4 D) 2; 4

Yechilishi:

1) $3\sqrt[4]{4} = \sqrt[4]{324}$

$3\sqrt[4]{4} = \sqrt[4]{3^4 \cdot 4} = \sqrt[4]{324}$ *to'g'ri*

2) $\frac{3xy^2}{2}\sqrt[3]{\frac{8}{xy}} = \sqrt[3]{27x^2y^5}$

$\frac{3xy^2}{2}\sqrt[3]{\frac{8}{xy}} = \sqrt[3]{\frac{3^3x^3y^6}{2^3} \cdot \frac{8}{xy}} = \sqrt[3]{27x^2y^5}$ *to'g'ri*

3) $4\sqrt[3]{2} = \sqrt[3]{248}$

$4\sqrt[3]{2} = \sqrt[3]{4^3 \cdot 2} = \sqrt[3]{128}$ *noto'g'ri*

4) $2m\sqrt[4]{\frac{1}{m^3} + \frac{1}{m^4}} = \sqrt{16m+16}$

$2m\sqrt[4]{\frac{1}{m^3} + \frac{1}{m^4}} = \sqrt[4]{16m^4 \cdot \frac{1}{m^3} + 16m^4 \cdot \frac{1}{m^4}} = \sqrt{16m+16}$ **J: (A)**

to'g'ri

3236. Quyidagilardan qaysilari ildiz ostiga to'g'ri kiritilgan.

1) $3\sqrt[3]{2} = \sqrt[3]{54}$; 2) $\frac{x}{x+1}\sqrt[4]{1+2x+x^2} = \sqrt[4]{\frac{x^4}{(x+1)^2}}$

3) $2\sqrt[3]{3} = \sqrt[3]{64}$ 4) $\frac{2a^3}{b}\sqrt[3]{\frac{b^3}{a^4} + \frac{b^5}{a^6}} = \sqrt[3]{8a^5 + 8a^3b^2}$

A) 1; 2; 4 B) 2; 3 C) 1; 3; 4 D) 2; 3; 4

3237. Quyidagilardan qaysilari ildiz ostiga to'g'ri kiritilgan.

1) $2\sqrt[3]{2} = \sqrt[3]{16}$; 2) $\frac{x}{y}\sqrt[n]{\frac{y^{3n+2}}{x^{n-2}}} = \sqrt[n]{x^2y^{2n+2}}$

3) $2\sqrt{3} = \sqrt[3]{12}$ 4) $\frac{1}{ab}\sqrt[n]{a^{n+1}b^{2n+2}} = \sqrt[n]{ab^{n+2}}$

A) 1; 2; 4 B) barchasi C) 1; 3; 4 D) 2; 4

✓ $\sqrt[6]{a^5\sqrt{a\sqrt[3]{a}}}$ ni soddalashtiring.

A) $\sqrt[3]{a^5}$ B) $2\sqrt[3]{a^5}$ C) $\sqrt[18]{a^{17}}$ D) 1

Yechilishi: formula $\sqrt[n]{m\sqrt{a}} = n \cdot m\sqrt{a}$

$\sqrt[6]{a^5\sqrt{a\sqrt[3]{a}}} = a^{\frac{5}{6}} \cdot a^{\frac{1}{6\cdot 2}} \cdot a^{\frac{1}{6\cdot 2\cdot 3}} = a^{\frac{5}{6}+\frac{1}{12}+\frac{1}{36}} = a^{\frac{17}{18}} = \sqrt[18]{a^{17}}$

Javob: C)

3238. $\sqrt[4]{8\sqrt[4]{16}}$ ni hisoblang.

A) 4 B) $\frac{1}{4}$ C) 2 D) 12

3239. $\sqrt[3]{-4 \cdot \sqrt[3]{8}}$ ni hisoblang.

A) 15 B) 2 C) 12 D) –2

3240. $a^{\frac{1}{9}} \cdot \sqrt[6]{a\sqrt[3]{a}}$ ni soddalashtiring.

A) $\sqrt[3]{a}$ B) $\sqrt[5]{a^6}$ C) $\sqrt[5]{a^3}$ D) $\sqrt[3]{a^2}$

3241. $b^{\frac{1}{12}} \cdot \sqrt[3]{b\sqrt[4]{b}}$ ni soddalashtiring.

A) $3b^2$ B) $\sqrt{b}$ C) 1 D) b^2

3242. $\sqrt[3]{2\sqrt{2\sqrt[3]{2}}}$ ni hisoblang.

A) $\sqrt[9]{32}$ B) $\sqrt[3]{16}$ C) $\sqrt[9]{64}$ D) 64

3243. $\dfrac{\sqrt[6]{b\sqrt[3]{b^{-1}}}}{b^{-\frac{2}{9}}}$ ni soddalashtiring.

A) $\sqrt[6]{b^5}$ B) $\sqrt[3]{b^2}$ C) $\sqrt[3]{b}$ D) $-b$

3244. $\dfrac{\sqrt[4]{a^3 \cdot \sqrt[3]{a}}}{a^{\frac{1}{3}}}$ ni soddalashtiring.

A) $\sqrt{a}$ B) $\sqrt[3]{a^2}$ C) $\sqrt[5]{a^3}$ D) 1

3245. $\sqrt[3]{2\sqrt[3]{2\sqrt{2}}} : 2^{\frac{1}{18}}$ ni hisoblang.

A) $\sqrt[9]{32}$ B) $\sqrt[9]{16}$ C) $\sqrt[9]{64}$ D) $\sqrt[9]{48}$

3246. $\sqrt{7+\sqrt{1+\sqrt{7+\sqrt[3]{8}}}}$ ni hisoblang.

A) 1 B) 4 C) 3 D) 2

3247. $\sqrt{3 \cdot \sqrt[3]{18}} \cdot \sqrt[6]{96}$ ni hisoblang.

A) 3 B) 6 C) 18 D) 9

3248. $\dfrac{27^{\frac{1}{2}} \cdot \sqrt[3]{4^2}}{\sqrt{3} \cdot 2^{\frac{1}{3}}}$ ni hisoblang.

A) 8 B) $\frac{1}{4}$ C) 6 D) 12

3249. $\dfrac{2^{\frac{1}{4}} \cdot \sqrt[3]{5}}{100^{\frac{1}{3}}}$ ni hisoblang.

A) 8 B) $2^{-\frac{5}{12}} \cdot 5$ C) $2^{-\frac{5}{12}} \cdot 5^{-\frac{1}{3}}$ D) 12

3250. $\sqrt{12 \cdot \sqrt[3]{18}} \cdot \sqrt[6]{96}$ ni hisoblang.

A) 15 B) 7 C) 18 D) 12

✓ $m=\sqrt[3]{3}$ $n=\sqrt{2}$, $p=\sqrt[6]{10}$ sonlar uchun qaysi munosabat o'rinli?

A) $n<m=p$ B) $n<p<m$

C) $n<m<p$ D) $m<n<p$

Yechilishi:

$m=\sqrt[3]{3}$ $n=\sqrt{2}$, $p=\sqrt[6]{10}$

$\sqrt[3]{3}$	$\sqrt{2}$	
$3\cdot\sqrt[2]{3^2}$	$2\cdot\sqrt[3]{2^3}$	
$\sqrt[6]{9}$	$>\sqrt[6]{8}$	$m>n$

$\sqrt[3]{3}$	$\sqrt[6]{10}$	
$3\cdot\sqrt[2]{3^2}$	$\sqrt[6]{10}$	
$\sqrt[6]{9}$	$<\sqrt[6]{10}$	$m<p$

$n<m<p$ **Javob: (C)**

3251. $m=\sqrt[3]{19}$ $n=\sqrt{8}$, $p=\sqrt[6]{350}$ sonlar uchun qaysi munosabat o'rinli?

A) $p=n<m$ B) $p<m<n$

C) $n<p<m$ D) $m<n<p$

3252. $m=\sqrt[15]{8}$ $n=\sqrt[45]{3}$, $p=\sqrt[30]{10}$ sonlar uchun qaysi munosabat o'rinli?

A) $p<n<m$ B) $n<m<p$

C) $m<n<p$ D) $n<p<m$

3253. $m=\sqrt[9]{4}$ $n=\sqrt[54]{5}$, $p=\sqrt[18]{10}$ sonlar uchun qaysi munosabat o'rinli?

A) $n=p<m$ B) $n<m<p$

C) $p<n<m$ D) $n<p<m$

✓ $\left(\frac{1}{16}\right)^{-0,75}+10000^{0,25}-\left(7\frac{19}{32}\right)^{\frac{1}{5}}$ ni hisoblang.

A) 8,5 B) 11,5 C) 6,4 D) 15,5

Yechilishi:

$$\left(\frac{1}{16}\right)^{-0,75}+10000^{0,25}-\left(7\frac{19}{32}\right)^{\frac{1}{5}}=\left(2^{-4}\right)^{-\frac{3}{4}}+\left(10^4\right)^{\frac{1}{4}}-\left(\frac{243}{32}\right)^{\frac{1}{5}}=$$

$$=2^3+10-\frac{3}{2}=18-1,5=16,5$$

Javob: 16,5

3254. $(0,001)^{-\frac{1}{3}}-2^{-2}\cdot 64^{\frac{2}{3}}-8^{-1\frac{1}{3}}$ ni hisoblang.

A) 4 B) $5\frac{5}{16}$ C) $5\frac{15}{16}$ D) 5

3255. $27^{\frac{2}{3}}-(-2)^{-2}+\left(3\frac{3}{8}\right)^{-\frac{1}{3}}$ ni hisoblang.

A) $9\frac{5}{6}$ B) 9 C) $-9\frac{5}{6}$ D) $9\frac{5}{12}$

3256. $(-0,5)^{-4}-\sqrt{625}-\left(2\frac{1}{4}\right)^{-1\frac{1}{2}}$ ni hisoblang.

A) $-9\frac{8}{27}$ B) $-8\frac{4}{9}$ C) $-9\frac{4}{27}$ D) 64

✓ $\sqrt[3]{27a^4}-3a\sqrt[3]{8a}+3\sqrt[3]{125a^4}$ ni soddalashtiring.

A) $\sqrt[3]{a^5}$ B) $2\sqrt[3]{a^5}$ C) $12a\sqrt[3]{a}$ D) 1

Yechilishi:

$$\sqrt[3]{27a^4}-3a\sqrt[3]{8a}+3\sqrt[3]{125a^4}=$$

$$=\sqrt[3]{3^3a^3a}-3a\sqrt[3]{2^3a}+3\sqrt[3]{5^3a^3a}=$$

$$=3a\sqrt[3]{a}-6a\sqrt[3]{a}+15a\sqrt[3]{a}=12a\sqrt[3]{a}$$

Javob: $12a\sqrt[3]{a}$

3257. $\left(7\sqrt[3]{4}-2\sqrt{5}\right)-\left(5\sqrt[3]{4}-4\sqrt{5}\right)$ ni soddalashtiring.

A) $2\sqrt[3]{4}+2\sqrt{5}$ B) $5\sqrt[3]{4}-2\sqrt{5}$

C) $2\sqrt[3]{4}-7\sqrt{5}$ D) $7\sqrt[3]{5}-2\sqrt{2}$

3258. $\left(2\sqrt[3]{11}-5\sqrt[5]{7}\right)+\left(7\sqrt[5]{7}-\sqrt[3]{11}\right)$ ni soddalashtiring.

A) $3\sqrt[5]{7}+\sqrt[3]{11}$ B) $2\sqrt[5]{7}+\sqrt[3]{11}$

C) **0** D) $4\sqrt[5]{7}-\sqrt[3]{11}$

3259. $\sqrt[5]{a^5b}-\sqrt[5]{32b^6}+3a\sqrt[5]{b}$ ni soddalashtiring.

A) $4a\sqrt[5]{b}+2b\sqrt[5]{b}$ B) $2a\sqrt[5]{b}+4b\sqrt[5]{b}$

C) $4a\sqrt[5]{b}-2b\sqrt[5]{b}$ D) $4a\sqrt[5]{b}+b\sqrt[5]{b}$

3260. $\sqrt[3]{a^2}-\sqrt[3]{a^5/8}-3a\sqrt[3]{1/a}$ ni soddalashtiring.

A) $-2\sqrt[3]{a^2}-\frac{1}{2}a\sqrt[3]{a^2}$ B) $2\sqrt[3]{a^2}-\frac{1}{2}a\sqrt[3]{a^2}$

C) $2\sqrt[3]{a^2}+\frac{1}{2}a\sqrt[3]{a^2}$ D) 1

✓ $b^{\frac{1}{5}}\left(\sqrt[5]{b^4}-\sqrt[5]{b^{-1}}\right)$ ni soddalashtiring.

A) $b+1$ B) $b-1$ C) b D) 1

Yechilishi:

$b^{\frac{1}{5}}\left(\sqrt[5]{b^4}-\sqrt[5]{b^{-1}}\right)=b^{\frac{1}{5}}\cdot\sqrt[5]{b^4}-\sqrt[5]{b^{-1}}\cdot b^{\frac{1}{5}}=$ **J:** $b-1$

$=b^{\frac{1}{5}}\cdot b^{\frac{4}{5}}-b^{-\frac{1}{5}}\cdot b^{\frac{1}{5}}=b^{\frac{1}{5}+\frac{4}{5}}-b^{-\frac{1}{5}+\frac{1}{5}}=b-b^0=b-1$

3261. $b^{\frac{2}{3}}\left(\sqrt[3]{b}+\sqrt[3]{b^{-2}}\right)$ ni soddalashtiring.

A) $b+1$ B) $b-1$ C) b D) $2b-4$

3262. $a^{\frac{4}{3}}\left(a^{-\frac{1}{3}}-a^{\frac{2}{3}}\right)$ ni soddalashtiring.

A) $1-a^2$ B) a^2-a C) $a-a^2$ D) $a+a^2$

3263. $a^{\frac{1}{4}}\left(a^{\frac{3}{4}}+a^{-\frac{1}{4}}\right)$ ni soddalashtiring.

A) $1-a$ B) a^2-a C) $a+1$ D) a^2

3264. $\left(\sqrt[3]{ab^{-2}}+(ab)^{-\frac{1}{6}}\right)\sqrt[6]{ab^4}$ ni soddalashtiring.

A) $\sqrt[6]{a^5}-\sqrt{b}$ B) $\sqrt[6]{a^7}+\sqrt{b}$

C) $4a-2b\sqrt[5]{b}$ D) $\sqrt{a}+\sqrt{b}$

3265. $\left(2^{\frac{5}{3}}\cdot3^{-\frac{1}{3}}-3^{\frac{5}{3}}\cdot2^{-\frac{1}{3}}\right)\sqrt[3]{6}$ ni hisoblang.

A) -5 B) -4 C) 5 D) 4

✓ $\left(\sqrt[3]{9}+\sqrt[3]{6}+\sqrt[3]{4}\right)\left(\sqrt[3]{3}-\sqrt[3]{2}\right)$ ni hisoblang.

A) 4 B) 8 C) 6 D) 1

Yechilishi:

$\underbrace{\left(\sqrt[3]{9}+\sqrt[3]{6}+\sqrt[3]{4}\right)\left(\sqrt[3]{3}-\sqrt[3]{2}\right)}_{\left(a^2+ab+b^2\right)(a-b)}=\sqrt[3]{3}^3-\sqrt[3]{2}^3=3-2=1$

J: 1

Izoh: formulaga tushurish lozim.

yana bir misol:

$\left(\sqrt[4]{3}+\sqrt[4]{2}\right)\left(\sqrt[4]{3}-\sqrt[4]{2}\right)=\sqrt[4]{3}^2-\sqrt[4]{2}^2=\sqrt{3}-\sqrt{2}$

3266. $\left(\sqrt[3]{4}-\sqrt[3]{10}+\sqrt[3]{25}\right)\left(\sqrt[3]{2}+\sqrt[3]{5}\right)$ ni hisoblang.

A) 7 B) 10 C) 3 D) –3

3267. $\left(\sqrt[6]{7}-\sqrt[6]{5}\right)\left(\sqrt[6]{5}+\sqrt[6]{7}\right)$ ni hisoblang.

A) $\sqrt[3]{7}-\sqrt[3]{5}$ B) 12 C) $\sqrt[3]{49}-\sqrt[3]{25}$ D) 2

3268. $\left(\sqrt[3]{16}+\sqrt[3]{4}+1\right)\left(\sqrt[3]{4}-1\right)$ ni hisoblang.

A) 3 B) 10 C) 5 D) –3

3269. $\left(\sqrt[3]{5}-\sqrt[3]{2}\right)\left(\sqrt[3]{2}+\sqrt[3]{5}\right)$ ni hisoblang.

A) $\sqrt[3]{4}-\sqrt[3]{25}$ B) 3 C) $\sqrt[3]{25}-\sqrt[3]{4}$ D) $\sqrt[3]{5}-\sqrt[3]{2}$

3270. $\left(\sqrt[3]{x}-\sqrt[3]{y}\right)\left(x^{\frac{2}{3}}+\sqrt[3]{xy}+y^{\frac{2}{3}}\right)$ ni soddalashtiring.

A) $x+y$ B) $x+y^2$ C) $x-y$ D) y^2+x

3271. $\left(\sqrt[3]{n^2}+(nm)^{\frac{1}{3}}+\sqrt[3]{m^2}\right)\left(m^{\frac{1}{3}}-n^{\frac{1}{3}}\right)$ ni soddalashtiring.

A) $n-m$ B) $n+m$ C) $m-n^2$ D) $m-n$

✓ $a^{\frac{1}{3}}-a^{\frac{4}{3}}$ ni ko'paytuvchilarga ajrating $(a\geq0)$.

A) $\sqrt[3]{a}(1-a)$ B) $\sqrt[3]{a}(1+a)$

C) $(3-a)$ D) $\left(3+\sqrt{a}\right)$

Yechilishi:

$a^{\frac{1}{3}}-a^{\frac{4}{3}}=a^{\frac{1}{3}}(1-a)=\sqrt[3]{a}(1-a)$ **Javob: (A)**

Izoh: darajasi kichigini qavsdan tashqariga chiqarish lozim.

3272. $a^{\frac{1}{3}}+a^{\frac{7}{3}}$ ni ko'paytuvchilarga ajrating.

A) $\sqrt[3]{a}\left(1-a^2\right)$ B) $\sqrt[3]{a}\left(1+a^2\right)$

C) $\sqrt[3]{a}\left(2+a^2\right)$ D) $\sqrt[3]{a}\left(a+a^2\right)$

3273. $x^{\frac{2}{3}}y^{\frac{1}{3}}+y^{\frac{2}{3}}\sqrt[3]{x}$ ni ko'paytuvchilarga ajrating.

A) $\sqrt[3]{xy}\left(\sqrt[3]{x}-\sqrt[3]{y}\right)$ B) $\sqrt[3]{xy}\left(\sqrt{x}+\sqrt{y}\right)$

C) $\sqrt[3]{xy}\left(\sqrt[3]{x}+\sqrt[3]{y}\right)$ D) $\sqrt{xy}\left(\sqrt[3]{x}+\sqrt[3]{y}\right)$

3274. $\sqrt{a^3}+ba^{\frac{1}{2}}-\sqrt{3a}$ ni ko'paytuvchilarga ajrating $(y\geq 0)$.

A) $\sqrt{a}\left(\sqrt{a}+b-3\right)$ B) $\sqrt{a}\left(a+b-\sqrt{3}\right)$

C) $\sqrt{a}\left(\sqrt{a}+\sqrt{b}-3\right)$ D) $\sqrt{a}(a-b-3)$

3275. $2\sqrt[3]{a^6b}-3a^2\cdot\sqrt[3]{64b}+2a^2\sqrt[3]{125b^4}$ ni ko'paytuvchilarga ajrating.

A) $10a^2\sqrt[3]{b}(b-1)$ B) $10a^2\sqrt[3]{b}(b+1)$

C) $-10a^2\sqrt[3]{b}(b-1)$ D) $-10a^2\sqrt[3]{b}(b+1)$

✓ $x-y$ quyidagilardan qaysi biriga teng.

A) $\left(\sqrt[3]{x}-\sqrt[3]{y}\right)\left(\sqrt[3]{x^2}+\sqrt[3]{xy}+\sqrt[3]{y^2}\right)$

B) $\left(\sqrt[3]{x}+\sqrt[3]{y}\right)\left(\sqrt[3]{x}-\sqrt[3]{xy}+\sqrt[3]{y}\right)$

C) $\left(\sqrt[3]{x}-\sqrt[3]{y}\right)\left(\sqrt[3]{x}+\sqrt[3]{y}\right)$ D) $\left(3+\sqrt{xy}\right)$

Yechilishi:

$$x-y=\sqrt[3]{x}^3-\sqrt[3]{y}^3=\left(\sqrt[3]{x}-\sqrt[3]{y}\right)\left(\sqrt[3]{x^2}+\sqrt[3]{xy}+\sqrt[3]{y^2}\right)$$

Javob: (A)

Izoh: formulaga tushurish lozim.

yana bir misol:

$$\sqrt{a}-\sqrt{b}=\sqrt[4]{a}^2-\sqrt[4]{a}^2=\left(\sqrt[4]{a}-\sqrt[4]{b}\right)\left(\sqrt[4]{a}+\sqrt[4]{b}\right)$$

3276. $n+m$ quyidagilardan qaysi biriga teng.

A) $\left(\sqrt[3]{n^2}+\sqrt[3]{nm}+\sqrt[3]{m^2}\right)\left(\sqrt[3]{m}+\sqrt[3]{n}\right)$

B) $\left(\sqrt[3]{n^2}-\sqrt[3]{nm}+\sqrt[3]{m^2}\right)\left(\sqrt[3]{m}+\sqrt[3]{n}\right)$

C) $\left(\sqrt[3]{n^2}+\sqrt[3]{nm}+\sqrt[3]{m^2}\right)\left(\sqrt[3]{m}-\sqrt[3]{n}\right)$

D) $\left(\sqrt[3]{n^2}-\sqrt[3]{nm}-\sqrt[3]{m^2}\right)\left(\sqrt[3]{m}+\sqrt[3]{n}\right)$

3277. $\sqrt{b}-\sqrt{y}$ quyidagilardan qaysi biriga teng.

A) $\left(\sqrt[4]{b}+\sqrt[4]{y}\right)\left(\sqrt[4]{y}-\sqrt[4]{b}\right)$ B) $\left(\sqrt[4]{y}+\sqrt[4]{b}\right)$

C) $\left(\sqrt[4]{y}+\sqrt[4]{b}\right)\left(\sqrt[4]{b}-\sqrt[4]{y}\right)$ D) $\left(\sqrt[4]{a}-\sqrt[4]{b}\right)\left(\sqrt[4]{a}+\sqrt[4]{b}\right)$

3278. $x^{\frac{2}{3}}+2\sqrt[3]{xy}+y^{\frac{2}{3}}$ quyidagilardan qaysi biriga teng.

A) $\left(\sqrt[3]{x}-\sqrt[3]{y}\right)^2$ B) $\left(\sqrt[3]{x}+\sqrt[3]{y}\right)^2$

C) $\left(\sqrt[3]{y}-\sqrt[3]{x}\right)^2$ D) $\left(\sqrt[4]{x}+\sqrt[4]{y}\right)^2$

3279. $x-k$ quyidagilardan qaysi biriga teng.

A) $\left(\sqrt[3]{x}-\sqrt[3]{k}\right)\left(\sqrt[3]{x^2}+\sqrt[3]{xk}+\sqrt[3]{k^2}\right)$

B) $\left(\sqrt[3]{x}+\sqrt[3]{k}\right)\left(\sqrt[3]{x}-\sqrt[3]{xk}+\sqrt[3]{k}\right)$

C) $\left(\sqrt[3]{x}-\sqrt[3]{k}\right)\left(\sqrt[3]{x}+\sqrt[3]{k}\right)$

D) $\left(\sqrt[3]{x}-\sqrt[3]{k}\right)\left(\sqrt[3]{x}+\sqrt[3]{xk}+\sqrt[3]{k}\right)$

✓ $\dfrac{a^{\frac{1}{3}}\sqrt{b}+b^{\frac{1}{3}}\sqrt{a}}{\sqrt[6]{a}+\sqrt[6]{b}}$ ni soddalashtiring.

A) $a^{\frac{1}{3}}b^{\frac{1}{3}}$ B) $a^{\frac{1}{3}}$ C) b D) 1

Yechilishi: **J: A**

$$\frac{a^{\frac{1}{3}}\sqrt{b}+b^{\frac{1}{3}}\sqrt{a}}{\sqrt[6]{a}+\sqrt[6]{b}}=\frac{a^{\frac{1}{3}}b^{\frac{1}{3}}(\sqrt[6]{a}+\sqrt[6]{b})}{\sqrt[6]{a}+\sqrt[6]{b}}=\frac{a^{\frac{1}{3}}b^{\frac{1}{3}}(\sqrt[6]{a}+\sqrt[6]{b})}{\sqrt[6]{a}+\sqrt[6]{b}}=a^{\frac{1}{3}}b^{\frac{1}{3}}$$

Izoh: qavsdan kichigini chiqarib qisqartirish lozim. ("-" bo'lsa ham, kichigini qavsdan tashqariga chiqaring)

yana bir misol:

$$\frac{a^{\frac{5}{3}}b^{-1}-ab^{-\frac{1}{3}}}{\sqrt[3]{a^2}-\sqrt[3]{a^2}}=\frac{ab^{-1}(a^{\frac{2}{3}}-b^{\frac{2}{3}})}{\sqrt[3]{a^2}-\sqrt[3]{a^2}}=\frac{ab^{-1}(a^{\frac{2}{3}}-b^{\frac{2}{3}})}{\sqrt[3]{a^2}-\sqrt[3]{a^2}}=ab^{-1}$$

3280. $\dfrac{x-y}{x^{\frac{1}{2}}+y^{\frac{1}{2}}}$ ni soddalashtiring.

A) $\sqrt{x}+\sqrt{y}$ B) $\sqrt{x}-\sqrt{y}$ C) 1 D) $\sqrt{y}-\sqrt{x}$

3281. $\dfrac{\sqrt{a}-\sqrt{b}}{a^{\frac{1}{4}}-b^{\frac{1}{4}}}$ ni soddalashtiring.

A) $\sqrt[4]{b}-\sqrt[4]{a}$ B) $\sqrt[4]{a}+\sqrt[4]{b}$ C) $a-a^2$ D) $\sqrt[4]{a}-\sqrt[4]{b}$

3282. $\dfrac{a^{\frac{4}{3}}(a^{-\frac{1}{3}}+a^{\frac{2}{3}})}{a^{\frac{1}{4}}(a^{\frac{3}{4}}+a^{-\frac{1}{4}})}$ ni soddalashtiring.

A) 1 B) a^2-a C) a D) a^2

3283. $\dfrac{b^{\frac{1}{5}}(\sqrt[5]{b^4}-\sqrt[5]{b^{-1}})}{b^{\frac{2}{3}}(\sqrt[3]{b}-\sqrt[3]{b^{-2}})}$ ni soddalashtiring.

A) $\sqrt[6]{a^5}-\sqrt{b}$ B) $\sqrt[6]{a^7}+\sqrt{b}$ C) 1 D) $\sqrt[6]{a^5}+\sqrt{b}$

3284. $\dfrac{a^{\frac{1}{4}}-a^{-\frac{7}{4}}}{a^{\frac{1}{4}}-a^{-\frac{3}{4}}}$ ni soddalashtiring.

A) $a^{-1}(a+1)$ B) $a(a+1)$ C) $a^{-1}(a-1)$ D) 1

3285. $\dfrac{a^{\frac{4}{3}}-a^{-\frac{2}{3}}}{a^{\frac{1}{3}}-a^{-\frac{2}{3}}}$ ni soddalashtiring.

A) $a+1$ B) $a(a+1)$ C) $a^{-1}(a-1)$ D) 1

3286. $\dfrac{b^{\frac{5}{4}}-2b^{\frac{1}{4}}+b^{-\frac{3}{4}}}{b^{\frac{3}{4}}-b^{-\frac{1}{4}}}$ ni soddalashtiring.

A) $b^{\frac{1}{2}}(b-1)$ B) $\sqrt[6]{a^7}+\sqrt{b}$

C) $b^{-\frac{1}{2}}(b-1)$ D) $\sqrt[6]{a^5}+\sqrt{b}$

3287. $\dfrac{a^{-\frac{4}{3}}b^{-2}-b^{-\frac{4}{3}}a^{-2}}{a^{-\frac{5}{3}}b^{-2}-a^{-2}b^{-\frac{5}{3}}}$ ni soddalashtiring.

A) 1 B) $\sqrt[3]{a}+\sqrt{b}$ C) $b^{-\frac{1}{2}}(b+1)$ D) $\sqrt[3]{a}+\sqrt[3]{b}$

3288. $\dfrac{a^{\frac{3}{4}}b^{-\frac{1}{4}}-a^{-\frac{1}{4}}b^{\frac{3}{4}}}{a^{\frac{1}{4}}b^{-\frac{1}{4}}-a^{-\frac{1}{4}}b^{\frac{1}{4}}}$ ni soddalashtiring.

A) $a+b$ B) $\sqrt{a}+\sqrt{b}$ C) $b^{-\frac{1}{2}}(b+1)$ D) $\sqrt[6]{a^5}+\sqrt{b}$

✓ $\dfrac{\sqrt{a}-a^{-\frac{1}{2}}b}{1-\sqrt{a^{-1}b}}-\dfrac{\sqrt[3]{a^2}-a^{-\frac{1}{3}}b}{\sqrt[6]{a}+a^{-\frac{1}{3}}\sqrt{b}}$ ni soddalashtiring.

A) $a^{\frac{1}{3}}b^{\frac{1}{3}}$ B) $2\sqrt{b}$ C) b D) 1

Yechilishi:

{1} {2}

$$\frac{\sqrt{a}-a^{-\frac{1}{2}}b}{1-\sqrt{a^{-1}b}}-\frac{\sqrt[3]{a^2}-a^{-\frac{1}{3}}b}{\sqrt[6]{a}+a^{-\frac{1}{3}}\sqrt{b}}=$$

$$\{1\}\ \frac{\sqrt{a}-a^{-\frac{1}{2}}b}{1-\sqrt{a^{-1}b}}=\frac{a^{-\frac{1}{2}}(a-b)}{a^{-\frac{1}{2}}(\sqrt{a}-\sqrt{b})}=\frac{a^{\frac{1}{2}}(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}{a^{\frac{1}{2}}(\sqrt{a}-\sqrt{b})}=$$

$$=(\sqrt{a}+\sqrt{b})$$

$$\{2\}\ \frac{\sqrt[3]{a^2}-a^{-\frac{1}{3}}b}{\sqrt[6]{a}+a^{-\frac{1}{3}}\sqrt{b}}=\frac{a^{\frac{1}{3}}(a-b)}{a^{\frac{1}{3}}(\sqrt{a}+\sqrt{b})}=\frac{(\sqrt{a}+\sqrt{b})(\sqrt{a}-\sqrt{b})}{\sqrt{a}+\sqrt{b}}=\sqrt{a}-\sqrt{b}$$

$$\{1\}-\{2\}=(\sqrt{a}+\sqrt{b})-(\sqrt{a}-\sqrt{b})=2\sqrt{b}$$

Javob: $2\sqrt{b}$

3289. $\left(1-2\sqrt{\dfrac{b}{a}}+\dfrac{b}{a}\right):(a^{\frac{1}{2}}-b^{\frac{1}{2}})^2$ ni soddalashtiring.

A) $\sqrt{a}+\sqrt{b}$ B) $\dfrac{1}{a}$ C) 1 D) a

3290. $(a^{\frac{1}{3}}+b^{\frac{1}{3}}):(2+\sqrt[3]{\dfrac{a}{b}}+\sqrt[3]{\dfrac{b}{a}})$ ni soddalashtiring.

A) $\sqrt[4]{b}-\sqrt[4]{a}$ B) $\dfrac{\sqrt[3]{ab}}{\sqrt[3]{a}+\sqrt[3]{b}}$

C) $a-a^2$ D) $\sqrt[4]{a}+\sqrt[4]{b}$

3291. $\dfrac{a^{\frac{1}{4}}-a^{\frac{9}{4}}}{a^{\frac{1}{4}}-a^{\frac{5}{4}}}-\dfrac{b^{-\frac{1}{2}}-b^{\frac{3}{2}}}{b^{\frac{1}{2}}-b^{-\frac{1}{2}}}$ ni soddalashtiring.

A) 1 B) $b+a$ C) $a+b+2$ D) a^2

✓ $\dfrac{a^{\frac{3}{2}}}{\sqrt{a}+\sqrt{b}}-\dfrac{ab^{\frac{1}{2}}}{\sqrt{b}-\sqrt{a}}-\dfrac{2a^2-4ab}{a-b}$ ni soddalashtiring.

A) $\dfrac{a^2+5ab}{a-b}$ B) $\dfrac{a^2-5ab}{a+b}$ C) $\dfrac{-a^2+5ab}{a-b}$ D) 1

Yechilishi:

$$\frac{a^{\frac{3}{2}}}{\sqrt{a}+\sqrt{b}}-\frac{ab^{\frac{1}{2}}}{\sqrt{b}-\sqrt{a}}-\frac{2a^2-4ab}{a-b}=$$

$$=\frac{a^{\frac{3}{2}}}{\sqrt{a}+\sqrt{b}}+\frac{ab^{\frac{1}{2}}}{\sqrt{a}-\sqrt{b}}-\frac{2a^2-4ab}{a-b}=$$

$$=\frac{a^{\frac{3}{2}}(\sqrt{a}-\sqrt{b})+ab^{\frac{1}{2}}(\sqrt{a}+\sqrt{b})-2a^2+4ab}{(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}=$$

$$=\frac{a^{\frac{3}{2}+\frac{1}{2}}-a^{\frac{3}{2}}\sqrt{b}+a^{1+\frac{1}{2}}b^{\frac{1}{2}}+ab^{\frac{1}{2}+\frac{1}{2}}-2a^2+4ab}{(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}=$$

$$=\frac{a^2-a^{\frac{3}{2}}\sqrt{b}+a^{\frac{3}{2}}b^{\frac{1}{2}}+ab-2a^2+4ab}{(\sqrt{a}-\sqrt{b})(\sqrt{a}+\sqrt{b})}=\frac{-a^2+5ab}{a-b}$$

Javob: C)

3292. $\dfrac{3xy-y^2}{x-y}-\dfrac{y\sqrt{y}}{\sqrt{x}-\sqrt{y}}-\dfrac{y\sqrt{x}}{\sqrt{x}+\sqrt{y}}$ ni soddalashtiring.

A) $4y$ B) $2\sqrt{yx}$ C) $2y$ D) $\sqrt[6]{y}+\sqrt{x}$

3293. $\dfrac{1}{\sqrt[3]{a}+\sqrt[3]{b}}-\dfrac{\sqrt[3]{a}+\sqrt[3]{b}}{a^{\frac{2}{3}}-\sqrt[3]{ab}+b^{\frac{2}{3}}}$ ni hisoblang.

A) $-\dfrac{3\sqrt[3]{ab}}{a+b}$ B) $\dfrac{3\sqrt[3]{ab}}{a+b}$ C) $-\dfrac{\sqrt[3]{ab}}{a+b}$ D) 1

3294. $\dfrac{\sqrt[3]{a^2}-\sqrt[3]{b^2}}{\sqrt[3]{a}-\sqrt[3]{b}}-\dfrac{a-b}{a^{\frac{2}{3}}+\sqrt[3]{ab}+b^{\frac{2}{3}}}$ ni hisoblang.

A) $2\sqrt[3]{b}$ B) $4\sqrt[3]{a}+2\sqrt[3]{b}$ C) $\sqrt[3]{a}$ D) 1

✓ $\dfrac{a-a\sqrt{a}}{\sqrt[3]{a^2}+\sqrt[6]{a^5}+a}-\dfrac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}+\sqrt{a}}+2\sqrt{a}$ ni soddalashtiring.

A) $2\sqrt{a}$ B) $2\sqrt{ab}$ C) $2\sqrt{b}$ D) 1

Yechilishi:

$$\frac{a-a\sqrt{a}}{\sqrt[3]{a^2}+\sqrt[6]{a^5}+a}-\frac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}+\sqrt{a}}+2\sqrt{a}=\frac{\sqrt[3]{a^3}-\sqrt{a^3}}{\sqrt[3]{a^2}+\sqrt[6]{a^5}+a}-\frac{\sqrt[3]{a^2}-\sqrt{a^2}}{\sqrt[3]{a}+\sqrt{a}}+2\sqrt{a}=$$

$$=\frac{(\sqrt[3]{a}-\sqrt{a})(\sqrt[3]{a^2}+\sqrt[6]{a^5}+a)}{\sqrt[3]{a^2}+\sqrt[6]{a^5}+a}-\frac{(\sqrt[3]{a}-\sqrt{a})(\sqrt[3]{a}+\sqrt{a})}{\sqrt[3]{a}+\sqrt{a}}+2\sqrt{a}=$$

$$=(\sqrt[3]{a}-\sqrt{a})-(\sqrt[3]{a}-\sqrt{a})+2\sqrt{a}=$$

$$=\sqrt[3]{a}-\sqrt{a}-\sqrt[3]{a}+\sqrt{a}+2\sqrt{a}=2\sqrt{a}$$

J: $2\sqrt{a}$

3295. $\dfrac{a+a\sqrt{a}}{\sqrt[3]{a^2}-\sqrt[6]{a^5}+a}+\dfrac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}-\sqrt{a}}-2\sqrt[3]{a}$ ni soddalashtiring.

A) $2\sqrt[3]{a}$ B) 0 C) $2\sqrt{a}$ D) $\sqrt{a}+\sqrt[3]{a}$

3296. $\dfrac{a-a\sqrt{a}}{\sqrt[3]{a^2}+\sqrt[6]{a^5}+a}-\dfrac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}+\sqrt{a}}-2\sqrt[3]{a}$ ni hisoblang.

A) $-2\sqrt[3]{a}$ B) $2\sqrt{a}$ C) $-\sqrt{a}-\sqrt[3]{a}$ D) 0

3297. $\dfrac{a+a\sqrt{a}}{\sqrt[3]{a^2}-\sqrt[6]{a^5}+a}-\dfrac{\sqrt[3]{a^2}-a}{\sqrt[3]{a}+\sqrt{a}}-2\sqrt{a}$ ni hisoblang.

A) 0 B) $4\sqrt[3]{a}+2\sqrt[3]{b}$ C) $\sqrt[3]{a}$ D) $2\sqrt[3]{a}$

3298. $\dfrac{27a+1}{9\sqrt[3]{a^2}-3\sqrt[3]{a}+1}-\dfrac{27a-1}{9\sqrt[3]{a^2}+3a^{\frac{1}{3}}+1}$ ni hisoblang.

A) 2 B) $4\sqrt[3]{a}+2\sqrt[3]{b}$ C) $\sqrt[3]{a}$ D) $2\sqrt[3]{a}$

✓ $\dfrac{3}{\sqrt[3]{2}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\dfrac{3\sqrt[3]{2}}{2}$ B) $\dfrac{3\sqrt[3]{4}}{2}$ C) $\dfrac{\sqrt[3]{4}}{2}$ D) 3

Yechilishi: Formulasi: $\dfrac{1}{\sqrt[n]{a^k}}=\dfrac{1\cdot\sqrt[n]{a^{n-k}}}{\sqrt[n]{a^k}\cdot\sqrt[n]{a^{n-k}}}$

$$\frac{3}{\sqrt[3]{2}}=\frac{3\cdot\sqrt[3]{2^2}}{\sqrt[3]{2}\cdot\sqrt[3]{2^2}}=\frac{3\cdot\sqrt[3]{2^2}}{\sqrt[3]{2^3}}=\frac{3\cdot\sqrt[3]{2^2}}{2}=\frac{3\sqrt[3]{4}}{2}$$

J:B)

Izoh: Maxrajda qanday son turgan bo'lsa, shunday sonni suratga ham, maxrajga ham ko'paytiringki ildizdan qutilsin.

3299. $\dfrac{8}{\sqrt[4]{3}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\dfrac{8\sqrt[4]{9}}{3}$ B) $\dfrac{8\sqrt[4]{27}}{3}$ C) $\dfrac{8\sqrt[4]{3}}{3}$ D) 8

3300. $\dfrac{20}{\sqrt[3]{10}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\dfrac{2\sqrt[3]{100}}{3}$ B) $\dfrac{20\sqrt{100}}{3}$ C) $2\sqrt[3]{100}$ D) 5

3301. $\dfrac{48}{\sqrt[5]{2^2}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $48\sqrt[5]{16}$ B) $24\sqrt[5]{8}$ C) $12\sqrt[5]{16}$ D) 16

3302. $\dfrac{9}{\sqrt[7]{3^5}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt[7]{9}$ B) $3\sqrt[7]{9}$ C) $\dfrac{2\sqrt[3]{14}}{11}$ D) 9

✓ $\dfrac{1}{\sqrt[3]{9}-\sqrt[3]{6}+\sqrt[3]{4}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\dfrac{\sqrt[3]{3}+\sqrt[3]{4}}{8}$ B) $\dfrac{\sqrt[3]{3}+\sqrt[3]{4}}{7}$ C) $\dfrac{\sqrt[3]{3}-\sqrt[3]{4}}{7}$ D) 7

Yechilishi:

$$\frac{1}{\sqrt[3]{9}-\sqrt[3]{6}+\sqrt[3]{4}}=\frac{1\cdot\left(\sqrt[3]{3}+\sqrt[3]{4}\right)}{\left(\sqrt[3]{9}-\sqrt[3]{6}+\sqrt[3]{4}\right)\left(\sqrt[3]{3}+\sqrt[3]{4}\right)}=$$

Javob: B)

$$=\frac{\left(\sqrt[3]{3}+\sqrt[3]{4}\right)}{\sqrt[3]{3}^3+\sqrt[3]{4}^3}=\frac{\sqrt[3]{3}+\sqrt[3]{4}}{3+4}=\frac{\sqrt[3]{3}+\sqrt[3]{4}}{7}$$

Izoh: formulaga tushushiga e'tibor bering.

3303. $\dfrac{1}{\sqrt[3]{49}+\sqrt[3]{35}+\sqrt[3]{25}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt[3]{7}-\sqrt[3]{5}$ B) $\dfrac{7-\sqrt[3]{5}}{2}$ C) $\dfrac{\sqrt[3]{7}-\sqrt[3]{5}}{2}$ D) 7

3304. $\dfrac{5}{2-\sqrt[3]{3}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt{3}$ B) $4+2\sqrt[3]{3}+\sqrt[3]{9}$ C) $\sqrt[3]{3}+\sqrt[3]{4}$ D) 5

3305. $\dfrac{11}{25+5\sqrt[3]{4}+\sqrt[3]{16}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $5+\sqrt[3]{4}$ B) $\dfrac{5+\sqrt[3]{4}}{11}$ C) $\dfrac{5-\sqrt[3]{4}}{11}$ D) 5

3306. $\frac{6}{\sqrt[3]{7}-\sqrt[3]{4}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\sqrt[3]{7}-\sqrt{3}$ B) $2\left(\sqrt[3]{49}+\sqrt[3]{28}+\sqrt[3]{16}\right)$

C) $\sqrt[3]{49}+\sqrt[3]{28}+\sqrt[3]{16}$ D) 2

✓ $\frac{\sqrt{x^2+1}}{\sqrt{x^2+1}-\sqrt{x^2-1}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{x^2+1+\sqrt{x^4-1}}{2}$ B) $\frac{x^2+1-\sqrt{x^4-1}}{2}$

C) $\frac{x^2-1+\sqrt{x^4-1}}{2}$ D) 7

Yechilishi:

$$\frac{\sqrt{x^2+1}}{\sqrt{x^2+1}-\sqrt{x^2-1}}=\frac{\sqrt{x^2+1}\left(\sqrt{x^2+1}+\sqrt{x^2-1}\right)}{\left(\sqrt{x^2+1}-\sqrt{x^2-1}\right)\left(\sqrt{x^2+1}+\sqrt{x^2-1}\right)}$$

$$=\frac{\sqrt{x^2+1}\left(\sqrt{x^2+1}+\sqrt{x^2-1}\right)}{\sqrt{x^2+1}^2-\sqrt{x^2-1}^2}=\frac{\sqrt{x^2+1}^2+\sqrt{x^4-1}}{x^2+1-x^2+1}=$$

$$=\frac{x^2+1+\sqrt{x^4-1}}{2}$$

J: A)

Izoh: formulaga tushushiga e'tibor bering.

3307. $\frac{\sqrt{x-3}-\sqrt{x+3}}{\sqrt{x-3}+\sqrt{x+3}}$ ni maxrajidagi irratsionallikni yo'qoting. $(x>3)$

A) $\frac{x-\sqrt{x^2-9}}{3}$ B) $-\frac{x-\sqrt{x^2-9}}{3}$

C) $x-\sqrt{x^2-9}$ D) 9

3308. $\frac{c}{\sqrt{c^2+1}-\sqrt{c^2-1}}$ ni maxrajidagi irratsionallikni yo'qoting.

A) $\frac{c\left(\sqrt{c^2+1}+\sqrt{c^2-1}\right)}{2}$ B) $\frac{\sqrt{c^2+1}+\sqrt{c^2-1}}{2}$

C) $\sqrt{c^2+1}+\sqrt{c^2-1}$ D) $\sqrt{c^2+1}-\sqrt{c^2-1}$

O'rta Proporsional

✓ 6; 16; 24 sonlarining o'rta proporsionalini toping.

A) 48 B) 35 C) 24 D) 12

Yechilishi: $\sqrt{6\cdot16\cdot24}=4\sqrt{6\cdot6\cdot4}=4\cdot6\cdot2=48$

Javob: (A)

Izoh: nechta son berilsa, ham ularni ko'paytirib ildiz olish lozim. yana bir misol:

36; 24 sonlarining o'rta proporsionalini toping.

$\sqrt{36\cdot24}=6\sqrt{6\cdot4}=6\cdot2\sqrt{6}=12\sqrt{6}$

3309. 75; 125; sonlarining o'rta proporsionalini toping.

A) 50 B) 25 C) 24 D) $25\sqrt{15}$

3310. 196; 0,01; 225 sonlarining o'rta proporsionalini toping.

A) 1,4 B) 1,5 C) 21 D) 210

3311. 4; 8; 44; 88 sonlarining o'rta proporsionalini toping.

A) 148 B) 352 C) 242 D) 142

3312. 7; 56; 100; 120 sonlarining o'rta proporsionalini toping.

A) $560\sqrt{15}$ B) $140\sqrt{2}$ C) $460\sqrt{15}$ D) 280

O'rta geometrik

✓ 3; 48; sonlarining O'rta geometrigini toping.

A) 48 B) 35 C) 24 D) 12

Yechilishi: O'rta geometrik formulasi

$G=\sqrt[n]{a_1\cdot a_2\cdot a_3\cdot\ldots\cdot a_n}$

2 ta son uchun formula $G=\sqrt{ab}$

3 ta son uchun formula $G=\sqrt[3]{abc}$

4 ta son uchun formula $G=\sqrt[4]{abcd}$

2 ta son bo'lgani uchun formula

$G=\sqrt{3\cdot48}=\sqrt{3\cdot3\cdot16}=4\cdot3=12$ **J: (D)**

Izoh: 2 ta sonning o'rta geometrigini o'rgandik. Buning uchun ularni ko'paytirib ildiz olish lozim.

3313. 2; 32; sonlarining o'rta geometrigini toping.

A) 16 B) 64 C) 12 D) 8

3314. $8\frac{1}{6};4\frac{1}{6}$ sonlarining o'rta geometrigini toping.

A) $6\frac{2}{6}$ B) $2\frac{1}{6}$ C) $5\frac{5}{6}$ D) $4\frac{1}{6}$

3315. $3\sqrt{5};\sqrt{5}$ sonlarining o'rta geometrigini toping.

A) $\sqrt{15}$ B) $3\sqrt{15}$ C) $10\sqrt{15}$ D) 280

3316. 8; 64; 0,027 sonlarining o'rta geometrigini toping.

A) $3\frac{2}{5}$ B) $2\frac{1}{5}$ C) $2\frac{2}{5}$ D) $4\frac{1}{6}$

3317. 4 *va* 64 sonlarining o'rta arifmetigi ularning o'rta geometrigidan necha marta katta?

A) $2\frac{1}{4}$ B) $2\frac{1}{5}$ C) $2\frac{1}{8}$ D) $2\frac{3}{4}$

3318. 2; 9; 12 sonlarining O'rta geometrigini toping.

A) 6 B) 5 C) $10\sqrt{3}$ D) 27

3319. Ikki sonning o'rta arifmetigi 10 ga, o'rta geometrigi esa 6 ga teng. Shu sonlarni toping.

A) 2; 18 B) 6; 14 C) 5; 15 D) 2; 8

Koshi tengsizligi

✓ Tengsizliklar uchun quyidagi keltirilgan mulohazalardan qaysilari to`g'ri?

1) Agar $x, y > 0$ bo'lsa, u holda $\frac{y}{x} + \frac{x}{y} \geq 2$ bo'ladi.

2) Agar $n, m > 0$ bo'lsa, u holda $\frac{1}{nm} + nm \leq 2$ bo'ladi.

3) Agar $a, b > 0$ bo'lsa, u holda $\frac{1}{ab^3} + \frac{1}{a^3b} \geq \frac{2}{a^2b^2}$ bo'ladi.

4) Agar $a, b > 0$ bo'lsa, u holda $9a^2 + b^2 \leq 6ab$ bo'ladi

A) 1; 2 B) 3; 4 C) 1; 3 D) 2; 4

Yechilishi: koshi tengsizligi $A \geq G \Rightarrow \frac{a+b}{2} \geq \sqrt{ab}$

$a+b \geq 2\sqrt{ab} \Rightarrow \frac{y}{x} + \frac{x}{y} \geq 2\sqrt{\frac{y}{x} \cdot \frac{x}{y}} \quad \frac{y}{x} + \frac{x}{y} \geq 2$

$a+b \geq 2\sqrt{ab} \Rightarrow \frac{1}{nm} + nm \geq 2\sqrt{\frac{1}{nm} \cdot nm}; \quad \frac{1}{nm} + nm \geq 2$

$a+b \geq 2\sqrt{ab} \Rightarrow \frac{1}{ab^3} + \frac{1}{a^3b} \geq 2\sqrt{\frac{1}{a^4b^4}}$

$\frac{1}{ab^3} + \frac{1}{a^3b} \geq \frac{2}{a^2b^2}$

$a+b \geq 2\sqrt{ab} \Rightarrow 9a^2 + b^2 \geq 2\sqrt{9a^2 \cdot b^2}$ **Javob: 1; 3**

$9a^2 + b^2 \geq 6ab$

3320. Tengsizliklar uchun quyidagi keltirilgan mulohazalardan qaysilari noto'g'ri?

1) Agar $x > 0$ bo'lsa, u holda $x + \frac{1}{16x} \leq \frac{1}{2}$ bo'ladi.

2) $n, m > 0$ bo'lsa, u holda $\frac{1}{32nm} + 8nm \leq 1$ bo'ladi.

3) Agar $a, b > 0$ bo'lsa, u holda $a + \frac{1}{a} \geq 2$ bo'ladi.

4) Agar $a > 0$ bo'lsa, u holda $4a^2 + 1 \geq 4a$ bo'ladi.

A) 1; 2 B) 3; 4 C) 1; 3 D) 1; 2; 4

3321. Tengsizliklar uchun quyidagi keltirilgan mulohazalardan qaysilari to'g'ri?

1) Agar $x > 0$ bo'lsa, u holda $5x + \frac{1}{5x} \geq 2$ bo'ladi.

2) $n, m > 0$ bo'lsa, u holda $\frac{1}{125n^m} + 5n^m \leq \frac{2}{5}$ bo'ladi.

3) Agar $a > 0$ bo'lsa, u holda $a^3 + \frac{1}{a} \geq 2a$ bo'ladi.

4) $a > 0$ bo'lsa, u holda $100a^2 + 1 \geq 20a$ bo'ladi.

A) 1; 2 B) 3; 4 C) 1; 3 D) 1; 3; 4

✓ Agar $25 \leq x \leq y \leq z \leq t \leq 64$ bo'lsa, $\frac{x}{y} + \frac{z}{t}$ ifodaning eng kichik qiymatini toping.

A) 0,25 B) 1,25 C) 1,3 D) 4,2

Yechilishi: **Javob: (B)**

ko'shi tensizligi *misol*

$\frac{a+b}{2} \geq \sqrt{ab} \Rightarrow \frac{x}{y} + \frac{z}{t} \geq 2\sqrt{\frac{x}{y} \cdot \frac{z}{t}}$

$a+b \geq 2\sqrt{ab}$

$\frac{x}{y} + \frac{z}{t} \geq 2\sqrt{\frac{x}{y} \cdot \frac{z}{t}} = 2\sqrt{\frac{25}{y} \cdot \frac{z}{64}} = 2\sqrt{\frac{25}{64}} = 2 \cdot \frac{5}{8} = \frac{5}{4} = 1,25$

Izoh: kasrning kichik qiymati mahraji katta, surati kichik bo'lgani uchun "25" va "64" ni qo'yildi..

3322. Agar $16 \leq x \leq y \leq z \leq t \leq 121$ bo'lsa, $\frac{x}{y} + \frac{z}{t}$ ifodaning eng kichik qiymatini toping.

A) $\frac{8}{11}$ B) 1,5 C) $\frac{4}{11}$ D) $\frac{2}{11}$

3323. Agar $5 \leq x \leq y \leq z \leq t \leq 320$ bo'lsa, $\frac{x}{y} + \frac{z}{t}$ ifodaning eng kichik qiymatini toping.

A) $\frac{1}{2}$ B) $\frac{1}{4}$ C) 12 D) $\frac{3}{2}$

3324. Agar $7 \leq x \leq y \leq z \leq t \leq 112$ bo'lsa, $\frac{x}{y} + \frac{z}{t}$ ifodaning eng kichik qiymatini toping.

A) $\frac{1}{8}$ B) $\frac{1}{4}$ C) 0,7 D) $\frac{1}{2}$

3325. Musbat x, y sonlari uchun $a = 9x + \frac{1}{9}y$ va $b = 2\sqrt{xy}$ bo'lsa, qaysi tengsizlik doim o'rinli?

1) $a > b$ 2) $a < b$ 3) $a \geq b$ 4) $a \leq b$

A) 1 B) 2 C) 3 D) 4

3326. Nomanfiy x, y sonlari uchun $a = \frac{x+4y}{2}$ va $b = 2\sqrt{xy}$ bo'lsa, qaysi tengsizlik doim o'rinli?

1) $a > b$ 2) $a < b$ 3) $a \leq b$ 4) $a \geq b$

A) 2 B) 4 C) 3 D) 1

3327. Har qanday x, y haqiqiy sonlari uchun $a = 2x^2 + \frac{1}{2}y^2$ va $b = 2|xy|$ bo'lsa, qaysi tengsizlik doim o'rinli? 1) $a \geq b$ 2) $a < b$ 3) $a \leq b$ 4) $a > b$

A) 2 B) 4 C) 3 D) 1

Kvadrat uchhadlarni ko'paytuvchilarga ajratish

✓ $2x^2-x-1$ ni ko'paytuvchilarga ajrating.

A) $2(x-1)\cdot\left(x-\frac{1}{2}\right)$ B) $(x-1)\cdot\left(x-\frac{1}{2}\right)$

C) $4(x-1)\cdot\left(x-\frac{1}{2}\right)$ D) $2(x-1)\cdot\left(x-\frac{1}{2}\right)$

Yechimi: formula $ax^2+bx+c=a(x-x_1)\cdot(x-x_2)$

formula	*misol*
$ax^2+bx+c=0$	$2x^2-x-1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-1)^2-4\cdot2\cdot(-1)}=\sqrt{1+8}=3$
$x_{1,2}=\frac{-b\pm D}{2a}$	$x_{1,2}=\frac{1\pm3}{2\cdot2}$

$$x_{1,2}=\frac{1\pm3}{2\cdot2}$$

$$x_1=\frac{1+3}{4}=1 \qquad x_1=\frac{1-3}{4}=-\frac{1}{2}$$

$$ax^2+bx+c=a(x-x_1)(x-x_2)$$

$$2x^2-x-1=2(x-1)\left(x+\frac{1}{2}\right)$$

Javob: (D)

Izoh: har doim diskiriminant qilib x_1,x_2 topiladi va formulaga qo'yiladi.

ko'plab holatlarda javobda qavs oldidagi sonni kasrli qavs ichiga ko'paytiradi. $2(x-1)\left(x+\frac{1}{2}\right)=(x-1)(2x+1)$

3328. x^2-5x+6 ni ko'paytuvchilarga ajrating.

A) $(x+3)(x+2)$ B) $(x-3)(x-2)$

C) $(x-1)(x-6)$ D) $(x+1)(x+6)$

3329. x^2+x-42 ni ko'paytuvchilarga ajrating.

A) $(x-8)(x+7)$ B) $(x+6)(x-7)$

C) $(x-6)(x+7)$ D) $(x-21)(x+2)$

3330. $-4x^2-7x+2$ ni ko'paytuvchilarga ajrating.

A) $(x-2)(1+4x)$ B) $-(x+2)(1-4x)$

C) $(x+2)(1-4x)$ D) $(x-2)(1+4x)$

3331. $x^2+5x-24$ ni ko'paytuvchilarga ajrating.

A) $(x-6)(x+4)$ B) $(x-3)(x+8)$

C) $(x+3)(x-8)$ D) $(x+2)(x-12)$

3332. $-6x^2+7x-2$ ni ko'paytuvchilarga ajrating.

A) $(1-2x)(3x-2)$ B) $(2x-1)(3x-2)$

C) $(1-x)(6x-2)$ D) $(1-3x)(2x-2)$

3333. $8x^2+10x+3$ ni ko'paytuvchilarga ajrating.

A) $(2x-1)(4x-3)$ B) $(2x+1)(4x+3)$

C) $(2x+3)(2x+1)$ D) $(x+1)(x+6)$

3334. $-\frac{1}{3}x^2+8x+27$ ni ko'paytuvchilarga ajrating.

A) $-\frac{1}{3}(x-27)(x+3)$ B) $-\frac{1}{3}(x+27)(x-3)$

C) $\frac{1}{3}(x-27)(x+3)$ D) $\frac{1}{3}(x-27)(x-3)$

✓ $\frac{a^2+6a-7}{a^2-7a+6}$ ni qisqartiring.

A) $\frac{a+7}{a-6}$ B) $\frac{a-7}{a+6}$ C) $\frac{a+9}{a+6}$ D) $\frac{a-7}{a-6}$

Yechimi: formula $ax^2+bx+c=a(x-x_1)(x-x_2)$

$$\frac{a^2+6a-7}{a^2-7a+6}$$

a^2-7a+6	a^2+6a-7
$D=\sqrt{7^2-4\cdot1\cdot6}=\sqrt{49-24}=5$	$D=\sqrt{6^2-4\cdot1\cdot(-7)}=\sqrt{36+28}=8$
$a_{1,2}=\frac{7\pm5}{2}$	$a_{1,2}=\frac{-6\pm8}{2}$
$a_1=6\ \ a_2=1$	$a_1=6\ \ a_2=1$
$(a-6)(a-1)$	$(a+7)(a-1)$

$$\frac{a^2+6a-7}{a^2-7a+6}=\frac{(a+7)\cancel{(a-1)}}{(a-6)\cancel{(a-1)}}=\frac{a+7}{a-6}$$

Javob: (A)

Izoh: diskiriminant qilib x_1,x_2 topiladi va formulaga qo'yiladi,

keyin qisqartirish lozim

3335. $\frac{x^2-8x-9}{x^2+9x+8}$ ni qisqartiring.

A) $\frac{x+8}{x-9}$ B) $\frac{x-9}{x+8}$ C) $\frac{x-8}{x+9}$ D) $\frac{x-3}{x+6}$

3336. $\frac{y^2-8y+15}{y^2-5y+6}$ ni qisqartiring.

A) $\frac{y-2}{y-5}$ B) $\frac{y-4}{y-3}$ C) $\frac{y-5}{y-2}$ D) $\frac{y+5}{y+2}$

3337. $\frac{1+10b+25b^2}{5b^2-14b-3}$ ni qisqartiring.

A) $\frac{5b-1}{b+3}$ B) $\frac{5b-1}{b+3}$ C) $\frac{5b+1}{b-3}$ D) $\frac{b-3}{5b+1}$

3338. $\frac{c^2+c-2}{c-1}$ ni qisqartiring.

A) $c-1$ B) $c+2$ C) $2c+1$ D) $2-c$

3339. $\frac{n+3}{n^2-6n-27}$ ni qisqartiring.

A) $\frac{1}{n-9}$ B) $n-9$ C) $\frac{1}{n+9}$ D) $\frac{1}{n-6}$

3340. $\frac{9x^2-1}{3x^2+8x-3}$ ni qisqartiring.

A) $\frac{3x+1}{x+3}$ B) $\frac{x+3}{3x+1}$ C) $\frac{3x+1}{x-3}$ D) $\frac{3x-1}{x-3}$

✓ $\frac{1}{a^2-7a+12}+\frac{1}{a-3}$ ni soddalashtiring.

A) $\frac{a+7}{a-6}$ B) $\frac{1}{a+6}$ C) $\frac{1}{a-4}$ D) $\frac{a-7}{a-6}$

Yechimi: $\frac{1}{a^2-7a+12}+\frac{1}{a-3}$

$a^2-7a+12=0$

$D=\sqrt{7^2-4\cdot1\cdot12}=\sqrt{49-48}=1$

$a_{1,2}=\frac{7\pm1}{2};\ a_1=4\ a_2=3\Rightarrow(a-4)(a-3)$

$\frac{1}{a^2-7a+12}+\frac{1}{a-3}=\frac{1}{(a-4)(a-3)}+\frac{1}{a-3}=$

$=\frac{1+a-4}{(a-4)(a-3)}=\frac{a-3}{(a-4)(a-3)}=\frac{1}{a-4}$ **J: (C)**

3341. $\frac{7}{5y^2+3y-2}-\frac{5}{5y-2}$ ni soddalashtiring.

A) $\frac{1}{y+1}$ B) $-\frac{1}{y+1}$ C) $\frac{1}{y+3}$ D) $\frac{1}{y-1}$

3342. $\frac{5b+1}{b^2+9b-10}:\frac{5b^2+b}{b^2-2b+1}$ ni soddalashtiring.

A) $\frac{b-1}{b+10}$ B) $\frac{5b-1}{b+3}$ C) $\frac{b-1}{b(b+10)}$ D) $\frac{b-1}{b}$

3343. $\frac{3}{x^2+6x+9}-\frac{1}{x+3}$ ni soddalashtiring.

A) $-\frac{x+2}{x+3}$ B) $\frac{x}{(x+3)^2}$ C) $\frac{-x+2}{(x+3)^2}$ D) $-\frac{x}{(x+3)^2}$

✓ $x^2-2\sqrt{3}x-1=0$ tenglamani yeching.

A) $\sqrt{3}\pm3$ B) $\sqrt{3}\pm6$ C) $\sqrt{3}\pm2$ D) $\sqrt{3}\pm4$

Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$x^2-2\sqrt{3}x-1=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{\left(-2\sqrt{3}\right)^2-4\cdot1\cdot(-1)}=\sqrt{12+4}=4$
$x_{1,2}=\frac{-b\pm D}{2a}$	$x_{1,2}=\frac{2\sqrt{3}\pm4}{2\cdot1}$

$x_{1,2}=\frac{2\sqrt{3}\pm4}{2\cdot1}\Rightarrow\begin{cases}x_1=\frac{2\sqrt{3}+4}{2}=\frac{2\left(\sqrt{3}+2\right)}{2}=\sqrt{3}+2\\ x_2=\frac{2\sqrt{3}-4}{2}=\frac{2\left(\sqrt{3}-2\right)}{2}=\sqrt{3}-2\end{cases}$

Javob: (C)

3344. $x^2-2\sqrt{5}x+1=0$ tenglamani yeching.

A) $\sqrt{5}\pm3$ B) $\sqrt{5}\pm2$ C) $\sqrt{5}\pm6$ D) $\sqrt{5}\pm4$

3345. $x^2-4\sqrt{7}x+4=0$ tenglamani yeching.

A) $\sqrt{7}\pm\sqrt{6}$ B) $2\sqrt{7}\pm2$

C) $2\sqrt{7}\pm2\sqrt{6}$ D) $\sqrt{7}\pm2\sqrt{6}$

3346. $x^2+\sqrt{2}x-4=0$ tenglamani yeching.

A) $\sqrt{2};2\sqrt{2}$ B) $-\sqrt{2};2\sqrt{2}$

C) $-2\sqrt{2};2\sqrt{2}$ D) $-2\sqrt{2};\sqrt{2}$

✓ $x^2-2ax-3a^2=0$ tenglamani yeching. $a>0$

A) $3a;-a$ B) $-3a;\ a$ C) $3a$ D) $3a;\ a$

Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$x^2-2ax-3a^2=0$
$D=\sqrt{b^2-4ac}$	$D=\sqrt{(-2a)^2-4\cdot1\cdot\left(-3a^2\right)}=\sqrt{4a^2+12a^2}=4a$
$x_{1,2}=\frac{-b\pm D}{2a}$	$x_{1,2}=\frac{2a\pm4a}{2\cdot1}$

$x_{1,2}=\frac{2a\pm4a}{2\cdot1}\Rightarrow\begin{cases}x_1=\frac{2a+4a}{2\cdot1}=\frac{6a}{2}=3a\\ x_2=\frac{2a-4a}{2\cdot1}=\frac{-2a}{2}=-a\end{cases}$

Javob: (A)

3347. $x^2-6ax+5a^2=0$ tenglamani yeching. $a>0$

A) $a;\ 5a$ B) $-a;\ 5a$ C) $a;\ -5a$ D) $9a$

3348. $x^2-11ax-60a^2=0$ tenglamani yeching. $a>0$

A) $15a;-4a$ B) $15a;4a$ C) $5a;-4a$ D) $a;4a$

3349. $x^2-2mx+m^2-n^2=0$ tenglamani yeching. $n>0$

A) $-m\pm n$ B) $m\pm n$ C) $m\pm2n$ D) $2m\pm2n$

3350. $x^2-3ax+2a^2-ab-b^2=0$ tenglamani yeching. $a\geq2b>0$

A) $2a-b;\ a-b$ B) $2a+b;\ a+b$

C) $2a+b;\ a-b$ D) $2a-b;\ a+b$

3351. $x^2-(2a-b)x+a^2-ab-2b^2=0$ tenglamani yeching.

A) $a-2b;\ a+b$ B) $a+2b;\ a-b$

C) $a-b;\ a+2b$ D) $a+b;\ a+2b$

3352. $x^2-5(a-b)x+6a^2-13ab+6b^2=0$ tenglamani yeching. $a\geq b>0$

A) $3a-2b;3a-6b$ B) $3a-2b;2a+3b$

C) $3a-2b;2a-3b$ D) $3a+2b;2a-3b$

✓ $(4x+1)\left(x-\frac{1}{4}\right)=0$ bo'lsa, $4x+1$ qanday qiymatlani qabul qilishi mumkin?

A) 0; 2 B) –1; 6- C) 3 D) 3; 1

Yechimi:

$$(4x+1)\left(x-\frac{1}{4}\right)=0 \Rightarrow \begin{array}{l} 4x+1=0 \\ 4x=-1 \\ x=-\frac{1}{4} \end{array} \Leftrightarrow \left[\begin{array}{l} x-\frac{1}{4}=0 \\ x=\frac{1}{4} \end{array}\right.$$

$4x+1$ *qanday qiymatlarni qabul qilishi mumkin.* $\Rightarrow$

$$\left[\begin{array}{l} x=-\frac{1}{4} \\ 4x+1=4\cdot\left(-\frac{1}{4}\right)+1=0 \end{array}\right.$$

$$\left[\begin{array}{l} x=\frac{1}{4} \\ 4x+1=4\cdot\left(\frac{1}{4}\right)+1=2 \end{array}\right.$$

Javob: (A)

Izoh: "0" ga tenglab yechamiz va so'ralgan $4x+1$ ifodaga qo'yiladi.

3353. $(2x+1)(x-1,5)=0$ bo'lsa, $2x+1$ qanday qiymatlani qabul qilishi mumkin?

A) 0; 4 B) 3; 6 C) 2; 3 D) 0; 2

3354. $(x+3)(5x-1)=0$ bo'lsa, $5x-1$ qanday qiymatlani qabul qilishi mumkin?

A) 0; –16 B) 3; 6 C) 2; 3 D) 0; 16

3355. $(8x+1)(x-0,5)=0$ bo'lsa, $4x+1$ qanday qiymatlani qabul qilishi mumkin?

A) 0; 4 B) 0,5; 3 C) 2; 3 D) 0; 2

Viyet Teoremasi

✓ Quyidagilardan qaysilari keltirilgan kvadrat tenglamalar.

1) $x^2+4x-5=0$ 2) $2x^2-3x-2=0$

3) $3x^2+8x-3=0$ 4) $x^2-6x-7=0$

5) $x^2+\frac{5}{4}x+\frac{3}{8}=0$

A) 1; 2; 4 B) 1; 2; 5 C) 2; 3 D) 1; 4; 5

Yechimi:

keltirilgan kvadrat tenglama	keltirilmagan kvadrat tenglama
$x^2+px+q=0$	$ax^2+bx+c=0$

1) $x^2+4x-5=0 \Rightarrow$ *keltirilgan*

2) $2x^2-3x-2=0 \Rightarrow$ *keltirilmagan*

3) $3x^2+8x-3=0 \Rightarrow$ *keltirilmagan* **Javob: (D)**

4) $x^2-6x-7=0 \Rightarrow$ *keltirilgan*

5) $x^2+\frac{5}{4}x+\frac{3}{8}=0 \Rightarrow$ *keltirilgan*

Izoh: x^2 ning oldida "1" bo'lsa, keltirilgan kvadrat tenglamalardir.

Eslatma: x^2 ning oldida "–1" bo'lsa, keltirilgan kvadrat tenglama emas.

3356. Quyidagilardan qaysilari keltirilgan kvadrat tenglamalar.

1) $-x^2+7x-2=0$ 2) $4x^2-4x+1=0$ 3) $x^2+8x-9=0$

4) $x^2+5x-24=0$ 5) $x^2-\frac{3}{2}x-1=0$

A) 3; 4; 5 B) 1; 2 C) 1; 4; 5 D) 1; 3; 4;

3357. Quyidagilardan qaysilari keltirilgan kvadrat tenglamalar.

1) $x^2+x-2=0$ 2) $2x^2+4x-12=0$ 3) $-x^2+6x+27=0$

4) $2x^2-3x-2=0$ 5) $x^2-\frac{3}{2}x-1=0$

A) 3; 4 B) barchasi C) 1; 4; 5 D) 1; 2; 5

3358. Quyidagilardan qaysilari keltirilgan kvadrat tenglamalar.

1) $x^2+7x-2=0$ 2) $4x^2-4x+1=0$ 3) $x^2+x-20=0$

4) $x^2+7x-2=0$ 5) $-x^2+4x+5=0$

A) 3; 4; 5 B) barchasi C) 1; 3; 4 D) 1; 2; 4

✓ $2x^2-9x+5=0$ kvadrat tenglama ildizlari yig'indisini toping.

A) 3,5 B) 4,5 C) 2,5 D) 1,5

Yechimi: Viyet teoremasi formulasi:

keltirilgan kvadrat tenglama	keltirilmagan kvadrat tenglama
$x^2+px+q=0$	$ax^2+bx+c=0$
$x_1+x_2=-p$	$x_1+x_2=-\frac{b}{a}$
$x_1\cdot x_2=q$	$x_1\cdot x_2=\frac{c}{a}$

$2x^2-9x+5=0$

$$x_1+x_2=-\left(-\frac{9}{2}\right)=4,5$$

Javob: (B)

Izoh: Viyet teoremasi tenglamani yechmasdan oldin javobini (ildizlarining yig'indisini va ko'paytmasini) topib bera oladi.

3359. $2x^2-9x+5=0$ kvadrat tenglama ildizlarining ko'paytmasini toping.

A) –5 B) 4,5 C) 2,5 D) 6

3360. $x^2-5x+6=0$ kvadrat tenglama ildizlari yig'indisini toping.

A) –5 B) 5 C) 2,5 D) 6

3361. $-x^2-x+42=0$ kvadrat tenglama ildizlari ko'paytmasini toping.

A) –5 B) –42 C) 2,5 D) 6

3362. $-4x^2-7x+2=0$ kvadrat tenglama ildizlari yig'indisini toping.

A) 1,75 B) –0,5 C) –1,75 D) 6

3363. $x^2+5x-24=0$ kvadrat tenglama ildizlari ko'paytmasini toping.

A) -24 B) 5 C) 1 D) -5

3364. $-4x^2-7x+2=0$ kvadrat tenglama ildizlari ko'paytmasini toping.

A) $-1{,}75$ B) $-0{,}5$ C) 1,75 D) 6

3365. $6x^2+7x-2=0$ kvadrat tenglama ildizlarining yig'indisini toping.

A) $-\frac{7}{6}$ B) $\frac{7}{6}$ C) $\frac{1}{3}$ D) $-\frac{1}{3}$

3366. $-\frac{1}{3}x^2+8x+27=0$ kvadrat tenglama ildizlari ko'paytmasini toping.

A) $-1{,}75$ B) 81 C) 24 D) -81

✓ x_1 *va* x_2 $x^2-22x+10=0$ tenglama ildizlari $x_1+x_1\cdot x_2+x_2$ ni toping.

A) 45 B) 42 C) 32 D) 15

Yechimi: Viyet teoremasi formulasi : misol:

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2-22x+10=0$
$x_1+x_2=-p$	$x_1+x_2=22$
$x_1\cdot x_2=q$	$x_1\cdot x_2=10$

$x_1+x_1x_2+x_2=x_1+x_2+x_1x_2=22+10=32$ **J: (C)**

3367. a *va* b $x^2-11x+8=0$ tenglama ildizlari $a+a\cdot b+b$ ni toping.

A) -3 B) 4,5 C) 19 D) 6

3368. x_1 *va* x_2 $4x^2+10x-6=0$ tenglama ildizlari $x_1+x_1\cdot x_2+x_2$ ni toping.

A) -4 B) 4,5 C) 2,5 D) 6

3369. x *va* y $x^2-7x+6=0$ tenglama ildizlari $x+x\cdot y+y$ ni toping.

A) -1 B) 18 C) 2,5 D) 13

3370. $4x^2+14x-6=0$ tenglama ildizlari yig'indisi va ko'paytmasi yig'indisini toping.

A) -5 B) 4,5 C) 2,5 D) 6

3371. $3x^2-8x-15=0$ tenglama ildizlari yig'indisi va ko'paytmasi yig'indisini toping.

A) $-2\frac{1}{3}$ B) $2\frac{1}{3}$ C) $-2{,}5$ D) $-4\frac{1}{3}$

✓ x_1 *va* x_2 $3x^2-8x-9=0$ tenglama ildizlari $x_1\cdot x_2^2+x_1^2\cdot x_2$ ni toping.

A) -8 B) -2 C) 32 D) -5

Yechimi: Viyet teoremasi formulasi : misol:

keltirilmagan kvadrat tenglama	keltirilmagan kvadrat tenglama
$ax^2+bx+c=0$	$3x^2-8x-9=0$
$x_1+x_2=-\frac{b}{a}$	$x_1+x_2=\frac{8}{3}$
$x_1\cdot x_2=\frac{c}{a}$	$x_1\cdot x_2=-\frac{9}{3}=-3$

$x_1\cdot x_2^2+x_1^2\cdot x_2=x_1\cdot x_2\left(x_2+x_1\right)=-3\cdot\frac{8}{3}=-8$ **J: (A)**

3372. a *va* b $x^2-11x+8=0$ tenglama ildizlari $a^2\cdot b+a\cdot b^2$ ni toping.

A) -3 B) 4,5 C) 88 D) 19

3373. x *va* y $x^2-7x+6=0$ tenglama ildizlari $x\cdot y^2+x^2\cdot y$ ni toping.

A) -1 B) 32 C) 22 D) 42

3374. n *va* m $4x^2+14x-6=0$ tenglama ildizlari $n\cdot m^2+n^2\cdot m$ ni toping.

A) 5,25 B) 4,5 C) 2,5 D) $-5{,}25$

3375. $4x^2+10x-6=0$ tenglama ildizlari ko'paytmasi va yig'indisining ko'paytmasini toping.

A) 3,75 B) 4,5 C) 2,75 D) 37,5

✓ x_1 *va* x_2 $x^2+8x-28=0$ tenglama ildizlari $\frac{1}{x_1}+\frac{1}{x_2}$ ni toping.

A) $\frac{3}{7}$ B) $\frac{2}{7}$ C) 20 D) 15

Yechimi: **Javob: (B)**

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2+8x-28=0$
$x_1+x_2=-p$	$x_1+x_2=-8$
$x_1\cdot x_2=q$	$x_1\cdot x_2=-28$

$\frac{1}{x_1}+\frac{1}{x_2}=\frac{x_1+x_2}{x_1\cdot x_2}=\frac{-8}{-28}=\frac{2}{7}$

Izoh: 1– viyet teoremasini, keyin ifodaga $\frac{1}{x_1}+\frac{1}{x_2}=\frac{x_1+x_2}{x_1\cdot x_2}$ qoyib hisoblang.

3376. n *va* m $x^2-2x-42=0$ tenglama ildizlari $\frac{1}{n}+\frac{1}{m}$ ni toping.

A) $-\frac{1}{21}$ B) 44 C) –21 D) 42

3377. a va b $x^2-3x-5=0$ tenglama ildizlari $\frac{1}{a}+\frac{1}{b}$ ni toping.

A) –5 B) 5/3 C) –0,6 D) 0,3

3378. x va y $-x^2-x+8=0$ tenglama ildizlari $\frac{1}{x}+\frac{1}{y}$ ni toping.

A) 0,125 B) 8 C) 2,5 D) –0,125

3379. $3x^2+x-6=0$ tenglama ildizlari teskarisining yig'indisini toping.

A) $-\frac{1}{6}$ B) $\frac{2}{15}$ C) $\frac{1}{6}$ D) 0,25

✓ x_1 va x_2 $x^2+8x-28=0$ tenglama ildizlari $x_1^2+x_2^2$ ni toping.

A) 110 B) 120 C) 200 D) 150

Yechimi: maxsus formula: $a^2+b^2=(a+b)^2-2ab$

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2+8x-28=0$
$x_1+x_2=-p$	$x_1+x_2=-8$
$x_1\cdot x_2=q$	$x_1\cdot x_2=-28$

$$a^2+b^2=(a+b)^2-2ab \Leftrightarrow x_1^2+x_2^2=\left(x_1+x_2\right)^2-2x_1x_2$$

$$x_1^2+x_2^2=(-8)^2-2\cdot(-28)=64+56=120$$

Javob: (B)

Izoh: 1– viyet teoremasini, keyin maxsus formulani qo'llab topiladi.

3380. n va m $x^2-7x-8=0$ tenglama ildizlari n^2+m^2 ni toping.

A) –63 B) 65 C) 25 D) 53

3381. a va b $-2x^2-2x+3=0$ tenglama ildizlari a^2+b^2 ni toping.

A) –5 B) 5 C) 4 D) 3

3382. x va y $-x^2-x+8=0$ tenglama ildizlari x^2+y^2 ni toping.

A) –5 B) 16 C) 2,5 D) 17

3383. $-5x^2+16x+3=0$ tenglama ildizlari kvadratlari yig'indisini toping.

A) $\frac{286}{25}$ B) $\frac{416}{25}$ C) 25 D) 6,25

✓ x_1 va x_2 $x^2-7x-21=0$ tenglama ildizlari $\frac{x_2}{x_1}+\frac{x_1}{x_2}$ ni toping.

A) $-\frac{91}{21}$ B) $-\frac{71}{21}$ C) 200 D) 150

Yechimi:

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2-7x-21=0$
$x_1+x_2=-p$	$x_1+x_2=7$
$x_1\cdot x_2=q$	$x_1\cdot x_2=-21$

$$\frac{x_2}{x_1}+\frac{x_1}{x_2}=\frac{x_1^2+x_2^2}{x_1\cdot x_2}=\frac{\left(x_1+x_2\right)^2-2x_1x_2}{x_1\cdot x_2}=\frac{7^2-2(-21)}{-21}=-\frac{91}{21}$$

Javob: (A)

Izoh: 1– viyet teoremasini, keyin ifodaga $\frac{x_2}{x_1}+\frac{x_1}{x_2}=\frac{x_1^2+x_2^2}{x_1\cdot x_2}$ qo'yib hisoblang.

3384. n va m $x^2-2x-42=0$ tenglama ildizlari $\frac{m}{n}+\frac{n}{m}$ ni toping.

A) –21 B) 44 C) $-\frac{44}{21}$ D) $\frac{44}{21}$

3385. $x_1 va x_2$ $3x^2+x-6=0$ tenglama ildizlari $\frac{x_2}{x_1}+\frac{x_1}{x_2}$ ni toping.

A) $\frac{2}{9}$ B) $-\frac{37}{18}$ C) $\frac{37}{18}$ D) 0,25

3386. a va b $x^2-3x-5=0$ tenglama ildizlari $\frac{b}{a}+\frac{a}{b}$ ni toping.

A) $\frac{19}{5}$ B) 5/3 C) $-\frac{19}{5}$ D) 0,3

3387. x va y $-x^2-x+8=0$ tenglama ildizlari $\frac{y}{x}+\frac{x}{y}$ ni toping.

A) –0,125 B) 8 C) –2,125 D) 0,25

✓ x_1 va x_2 $x^2-9x+4=0$ tenglama ildizlari $\frac{1}{x_1^2}+\frac{1}{x_2^2}$ ni toping.

A) 110 B) 120 C) $\frac{63}{16}$ D) $\frac{73}{16}$

Yechimi:

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2-9x+4=0$
$x_1+x_2=-p$	$x_1+x_2=9$
$x_1\cdot x_2=q$	$x_1\cdot x_2=4$

$$a^2+b^2=(a+b)^2-2ab \Rightarrow x_1^2+x_2^2=\left(x_1+x_2\right)^2-2x_1x_2$$

$$\frac{1}{x_1^2}+\frac{1}{x_2^2}=\frac{x_1^2+x_2^2}{x_1^2\cdot x_2^2}=\frac{\left(x_1+x_2\right)^2-2x_1x_2}{\left(x_1\cdot x_2\right)^2}$$

$$\frac{1}{x_1^2}+\frac{1}{x_2^2}=\frac{9^2-2\cdot4}{(4)^2}=\frac{81-8}{16}=\frac{73}{16}$$ **Javob: (D)**

Izoh: 1– viyet teoremasini, keyin maxsus formulani qo'llab topiladi.

3388. n va m $x^2-3x-5=0$ tenglama ildizlari $\frac{1}{n^2}+\frac{1}{m^2}$ ni toping.

A) $-\frac{1}{25}$ B) $\frac{19}{25}$ C) 25 D) 0,25

3389. x_1 va x_2 $-2x^2-9x+3=0$ tenglama ildizlari $\frac{1}{x_1^2}+\frac{1}{x_2^2}$ ni toping.

A) $\frac{31}{3}$ B) $\frac{41}{9}$ C) 9 D) 6,25

3390. a va b $-x^2+x+9=0$ tenglama ildizlari $\frac{1}{a^2}+\frac{1}{b^2}$ ni toping.

A) –19 B) $\frac{19}{25}$ C) $\frac{19}{81}$ D) 81

3391. x va y $x^2-24x+12=0$ tenglama ildizlari $\frac{1}{x^2}+\frac{1}{y^2}$ ni toping.

A) $\frac{29}{6}$ B) 23 C) 2,5 D) $\frac{23}{6}$

✓ x_1 va x_2 $x^2-9x+4=0$ tenglama ildizlari $x_1^3+x_2^3$ ni toping.

A) 77 B) 621 C) $\frac{63}{16}$ D) $\frac{73}{16}$

Yechimi:

keltirilgan kvadrat tenglama	keltirilgan kvadrat tenglama
$x^2+px+q=0$	$x^2-9x+4=0$
$x_1+x_2=-p$	$x_1+x_2=9$
$x_1\cdot x_2=q$	$x_1\cdot x_2=4$

$$x_1^3+x_2^3=\left(x_1+x_2\right)\left(x_1^2-x_1\cdot x_2+x_2^2\right)$$

$$x_1^2+x_2^2=\left(x_1+x_2\right)^2-2x_1x_2$$

$$x_1^3+x_2^3=\left(x_1+x_2\right)\left(\left(x_1+x_2\right)^2-2x_1x_2-x_1\cdot x_2\right)$$

$$x_1^3+x_2^3=\left(x_1+x_2\right)\left(\left(x_1+x_2\right)^2-3x_1x_2\right)$$

$$x_1^3+x_2^3=9\cdot\left(9^2-3\cdot4\right)=621$$

Javob: (B)

Izoh: 1– viyet teoremasini, keyin maxsus formulani qo'llab topiladi.

3392. n va m $x^2-3x-5=0$ tenglama ildizlari n^3+m^3 ni toping.

A) $-\frac{1}{25}$ B) 72 C) 25 D) 42

3393. a va b $-x^2+x+9=0$ tenglama ildizlari a^3+b^3 ni toping.

A) –39 B) $\frac{10}{21}$ C) 28 D) 81

3394. $x^2-8x+2=0$ tenglama ildizlari kublari yig'indisini toping.

A) $\frac{29}{6}$ B) 496 C) 526 D) 464

3395. $-2x^2-9x+3=0$ tenglama ildizlari kublari yig'indisini toping.

A) $-\frac{891}{8}$ B) $\frac{579}{8}$ C) 959 D) –891

✓ x_1 va x_2 $x^2+8x-2=0$ tenglama ildizlari $x_1^4+x_2^4$ ni toping.

A) 1126 B) 4616 C) 2016 D) 4416

Yechimi: maxsus formula:

$$a^4+b^4=\left((a+b)^2-2ab\right)^2-2a^2b^2$$

$$\begin{cases} x^2+8x-2=0 \\ x_1+x_2=-8 \\ x_1\cdot x_2=-2 \end{cases}$$

$$x_1^4+x_2^4=\left((-8)^2+2\cdot2\right)^2-2\cdot(-2)^2$$

$$x_1^4+x_2^4=(64+4)^2-8=4616$$

Izoh: Javob: (B) 1– viyet teoremasini, keyin maxsus formulani qo'llab topiladi.

3396. n va m $x^2-x-8=0$ tenglama ildizlari n^4+m^4 ni toping.

A) –161 B) 161 C) 171 D) 53

3397. x_1 va x_2 $x^2+2x-3=0$ tenglama ildizlari $x_1^4+x_2^4$ ni toping.

A) 82 B) 72 C) 25 D) 62

3398. a va b $-x^2-2x+1=0$ tenglama ildizlari a^4+b^4 ni toping.

A) –5 B) 54 C) 34 D) 32

3399. $-x^2-x+4=0$ tenglama ildizlari to'rtinchi darajalari yig'indisini toping.

A) –5 B) 7 C) 59 D) 49

✓ x_1 va x_2 $x^2-22x+10=0$ tenglama ildizlari $|x_1-x_2|$ ni toping.

A) $\sqrt{444}$ B) $\sqrt{454}$ C) 32 D) 15

Yechimi: maxsus formula: $a-b=\pm\sqrt{(a+b)^2-4a\cdot b}$

$$\begin{array}{|l} x^2-22x+10=0 \\ x_1+x_2=22 \\ x_1\cdot x_2=10 \end{array} \quad \begin{array}{|l} x_1-x_2=\pm\sqrt{(x_1+x_2)^2-4x_1\cdot x_2} \\ |x_1-x_2|=\sqrt{(x_1+x_2)^2-4x_1\cdot x_2} \end{array}$$

$$|x_1-x_2|=\sqrt{22^2-4\cdot 10}=\sqrt{484-40}=\sqrt{444}$$

Javob: (A)

Izoh: modul qo'yilgani uchun "±" tashlab yubo'ramiz.

3400. a va b $x^2-11x+4=0$ tenglama ildizlari $a-b$ ni toping.

A) –3 B) 4,5 C) $\pm\sqrt{105}$ D) $\sqrt{105}$

3401. x_1 va x_2 $4x^2+10x-6=0$ tenglama ildizlari $|x_1-x_2|$ ni toping.

A) 3,5 B) 4,5 C) 2,5 D) 6

3402. $x^2-7x+6=0$ tenglama ildizlari ayirmasining absolyut qiymatini toping.

A) 5 B) $\sqrt{11}$ C) –2,5 D) $-4\frac{1}{3}$

✓ Ildizlari $x_1=-3$, $x_2=6$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2-3x-18=0$ B) $x^2+3x+18=0$

C) $x^2+3x-18=0$ D) $x^2-3x+18=0$

Yechimi:

$$\begin{array}{|l} x_1+x_2=-p \\ x_1\cdot x_2=q \\ x^2+px+q=0 \end{array} \Rightarrow \begin{array}{|l} -3+6=-p \\ -3\cdot 6=q \\ p=-3,\ q=-18 \\ x^2-3x-18=0 \end{array}$$

Javob: (A)

Izoh: Berilgan ildizlarni qo'shing va ko'paytiring keyin viyet teoremasiga ko'ra joylang.

3403. Ildizlari $x_1=3$, $x_2=-1$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2+2x-3=0$ B) $x^2-2x-3=0$

C) $x^2+3x-3=0$ D) $x^2-2x+3=0$

3404. Ildizlari $x_1=3$, $x_2=2$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2-5x+6=0$ B) $x^2+5x+6=0$

C) $x^2+2x-5=0$ D) $x^2-6x+6=0$

3405. Ildizlari $x_1=-4$, $x_2=-5$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2+9x-20=0$ B) $x^2-9x+20=0$

C) $x^2+9x+20=0$ D) $x^2-9x-20=0$

3406. Ildizlari $x_1=3/4$, $x_2=4/3$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2-\frac{29}{12}x+1=0$ B) $x^2+3x+1=0$

C) $x^2-\frac{13}{12}x+1=0$ D) $x^2-\frac{25}{12}x+1=0$

3407. Ildizlari $x_1=4-\sqrt{7}$, $x_2=4+\sqrt{7}$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2-8x-9=0$ B) $x^2-8x+9=0$

C) $x^2+8x+9=0$ D) $x^2-3x+9=0$

3408. Ildizlari $x_1=2-\sqrt{3}$, $x_2=2+\sqrt{3}$ bo'lgan keltirilgan kvadrat tenglamani tuzing.

A) $x^2-4x+1=0$ B) $x^2-4x-1=0$

C) $x^2+4x-1=0$ D) $x^2-3x+1=0$

✓ Ildizlaridan biri $\frac{1}{6-\sqrt{2}}$ bo'lgan ratsional koefitsentli kvadrat tenglamani tuzing.

A) $x^2-\frac{6}{17}x-1=0$ B) $x^2-\frac{6}{17}x+\frac{1}{34}=0$

C) $x^2+\frac{6}{17}x+1=0$ D) $x^2+\frac{6}{17}x-\frac{1}{34}=0$

Yechimi:

$$\frac{1}{6-\sqrt{2}}=\frac{6+\sqrt{2}}{(6-\sqrt{2})(6+\sqrt{2})}=\frac{6+\sqrt{2}}{34}$$

$$x_1=\frac{6+\sqrt{2}}{34} \Rightarrow x_2=\frac{6-\sqrt{2}}{34}$$

$$\left.\begin{array}{l} x_1+x_2=-p \\ x_1\cdot x_2=q \\ \underline{x^2+px+q=0} \end{array}\right| \Rightarrow \left|\begin{array}{l} \frac{6+\sqrt{2}}{34}+\frac{6-\sqrt{2}}{34}=-p \\ \frac{6+\sqrt{2}}{34}\cdot\frac{6-\sqrt{2}}{34}=q \\ \underline{-\frac{6}{17}=p \quad \frac{1}{34}=q} \end{array}\right.$$

$$x^2-\frac{6}{17}x+\frac{1}{34}=0$$

Javob: (B)

Izoh: agar tenglamaning berilgan ildizlaridan biri "–" bo'lsa, ikkinchisi "+" bo'ladi.

$$x_1=\frac{6+\sqrt{2}}{34} \Rightarrow x_2=\frac{6-\sqrt{2}}{34}$$

3409. Ildizlaridan biri $3+\sqrt{2}$ bo'lgan ratsional koefitsentli kvadrat tenglamani tuzing.

A) $x^2+6x+7=0$ B) $x^2-6x+7=0$

C) $x^2-6x-7=0$ D) $x^2+6x-7=0$

3410. Ildizlaridan biri $2-\sqrt{3}$ bo'lgan ratsional koefitsentli kvadrat tenglamani tuzing.

A) $x^2-4x+1=0$ B) $x^2-4x-1=0$

C) $x^2+4x-1=0$ D) $x^2+4x+1=0$

3411. Ildizlaridan biri $5+\frac{\sqrt{7}}{2}$ bo'lgan ratsional koefitsentli kvadrat tenglamani tuzing.

A) $x^2-10x-\frac{93}{4}=0$ B) $x^2+10x+\frac{93}{4}=0$

C) $x^2-10x+\frac{93}{4}=0$ D) $x^2+10x+\frac{97}{4}=0$

✓ Ildizlari $x^2-10x+4=0$ kvadrat tenglamaning ildizlariga qarama–qarshi sonlardan iborat bo'lgan kvadrat tenglamani tuzing.

A) $x^2+10x+4=0$ B) $x^2+10x-4=0$

C) $x^2-10x+4=0$ D) $x^2-10x-4=0$

Yechimi:

$$\left.\begin{array}{l} x^2-10x+4=0 \\ x_1\ ;\ x_2 \\ \underline{x_1+x_2=10\ ;\ x_1\cdot x_2=4} \end{array}\right| \Rightarrow \left|\begin{array}{l} y^2+py+q=0 \\ y_1=-x_1\ ;\ y_2=-x_2 \\ \underline{y_1+y_2=-p\ ;\ y_1\cdot y_2=q} \end{array}\right.$$

$$y^2+py+q=0$$

$$\left.\begin{array}{l} -x_1+(-x_2)=-p \\ \underline{(-x_1)\cdot(-x_2)=q} \end{array}\right| \Rightarrow \left|\begin{array}{l} -(x_1+x_2)=-p \\ \underline{x_1\cdot x_2=q} \end{array}\right.$$

$$\left.\begin{array}{l} x_1+x_2=10 \\ \underline{x_1\cdot x_2=4} \end{array}\right| \Rightarrow \left|\begin{array}{l} 10=p \\ \underline{4=q} \end{array}\right.$$

$$\boxed{\begin{array}{c} y^2+10y+4=0 \\ \Downarrow \\ x^2+10x-4=0 \end{array}}$$

Javob: (A)

Izoh: qarama–qarshi degani uchun $y_1=-x_1 \quad y_2=-x_2$ kabi belgilandi.

3412. Ildizlari $x^2-5x+1=0$ kvadrat tenglamaning ildizlariga qarama–qarshi sonlardan iborat bo'lgan kvadrat tenglamani tuzing.

A) $x^2-5x-1=0$ B) $x^2+5x+1=0$

C) $x^2-5x+1=0$ D) $x^2+5x-1=0$

3413. Ildizlari $x^2-x-2=0$ kvadrat tenglamaning ildizlariga qarama–qarshi sonlardan iborat bo'lgan kvadrat tenglamani tuzing.

A) $x^2-x+2=0$ B) $x^2+x-2=0$

C) $x^2-x-2=0$ D) $x^2+x+2=0$

3414. Ildizlari $3x^2+2x-4=0$ kvadrat tenglamaning ildizlariga qarama–qarshi sonlardan iborat bo'lgan kvadrat tenglamani tuzing.

A) $3x^2+2x+4=0$ B) $3x^2-2x+4=0$

C) $3x^2+2x-4=0$ D) $3x^2-2x-4=0$

✓ Ildizlari $x^2-18x+72=0$ kvadrat tenglamaning ildizlaridan ikki marta katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2+36x-288=0$ B) $x^2+36x+288=0$

C) $x^2-36x+288=0$ D) $x^2-36x-288=0$

Yechimi:

$$\left.\begin{array}{l} x^2-18x+72=0 \\ x_1\ ;\ x_2 \\ \underline{x_1+x_2=18\ ;\ x_1\cdot x_2=72} \end{array}\right| \Rightarrow \left|\begin{array}{l} y^2+py+q=0 \\ y_1=2x_1\ ;\ y_2=2x_2 \\ \underline{y_1+y_2=-p\ ;\ y_1\cdot y_2=q} \end{array}\right.$$

$$y^2+py+q=0$$

$$\left.\begin{array}{l} 2x_1+2x_2=-p \\ \underline{2x_1\cdot 2x_2=q} \end{array}\right| \Rightarrow \left|\begin{array}{l} 2(x_1+x_2)=-p \\ \underline{4x_1\cdot x_2=q} \end{array}\right.$$

$$\left.\begin{array}{l} x_1+x_2=18 \\ \underline{x_1\cdot x_2=72} \end{array}\right| \Rightarrow \left|\begin{array}{l} 2\cdot 18=-p \\ \underline{4\cdot 72=q} \end{array}\right| \begin{array}{l} p=-36 \\ \underline{q=288} \end{array}$$

Javob: (C)

$$y^2-36y+288=0$$

$$x^2-36x+288=0$$

Izoh: tenglamaning ildizlaridan ikki marta katta bo'lgan degani uchun $y_1=2x_1\ ;\ y_2=2x_2$ kabi belgilandi.

3415. Ildizlari $x^2-11x+28=0$ kvadrat tenglamaning ildizlaridan ikki marta katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2-22x+112=0$ B) $x^2+22x+112=0$

C) $x^2-22x-112=0$ D) $x^2+22x-112=0$

3416. Ildizlari $-x^2-3x+4=0$ kvadrat tenglamaning ildizlaridan ikki marta katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2+6x+16=0$ B) $x^2+6x-16=0$

C) $x^2-6x-16=0$ D) $x^2-6x+16=0$

3417. Ildizlari $x^2+x+11=0$ kvadrat tenglamaning ildizlaridan ikki marta katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2-2x-44=0$ B) $x^2+2x-44=0$

C) $x^2+2x+44=0$ D) $x^2-2x+44=0$

✓ Ildizlari $x^2-19x+84=0$ kvadrat tenglamaning ildizlaridan ikkita katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2+36x-288=0$ B) $x^2-23x-126=0$

C) $x^2+23x+126=0$ D) $x^2-23x+126=0$

Yechimi:

$$\left.\begin{array}{l} x^2-19x+84=0 \\ x_1;\ x_2 \\ x_1+x_2=19;\ x_1\cdot x_2=84 \end{array}\right| \Rightarrow \left|\begin{array}{l} y^2+py+q=0 \\ y_1=x_1+2;\ y_2=x_2+2 \\ y_1+y_2=-p;\ y_1\cdot y_2=q \end{array}\right.$$

$$y^2+py+q=0$$

$$\left.x_1+2+x_2+2=-p\right| \Rightarrow \left|(x_1+2)\cdot(x_2+2)=q\right.$$

$$(x_1+2)\cdot(x_2+2)=q$$

$$4+x_1+x_2=-p \qquad x_1\cdot x_2+2\cdot(x_1+x_2)+4=q$$

$$4+19=-p \qquad 84+2\cdot 19+4=q$$

$$p=-23 \qquad q=126$$

$$y^2-23y+126=0 \Rightarrow \quad x^2-23x+126=0$$

Javob: (D)

Izoh: tenglamaning ildizlaridan ikkita katta bo'lgan degani uchun $y_1=x_1+2;\ y_2=x_2+2$ kabi belgilandi.

3418. Ildizlari $x^2-10x+24=0$ kvadrat tenglamaning ildizlaridan ikkita katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2+14x+48=0$ B) $x^2-14x-48=0$

C) $x^2+14x-48=0$ D) $x^2-14x+48=0$

3419. Ildizlari $x^2-11x+24=0$ kvadrat tenglamaning ildizlaridan ikkita katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2-15x-50=0$ B) $x^2+15x+50=0$

C) $x^2+15x-50=0$ D) $x^2-15x+50=0$

3420. Ildizlari $x^2-9x+18=0$ kvadrat tenglamaning ildizlaridan ikkita katta bo'lgan kvadrat tenglamani tuzing.

A) $x^2-13x-40=0$ B) $x^2+13x+40=0$

C) $x^2+2x+44=0$ D) $x^2-13x+40=0$

✓ Ildizlari $x^2-10x+24=0$ kvadrat tenglamaning ildizlariga teskari bo'lgan kvadrat tenglamani tuzing.

A) $24x^2-10x-1=0$ B) $24x^2-10x+1=0$

C) $24x^2+10x+1=0$ D) $24x^2+10x-1=0$

Yechimi:

$$\left.\begin{array}{l} x^2-10x+24=0 \\ x_1;\ x_2 \\ x_1+x_2=10 \\ x_1\cdot x_2=24 \end{array}\right| \Rightarrow \left|\begin{array}{l} y^2+py+q=0 \\ y_1=\dfrac{1}{x_1};\quad y_2=\dfrac{1}{x_2} \\ y_1+y_2=-p \\ y_1\cdot y_2=q \end{array}\right.$$

$$\left.\begin{array}{l} y^2+py+q=0 \\ \dfrac{1}{x_1}+\dfrac{1}{x_2}=-p \end{array}\right| \Rightarrow \left|\begin{array}{l} \dfrac{1}{x_1}\cdot\dfrac{1}{x_2}=q \end{array}\right. \qquad \left|\begin{array}{l} \dfrac{x_2+x_1}{x_1\cdot x_2}=-p \\ \dfrac{10}{24}=-p \\ \dfrac{5}{12}=-p \end{array}\right| \qquad \left|\begin{array}{l} \dfrac{1}{x_1\cdot x_2}=q \\ \dfrac{1}{24}=q \end{array}\right.$$

$$y^2-\frac{5}{12}y+\frac{1}{24}=0 \quad (\cdot 24)$$

$$\Downarrow$$

$$24x^2-10x+1=0$$

Javob: (B)

Izoh: ildizlariga teskari bo'lgan degani uchun $y_1=\dfrac{1}{x_1};\quad y_2=\dfrac{1}{x_2}$ kabi belgilandi.

3421. Ildizlari $x^2-20x+96=0$ kvadrat tenglamaning ildizlariga teskari bo'lgan kvadrat tenglamani tuzing.

A) $96x^2-20x+1=0$ B) $96x^2-20x-1=0$

C) $96x^2+20x+1=0$ D) $96x^2+20x-1=0$

3422. Ildizlari $x^2-17x-66=0$ kvadrat tenglamaning ildizlariga teskari bo'lgan kvadrat tenglamani tuzing.

A) $66x^2-17x+1=0$ B) $66x^2+17x-1=0$

C) $66x^2-17x-1=0$ D) $66x^2+17x+1=0$

3423. *Ildizlari* $x^2-11x+24=0$ kvadrat tenglamaning ildizlariga teskari bo'lgan kvadrat tenglamani tuzing.

A) $24x^2-11x-1=0$ B) $24x^2+11x+1=0$

C) $24x^2-11x+1=0$ D) $24x^2+11x-1=0$

✓ k ning qanday qiymatlarida $3x^2-10x+3k=0$ tenglamaning x_1 *va* x_2 ildizlari orasida $6x_1+13x_2=48$ munosabat o'rinli bo'ladi?

A) $-\frac{8}{3}$ B) $\frac{8}{3}$ C) $-\frac{10}{3}$ D) $\frac{10}{3}$

Yechimi:

$$\boxed{3x^2-10x+3k=0\,(:3)} \Downarrow \boxed{x^2-\frac{10}{3}x+k=0}$$

$$\boxed{\begin{matrix}x_1+x_2=\frac{10}{3}\\ x_1\cdot x_2=k\end{matrix}} \Rightarrow \begin{cases}x_1+x_2=\frac{10}{3}\\ 6x_1+13x_2=48\end{cases}$$

$$\begin{cases}x_1+x_2=\frac{10}{3} & (\cdot 6)\\ 6x_1+13x_2=48\end{cases} \Rightarrow \boxed{\begin{matrix}-\begin{cases}6x_1+6x_2=20\\ 6x_1+13x_2=48\end{cases}\\ \hline -7x_2=-28\\ x_2=4\end{matrix}}$$

$$\boxed{\begin{matrix}x_1+x_2=\frac{10}{3}\\ x_1+4=\frac{10}{3}\\ x_1=-\frac{2}{3}\end{matrix}} \Rightarrow \boxed{\begin{matrix}x_1=-\frac{2}{3}\\ x_2=4\\ x_1\cdot x_2=k\\ -\frac{2}{3}\cdot 4=k\end{matrix}} \Rightarrow \boxed{k=-\frac{8}{3}}$$

Javob: (A)

Izoh: viyet teoremasini qo'llab, sistema tuzib olish lozim.

3424. a ning qanday qiymatlarida $3x^2-5x+3a=0$ tenglamaning x_1 *va* x_2 ildizlari orasida $6x_1-x_2=24$ munosabat o'rinli bo'ladi?

A) $-\frac{22}{3}$ B) $\frac{46}{3}$ C) $\frac{23}{3}$ D) $\frac{-5}{3}$

3425. m ning qanday qiymatlarida $4x^2-25x+4m=0$ tenglamaning x_1 *va* x_2 ildizlari orasida $8x_1+6x_2=36$ munosabat o'rinli bo'ladi?

A) $\frac{21}{4}$ B) $\frac{-21}{4}$ C) $\frac{25}{4}$ D) $\frac{-25}{4}$

3426. n ning qanday qiymatlarida $2x^2-7x+2n=0$ tenglamaning x_1 *va* x_2 ildizlari orasida $8x_1+6x_2=20$ munosabat o'rinli bo'ladi?

A) -2 B) 2 C) $\frac{7}{2}$ D) $\frac{-7}{2}$

✓ k ning qanday qiymatlarida $5x^2+kx-1=0$ tenglamaning x_1 *va* x_2 ildizlari orasida $x_1+10x_2=1$ munosabat o'rinli bo'ladi?

A) $-\frac{8}{3}$ B) $2;\frac{8}{3}$ C) $4;\frac{19}{2}$ D) $2;\frac{10}{3}$

Yechimi:

$$\boxed{5x^2+kx-1=0\,(:5)} \Downarrow \boxed{x^2+\frac{k}{5}x-\frac{1}{5}=0}$$

$$\boxed{\begin{matrix}x_1+x_2=-\frac{k}{5}\\ x_1\cdot x_2=-\frac{1}{5}\end{matrix}} \Rightarrow \begin{cases}x_1+10x_2=1\\ x_1\cdot x_2=-\frac{1}{5}\end{cases}$$

$$\begin{cases}x_1+10x_2=1\\ x_1\cdot x_2=-\frac{1}{5}\end{cases} \Rightarrow \begin{cases}x_1=1-10x_2\\ x_1\cdot x_2=-\frac{1}{5}\end{cases}$$

$$x_1\cdot x_2=-\frac{1}{5}$$

$$(1-10x_2)\cdot x_2=-\frac{1}{5}$$

$$x_2-10x_2^2+\frac{1}{5}=0$$

$$-10x_2^2+x_2+\frac{1}{5}=0$$

$$D=\sqrt{1+4\cdot\frac{1}{5}\cdot 10}=3$$

$$\boxed{\begin{matrix}x_{2,1}=\frac{-1-3}{-20}=\frac{1}{5}\\ x_{2,2}=\frac{-1+3}{-20}=-\frac{1}{10}\end{matrix}} \Rightarrow \boxed{\begin{matrix}x_1=1-10x_2\\ x_{1,1}=1-10\cdot\frac{1}{5}=-1\\ x_{1,2}=1+10\cdot\frac{1}{10}=2\end{matrix}}$$

$$\left\{x_{1,1};\ x_{2,1}\right\} \Rightarrow \left\{-1;\ \frac{1}{5}\right\}$$

$$\left\{x_{1,2};\ x_{2,2}\right\} \Rightarrow \left\{2;\ -\frac{1}{10}\right\}$$

$$x_1+x_2=-\frac{k}{5}$$

$$\swarrow \quad \searrow$$

$$\boxed{\begin{matrix}-1+\frac{1}{5}=-\frac{k}{5}\\ -\frac{4}{5}=-\frac{k}{5}\\ k=4\end{matrix}} \qquad \boxed{\begin{matrix}2-\frac{1}{10}=-\frac{k}{5}\\ \frac{19}{10}=-\frac{k}{5}\\ k=-\frac{19}{2}\end{matrix}}$$

Javob: (C)

3427. k ning qanday qiymatlarida $x^2-kx-8=0$ tenglamaning x_1 va x_2 ildizlari orasida $x_1+x_2=2$ munosabat o'rinli bo'ladi?

A) $\pm\frac{1}{2}$ B) 2 C) $\pm\frac{1}{4}$ D) $\frac{-5}{3}$

3428. k ning qanday qiymatlarida i $x^2-kx+4=0$ tenglamaning x_1 va x_2 ildizlari orasida $2x_1-3x_2=2$ munosabat o'rinli bo'ladi?

A) $\frac{21}{4}$; 2 B) $-2;\frac{13}{4}$ C) $-4;\frac{13}{3}$ D) $\frac{-25}{4}$

✓ k ning qanday qiymatlarida $(3k+2)x^2+6x+1=0$ tenglama $x=-2$ yechimga ega?

A) $\frac{1}{4}$ B) $2;\frac{8}{3}$ C) 4 D) $-\frac{1}{4}$

Yechimi: tenlamaning ildizi berilgan bo'lsa, o'rniga qo'ying.

$(3k+2)x^2+6x+1=0$ | $x=-2$ | $(3k+2)\cdot(-2)^2+6\cdot(-2)+1=0$ *bu tenglamani yechsak* $k=\frac{1}{4}$

Javob: (A)

3429. n ning qanday qiymatlarida $nx^2-nx-11=0$ tenglama $x=0,5$ yechimga ega?

A) –44 B) –3 C) 11 D) 44

3430. a ning qanday qiymatlarida $x^2-(a-1)x+32=0$ tenglama $x=4$ yechimga ega?

A) 12 B) 13 C) 11 D) 14

3431. k ning qanday qiymatlarida $(2k+5)x^2+7x-2k^2=0$ tenglama $x=1$ yechimga ega?

A) 1; 3 B) 1; –3 C) –2; 3 D) –3; 2

✓ $x^2-11x+q=0$ tenglamaning ildizlaridan biri 5 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) 11 B) 15 C) 20 D) 18

Yechimi: tenlamaning ildizi berilgan bo'lsa, o'rniga qo'ying.

$x^2-11x+q=0$ | $x=5$ | $5^2-11\cdot5+q=0$ *bu tenglamani yechsak* $q=30$

demak, $x^2-11x+30=0$

Shu tenglamaning barcha koeffitsiyentlari yig'indisini | $1-11+30=20$

Javob: (C)

3432. $x^2-12x+a=0$ tenglamaning ildizlaridan biri 5 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) –48 B) 48 C) 23 D) 24

3433. $x^2-12x+n=0$ tenglamaning ildizlaridan biri 4 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) 21 B) 13 C) 11 D) 44

3434. $x^2-11x+m=0$ tenglamaning ildizlaridan biri 6 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) 19 B) 15 C) 20 D) 24

✓ $x^2-\frac{9}{20}ax+a=0$ tenglamaning ildizlaridan biri 5 ga teng. Uning ikkinchi ildizini toping.

A) 11 B) 5 C) 2 D) 4

Yechimi: tenlamaning ildizi berilgan bo'lsa, o'rniga qo'ying.

$x^2-\frac{9}{20}ax+a=0$ | $x=5$ | $5^2-\frac{9}{20}a\cdot5+a=0$ *bu tenglamani yechsak* $a=20$

demak, $x^2-9x+20=0$

$x_1+x_2=9$, $x_1\cdot x_2=20$ $\Rightarrow$ $5+x_2=9$, $x_2=4$

Javob: (D)

3435. $x^2-\frac{a}{2}x+a=0$ tenglamaning ildizlaridan biri 6 ga teng. Uning ikkinchi ildizini toping.

A) 3 B) 8 C) 2 D) 4

3436. $x^2+\frac{5}{14}ax+a=0$ tenglamaning ildizlaridan biri –2 ga teng. Uning ikkinchi ildizini toping.

A) 7 B) –7 C) 8 D) 6

3437. $x^2+\frac{n}{20}x+n=0$ tenglamaning ildizlaridan biri –4 ga teng. Uning ikkinchi ildizini toping.

A) 5 B) –5 C) 2 D) 4

✓ $x^2-2x+3a=0$ tenglamaning x_1 va x_2 ildizlari orasida $\frac{1}{x_1}+\frac{1}{x_2}=\frac{2}{5}$ munosabat o'rinli. a ning qiymatini toping.

A) 5/3 B) 5 C) 2/5 D) 4

Yechimi:

$x^2-2x+3a=0$

$x_1+x_2=2$, $x_1\cdot x_2=3a$

$\frac{1}{x_1}+\frac{1}{x_2}=\frac{2}{5}$, $\frac{x_2+x_1}{x_1x_2}=\frac{2}{5}$

proporsiya $\frac{x_2+x_1}{x_1x_2}=\frac{2}{5}$ $\frac{2}{3a}=\frac{2}{5}$

$6a=10$

$a=\frac{5}{3}$

Javob: (A)
Izoh: Viyet teoremasini qo'llab, proporsiya tuzib olish lozim.

3438. $x^2+x+a=0$ tenglamaning x_1 va x_2 ildizlari orasida $\frac{1}{x_1}+\frac{1}{x_2}=\frac{2}{5}$ munosabat o'rinli. a ning qiymatini toping.
A) –1,5 B) –2 C) –1 D) –2,5

3439. $x^2-5x-4a=0$ tenglamaning x_1 va x_2 ildizlari orasida $\frac{1}{x_1}+\frac{1}{x_2}=\frac{1}{4}$ munosabat o'rinli. a ning qiymatini toping.
A) 5 B) –5 C) 2 D) 6

3440. $x^2-3x-2a=0$ tenglamaning x_1 va x_2 ildizlari orasida $\frac{1}{x_1}+\frac{1}{x_2}=5$ munosabat o'rinli. a ning qiymatini toping.
A) 0,3 B) –0,3 C) 2 D) 4

KVADRAT TENGLAMAGA KELTIRILADIGAN TENGLAMALAR

✓ $x^4-7x^2+12=0$ tenglamani yeching.
A) $\pm 3;\pm\sqrt{5}$ B) $\pm 2;\pm\sqrt{3}$
C) $\pm 3;\pm\sqrt{3}$ D) $\pm 2;\pm\sqrt{2}$

Yechimi: $ax^4+bx^2+c=0$ ko'rinishdagi tenglamalar **BIKVADRAT** tenglama deyiladi.

$$x^4-7x^2+12=0$$

bu turdagi misollarni ishlashda belgilash kiritamiz:

$$x^2=t$$
$$x^4-7x^2+12=0$$
$$(x^2)^2-7x^2+12=0$$
$$t^2-7t+12=0$$

bu kvadrat tenglamani yechamiz:

$$t^2-7t+12=0$$
$$t_1=4 \qquad t_2=3$$

$x^2=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x^2=4$	$x^2=3$
$x_{1,2}=\pm 2$	$x_{3,4}=\pm\sqrt{3}$

Javob: $x_{1,2}=\pm 2;\quad x_{3,4}=\pm\sqrt{3}$ **(B)**

3441. $x^4-10x^2+9=0$ tenglamani yeching.
A) $\pm 1;\pm 3$ B) $\pm 1;\pm 5$
C) $\pm 1;\pm 6$ D) $\pm 4;\pm 3$

3442. $x^4-13x^2+36=0$ tenglamani yeching.
A) $\pm 2;\pm 3$ B) $\pm 4;\pm 3$
C) $\pm 5;\pm 2$ D) $\pm 2;\pm 4$

3443. $4x^4-17x^2+4=0$ tenglamani yeching.
A) $\pm 2;\pm\frac{1}{2}$ B) ± 2
C) $\pm 2;\pm\frac{1}{4}$ D) $2;\frac{1}{4}$

✓ $9x^4+5x^2-4=0$ tenglamani yeching.
A) $\pm\frac{2}{3}$ B) ± 2 C) $\pm 3;\pm\sqrt{3}$ D) $\pm\sqrt{2}$

Yechimi: $9x^4+5x^2-4=0$

belgilash kiritamiz: $x^2=t$

$$9t^2+5t-4=0$$

bu kvadrat tenglamani yechamiz:

$$9t^2+5t-4=0$$
$$t_1=\frac{4}{9} \qquad t_2=-1$$

$x^2=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x^2=\frac{4}{9}$	$x^2=-1$
$x_{1,2}=\pm\frac{2}{3}$	$\varnothing$

Javob: $x_{1,2}=\pm\frac{2}{3}$ **(A)**

3444. $x^4-3x^2-4=0$ tenglamani yeching.
A) ± 1 B) ± 2 C) $\varnothing$ D) ± 4

3445. $x^4+x^2-20=0$ tenglamani yeching.
A) $\pm\sqrt{5}$ B) $\varnothing$ C) ± 2 D) $\pm\sqrt{5};\ \pm 2$

3446. $x^4-4x^2-5=0$ tenglamani yeching.
A) $\pm 1;\pm\sqrt{5}$ B) $\varnothing$ C) ± 2 D) $\pm\sqrt{5}$

3447. $x^4+5x^2+6=0$ tenglamani yeching.
A) $\pm\sqrt{2}$ B) $\pm\sqrt{3};\pm\sqrt{2}$ C) $\varnothing$ D) $\pm 2;\pm 3$

✓ Ildizlari ± 2 va ± 3 bo'lgan keltirilgan bikvadrat tenglamani tuzing.
A) $x^4-13x^2+36=0$ B) $x^4+13x^2+36=0$
C) $x^4-13x^2-36=0$ D) $x^4+13x^2-36=0$
Yechimi:

$x_{1,2}=\pm 2$	$x_{3,4}=\pm 3$	$x_1+x_2=-p$	$9+4=-p$
$x^2=4$	$x^2=9$	$x_1\cdot x_2=q$	$9\cdot 4=q$
$t_1=4$	$t_2=9$	$x^2+px+q=0$	$p=-13,\ q=36$
			$t^2-13t+36=0$

$x^2=t \Rightarrow \qquad x^4-13x^2+36=0$

Javob: (A)

3448. Ildizlari ± 5 *va* ± 7 bo'lgan keltirilgan bikvadrat tenglamani tuzing.

A) $x^4-74x^2+1225=0$ B) $x^4+74x^2-1225=0$

C) $x^4-74x^2-1225=0$ D) $x^4+74x^2+1225=0$

3449. Ildizlari ± 1 *va* ± 6 bo'lgan keltirilgan bikvadrat tenglamani tuzing.

A) $x^4-37x^2-36=0$ B) $x^4+37x^2-36=0$

C) $x^4+37x^2+36=0$ D) $x^4-37x^2+36=0$

3450. Ildizlari $\pm\sqrt{2}$ *va* $\pm\sqrt{3}$ bo'lgan keltirilgan bikvadrat tenglamani tuzing.

A) $x^4-5x^2+6=0$ B) $x^4-5x^2-6=0$

C) $x^4+5x^2-6=0$ D) $x^4+5x^2+6=0$

3451. Ildizlari $\pm 3\sqrt{2}$ *va* $\pm 2\sqrt{3}$ bo'lgan keltirilgan bikvadrat tenglamani tuzing.

A) $x^4-30x^2-216=0$ B) $x^4-30x^2+216=0$

C) $x^4+30x^2+216=0$ D) $x^4+30x^2-216=0$

✓ $\dfrac{x^2+2x-3}{x-3}=0$ tenglamani yeching.

A) 1 B) –2 C) –1 D) –3

Yechimi: Agar kasr ko'rinishdagi tenglama berilsa suratini (tepasini) "0" ga tenglab yeching:

$x^2+2x-3=0$

bu kvadrat tenglamani yechamiz:

$x_1=-1 \qquad x_2=3$

$x=3$ tenglamaning yechimi bo'lmaydi ($x=3$ *chet ildiz* deyiladi) ya'ni maxraj "0" ga teng bo'lgani uchun:

Javob: $x=-1$; **(C)**

Izoh: Javobni olishdan oldin maxrajga qo'yib tekshirish lozim.

3452. $\dfrac{x+1}{x-2}=0$ tenglamani yeching.

A) –4 B) 2 C) 3 D) –1

3453. $\dfrac{2x-1}{3x+1}=0$ tenglamani yeching.

A) 0,3 B) –0,5 C) 0,5 D) –2

3454. $\dfrac{x-3x^2}{x}=0$ tenglamani yeching.

A) 0 B) 0; 3 C) ∅ D) $\dfrac{1}{3}$

3455. $\dfrac{25-x^2}{x-5}=0$ tenglamani yeching.

A) 5 B) –5 C) ∅ D) ± 5

3456. $\dfrac{(x-25)(7x-14)}{5-\sqrt{x}}=0$ tenglamani yeching.

A) 25; 0,5 B) 2 C) ± 2 D) ∅

3457. $\dfrac{-x^2+x+2}{x+1}=0$ tenglamani yeching.

A) 2 B) –1 C) ∅ D) ± 5

✓ $\dfrac{3}{x+2}-\dfrac{4}{x-3}=3$ tenglamani yeching.

A) ± 3 B) –1; $-\dfrac{1}{3}$ C) $\pm 3; \pm\sqrt{3}$ D) 1; $-\dfrac{1}{3}$

Yechimi: Umumiy mahraj beramiz.

$$\frac{3}{x+2}-\frac{4}{x-3}=3$$

$$\frac{(x-3)\cdot 3}{x+2}-\frac{(x+2)\cdot 4}{x-3}=3\cdot(x+2)(x-3)$$

$$3\cdot(x-3)-4\cdot(x+2)=3\cdot(x+2)(x-3)$$

$$3x-9-4x-8=3\cdot(x^2-3x+2x-6)$$

$$3x-9-4x-8=3x^2-9x+6x-18$$

$$3x^2-2x-1=0$$

bu kvadrat tenglamani yechamiz: $x_1=1$; $x_2=-\dfrac{1}{3}$

bu yechimlarda maxraj nolga teng emas demak ikkilasi yechim bo'la oladi.

Javob: $x_1=1$; $x_2=-\dfrac{1}{3}$ **(D)**

3458. $\dfrac{10}{x-3}-\dfrac{8}{x}=1$ tenglamani yeching.

A) 8; –3 B) –1; 5 C) –1; 8 D) 4; –3

3459. $\dfrac{2}{x-5}+\dfrac{14}{x}=3$ tenglamani yeching.

A) 7; $\dfrac{10}{3}$ B) 7; $\dfrac{3}{10}$ C) 3; $\dfrac{10}{7}$ D) $\dfrac{3}{5}$; 7

3460. $\dfrac{1}{x}+\dfrac{1}{x+3}=\dfrac{3}{20}$ tenglamani yeching.

A) 12; $\dfrac{5}{3}$ B) $-\dfrac{5}{3}$; 12 C) ∅ D) 12; $-\dfrac{3}{5}$

3461. $\dfrac{40}{x-20}-\dfrac{40}{x}=1$ tenglamani yeching.

A) 40 B) ∅

C) –20; 40 D) –40; 20

3462. $\frac{4}{x-2}-\frac{4}{x+2}=1{,}5$ tenglamani yeching.

A) $\pm\sqrt{2}$ B) $\pm\sqrt{3};\pm\sqrt{2}$

C) $\pm\frac{2\sqrt{33}}{3}$ D) $\pm\sqrt{33}$

✓ $\frac{1}{(x-1)(x-2)}+\frac{3}{x-1}=\frac{3-x}{x-2}$ tenglamani yeching.

A) 1 B) $-1;\ -\frac{1}{3}$ C) $\frac{1}{3}$ D) $1;\ -\frac{1}{3}$

Yechimi: Umumiy mahraj beramiz.

$$\frac{1}{(x-1)(x-2)}+\frac{3}{x-1}=\frac{3-x}{x-2}$$

$$\frac{1}{(x-1)(x-2)}-\frac{(x-2)\cdot 3}{(x-1)(x-2)}=\frac{(x-1)\cdot(3-x)}{x-2}$$

$$1+3\cdot(x-2)=(3-x)(x-1)$$

$$1+3x-6=3x-3-x^2+x$$

$$x^2-x-2=0$$

bu kvadrat tenglamani yechamiz:

$x_1=-1 \quad x_2=2$

$x=2$ tenglamaning yechimi bo'lmaydi ya'ni $x=2$ *chet ildiz* maxraj "0" ga teng bo'lgani uchun:

Javob: $x_1=1$ **(A)**

3463. $\frac{x+5}{x+2}+\frac{1}{(x+1)(x+2)}=\frac{1}{x+1}$ tenglamani yeching.

A) $-2;-3$ B) -4 C) $-2;-4$ D) $-4;-1$

3464. $\frac{x^2-2x-5}{(x-3)(x-1)}-\frac{1}{x-3}=1$ tenglamani yeching.

A) $7;\ \frac{10}{3}$ B) 7 C) 3; 7 D) 1; 7

3465. $\frac{x^2}{x+3}-\frac{x}{-3-x}=\frac{6}{x+3}$ tenglamaning ildizlari nechta?

A) 2 B) 1 C) ∅ D) 3

3466. $\frac{x^2}{x-1}-\frac{2x}{1-x}=\frac{3}{x-1}$ tenglamaning ildizlari nechta?

A) 4 B) 2 C) 3 D) 1

3467. x ning qanday qiymatlarida $\frac{6}{x^2-1}+\frac{2}{1-x}$ va $2-\frac{x+4}{1+x}$ *ifodalarning qiymatlari bir–biriga teng* bo'ladi?

A) 2 B) 0 C) 3 D) 1

3468. x ning qanday qiymatlarida $\frac{1}{x+2}-\frac{3}{x-2}$ va $1+\frac{4}{4-x^2}$ *ifodalarning qiymatlari bir–biriga teng* bo'ladi?

A) 0 B) 2 C) 3 D) 1

✓ $(x-1)^4-5(x-1)^2+4=0$ tenglamani yeching.

A) 1 B) −1; 3 C) −1; 0; 2; 3 D) 4; $-\frac{1}{3}$

Yechimi: $(x-1)^4-5(x-1)^2+4=0$

$(x-1)^2=t$

$t^2-5t+4=0$

bu kvadrat tenglamani yechamiz: $t_1=1;\ t_2=4$

$(x-1)^2=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$(x-1)^2=1 \quad (x-1)^2=4$

$x-1=\pm1 \quad x-1=\pm2 \qquad x-1=\pm2$

$x-1=1$	$x-1=-1$	$x-1=2$	$x-1=-2$
$x_1=2$	$x_2=0$	$x_3=3$	$x_4=-1$

Javob: −1; 0; 2; 3 **(C)**

3469. $(x+1)^4-10(x+1)^2+9=0$ tenglamani yeching.

A) $-2;-3;\ 0;\ 5$ B) $-4;-2;\ 0;\ 2$

C) $-2;-4;-3;-1$ D) $0;\ 4;-3;\ -1$

3470. $(x+5)^4+8(x+5)^2-9=0$ tenglamaning eng katta ildizini toping.

A) −4 B) −6 C) −6; −4 D) 1; 7

✓ $2x^8-x^4-15=0$ tenglamani yeching.

A) 1 B) −1; 3

C) $\pm\sqrt[4]{3}$ D) $4;\ -\frac{1}{3}$

Yechimi: $2x^8-x^4-15=0$

$x^4=t$

$2t^2-t-15=0$

bu kvadrat tenglamani yechamiz: $t_1=3;\ t_2=-\frac{5}{2}$

$x^4=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x^4=3$	$x^4=-\frac{5}{2}$
$x_{1,2}=\pm\sqrt[4]{3}$	∅

Javob: $\pm\sqrt[4]{3}$ **(C)**

3471. $x^8-15x^4-16=0$ tenglamani yeching.
A) 24 B) $-2;\ 2$ C) ± 4 D) ± 1

3472. $x^{12}-26x^6-27=0$ tenglamani yeching.
A) $\pm\sqrt{3}$ B) -6 C) $\pm\sqrt[6]{3}$ D) 3

3473. $(2x-1)^6-6(2x-1)^3-16=0$ tenglamaning eng katta ildizini toping.
A) -4 B) $\frac{-\sqrt[3]{2}+1}{2};\ 1,5$ C) 1,5 D) $-\sqrt[3]{2}+1;\ 3$

✓ $(x^2-5x+4)(x^2-5x+6)=120$ tenglamaning ildizlari yig'indisini toping.
A) 1 B) 10 C) 6 D) 5
Yechimi:

$$\underbrace{(x^2-5x+4)}_{t}\cdot\underbrace{(x^2-5x+6)}_{t+2}=120$$

$$\Downarrow$$

$$t\cdot(t+2)=120$$

$$t^2+2\cdot t-120=0$$

bu kvadrat tenglamani yechamiz: $t_1=10$; $t_2=-12$

$x^2-5x+4=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x^2-5x+4=10$	$x^2-5x+4=-12$
$x^2-5x-6=0$	$x^2-5x+16=0$
$x_1+x_2=5$	$\varnothing$

Javob: (D)

Izoh: ildizlari yig'indisini topishda Viyet teoremasini qo'llang (Diskiriminant musbat bo'lishi lozim).

3474. $(x^2-7x+1)(x^2-7x+2)=20$ tenglamaning ildizlari yig'indisini toping.
A) 24 B) 12 C) 6 D) 7

3475. $(x^2+6x+4)(x^2+6x+13)=10$ tenglamaning ildizlari yig'indisini toping.
A) 4 B) 6 C) -6 D) 12

3476. $(3x^2-4x+1)(3x^2-4x+2)=56$ tenglamaning ildizlari yig'indisini toping.
A) $-4/3$ B) $-1/3$ C) 8 D) 4/3

3477. $(x^2+5x+1)(x^2+5x+2)=2$ tenglamaning ildizlari yig'indisini toping.
A) 10 B) 5 C) -10 D) -5

✓ $(x+1)(x+2)(x+4)(x+5)=40$ tenglamaning ildizlari yig'indisini toping.
A) -6 B) 10 C) 6 D) 5
Yechimi: boshi bilan oxirini va o'rtalarini o'zaro ko'paytiring.

$$\underbrace{(x+1)(x+5)}_{x^2+6x+5}\cdot\underbrace{(x+2)(x+4)}_{x^2+6x+8}=40$$

$$\underbrace{(x^2+6x+5)}_{t}\cdot\underbrace{(x^2+6x+8)}_{t+3}=40$$

$$\Downarrow$$

$$t\cdot(t+3)=40$$

$$t^2+3t-40=0$$

bu kvadrat tenglamani yechamiz: $t_1=-8;\ t_2=5$

$x^2+6x+5=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x^2+6x+5=-8$		$x^2+6x+5=5$
$x^2+6x+13=0$	$\Rightarrow$	$x^2+6x=0$
$\varnothing$		$x_1+x_2=-6$

Javob: (A)

Izoh: ildizlari yig'indisini topishda Viyet teoremasini qo'llang. (Diskiriminant musbat bo'lishi lozim.)

3478. $(y+3)(y+4)(y+6)(y+7)=10$ tenglamaning ildizlari yig'indisini toping.
A) 10 B) -12 C) -20 D) -10

3479. $(n-2)(n+1)(n+4)(n+7)=19$ tenglamaning ildizlari yig'indisini toping.
A) 5 B) -5 C) -10 D) 10

3480. $(x+2)(x+3)(x+5)(x+6)=28$ tenglamaning ildizlari yig'indisini toping.
A) -8 B) -16 C) 8 D) 16

✓ $(x+\frac{1}{x})^2-2(x+\frac{1}{x})-3=0$ tenglamaning ildizlari ko'paytmasini toping.
A) -1 B) 3 C) 1 D) 4
Yechimi: belgilash kiritish lozim.

$$\underbrace{(x+\tfrac{1}{x})}_{t}{}^2-2\underbrace{(x+\tfrac{1}{x})}_{t}-3=0$$

$$\Downarrow$$

$$t^2-2t-3=0$$

bu kvadrat tenglamani yechamiz: $t_1=-1;\ t_2=3$

$x+\frac{1}{x}=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$x+\frac{1}{x}=-1\ (\cdot x)$		$x+\frac{1}{x}=3\ (\cdot x)$
$x^2+1=-x$		$x^2+1=3x$
$x^2+x+1=0$		$x^2-3x+1=0$
$\varnothing$		$x_1\cdot x_2=1$

Javob: (C)

Izoh: ildizlari ko'paytmasini topishda Viyet teoremasini qo'llang (Diskiriminant musbat bo'lishi lozim).

3481. $(x+\frac{1}{x})^2+2(x+\frac{1}{x})-15=0$ tenglamaning ildizlari ko'paytmasini toping.
A) Ø B) 1 C) –2 D) –1

3482. $5(x+\frac{1}{x})^2-8(x+\frac{1}{x})-4=0$ tenglamaning ildizlari ko'paytmasini toping.
A) 1 B) –5 C) –1 D) Ø

3483. $8(x+\frac{1}{x})^2-6(x+\frac{1}{x})+1=0$ tenglamaning ildizlari ko'paytmasini toping.
A) –8 B) –16 C) Ø D) 16

✓ $x^2+\frac{1}{x^2}-5(x+\frac{1}{x})-4=0$ tenglamaning ildizlari ko'paytmasini toping.
A) –1 B) 1 C) 3 D) 4

Yechimi: belgilash kiritish lozim.

$$x+\frac{1}{x}=t \Rightarrow \left|\begin{array}{l}(x+\frac{1}{x})^2=t^2\\ x^2+2+\frac{1}{x^2}=t^2\\ x^2+\frac{1}{x^2}=t^2-2\end{array}\right.$$

$$\underbrace{x^2+\frac{1}{x^2}}_{t^2-2}-5\cdot\underbrace{(x+\frac{1}{x})}_{t}-4=0$$

$$\Downarrow$$

$$t^2-2-5t-4=0$$

$$t^2-5t-6=0$$

bu kvadrat tenglamani yechamiz: $t_1=-1$; $t_2=6$

$x+\frac{1}{x}=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$$\left|\begin{array}{l}x+\frac{1}{x}=-1\ (\cdot x)\\ x^2+1=-x\\ x^2+x+1=0\\ \varnothing\end{array}\right| \quad \left|\begin{array}{l}x+\frac{1}{x}=6\ (\cdot x)\\ x^2+1=6x\\ x^2-6x+1=0\\ x_1\cdot x_2=1\end{array}\right.$$

Javob: (B)

Izoh: Ildizlari ko'paytmasini topishda Viyet teoremasini qo'llang (Diskiriminant musbat bo'lishi lozim).

3484. $x^2+\frac{1}{x^2}+3(x+\frac{1}{x})+2=0$ tenglamaning ildizlari ko'paytmasini toping.
A) Ø B) 2 C) 1 D) –1

3485. $2(x^2+\frac{1}{x^2})-3(x+\frac{1}{x})-5=0$ tenglamaning ildizlari ko'paytmasini toping.
A) Ø B) –5 C) –1 D) 1

3486. $12(x^2+\frac{1}{x^2})-7(x+\frac{1}{x})+27=0$ tenglamaning ildizlari ko'paytmasini toping.
A) –8 B) –16 C) 1 D) Ø

✓ $\frac{x^2+1}{x}+\frac{x}{x^2+1}=2,5$ tenglamaning yechimlari quyidagi oraliqlarning qaysi birida joylashgan?
A) $[-1;8)$ B) $[2;7)$ C) $(-\infty;-1)$ D) $[3;8)$

Yechimi: belgilash kiritish lozim.

$$\frac{x^2+1}{x}=t \Rightarrow \left|\frac{x}{x^2+1}=\frac{1}{t}\right. \qquad \underset{t}{\frac{x^2+1}{x}}+\underset{\frac{1}{t}}{\frac{x}{x^2+1}}=2,5$$

$$\Downarrow$$

$$t+\frac{1}{t}=2,5$$

$$\Downarrow$$

$$t^2-2,5t+1=0$$

bu kvadrat tenglamani yechamiz: $t_1=\frac{1}{2}$; $t_2=2$

$\frac{x^2+1}{x}=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$$\left|\begin{array}{l}\frac{x^2+1}{x}=\frac{1}{2}\\ 2x^2+2=x\\ 2x^2-x+2=0\\ \varnothing\end{array}\right| \quad \left|\begin{array}{l}\frac{x^2+1}{x}=2\\ x^2+1=2x\\ x^2-2x+1=0\\ x_3=1\end{array}\right.$$

Javob: (A)

Izoh: javobni olishda $x=1$ qaysi oraliqda ekanini bilish lozim.

$x=1$

↙ × × ×

$[-1;8)$ $[2;7)$ $(-\infty;-1)$ $[3;8)$

3487. $\frac{x-4}{2x+5}+\frac{2x+5}{x-4}=2$ tenglamaning yechimlari quyidagi oraliqlarning qaysi birida joylashgan?
A) $[-1;8)$ B) $(-\infty;-1)$ C) $(-3;-1)$ D) $[3;8)$

3488. $\frac{x^2+x-5}{x}+\frac{3\cdot x}{x^2+x-5}+4=0$ tenglamaning yechimlari quyidagi oraliqlarning qaysi birida joylashgan?
A) $[-1;8)$ B) $[2;7)$ C) $(-\infty;-1)$ D) $[-10;+\infty)$

3489. $\frac{x-4}{x-5}+\frac{6x-30}{x-4}=5$ tenglamaning yechimlari quyidagi oraliqlarning qaysi birida joylashgan?

A) $[-1;0)$ B) $[2;4)$ C) $(0;10)$ D) $[3;5)$

3490. $\frac{x-4}{x+5}+\frac{x+5}{x-4}=2$ tenglamaning yechimlari quyidagi oraliqlarning qaysi birida joylashgan?

A) $[-1;8)$ B) $\varnothing$ C) $(-\infty;-1)$ D) $[3;8)$

✓ $(x^2+27)^2-5(x^2+27)(x^2+3)+6(x^2+3)^2=0$ tenglamaning ildizlari ko'paytmasini toping.

A) -1 B) 189 C) 36 D) 44

Yechimi: oxirgi ifodaga bo'lish lozim ya'ni $(x^2+3)^2$ ga

$$\frac{(x^2+27)^2}{(x^2+3)^2}-5\frac{(x^2+27)}{(x^2+3)}+6=0$$

$$\underbrace{\frac{(x^2+27)^2}{(x^2+3)^2}}_{t^2}-5\underbrace{\frac{(x^2+27)}{(x^2+3)}}_{t}+6=0$$

$$\Downarrow$$

$$t^2-5t+6=0$$

bu kvadrat tenglamani yechamiz: $t_1=3;\ t_2=2$

$\frac{x^2+27}{x^2+3}=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$\frac{x^2+27}{x^2+3}=2$	$\frac{x^2+27}{x^2+3}=3$
$x^2+27=2x^2+6$	$x^2+27=3x^2+9$
$x^2=21$	$2x^2=18$
$x_{1,2}=\pm\sqrt{21}$	$x_{3,4}=\pm 3$

$x_1\cdot x_2\cdot x_3\cdot x_4=\sqrt{21}\cdot\sqrt{21}\cdot 3\cdot 3=189$ **Javob: (B)**

3491. $2(x^2-1)^2+(x^4-1)-(x^2+1)^2=0$ tenglamaning ildizlari yig'indisini toping.

A) Ø B) 0,5 C) 0 D) -1

3492. $5(x^2-3)^2-8(x^4-9)-4(x^2+3)^2=0$ tenglamaning ildizlari ko'paytmasini toping.

A) Ø B) $-5/7$ C) $-3/7$ D) $-9/7$

3493. $(x-2)^2+(x-2)(x+1)+(x+1)^2=0$ tenglamaning ildizlari ko'paytmasini toping.

A) -8 B) -16 C) 1 D) Ø

✓ $|x^2+5x|=6$ tenglamaning ildizlari ko'paytmasini toping.

A) -1 B) 108 C) -36 D) 44

Yechimi:

$$|x^2+5x|=6 \Rightarrow \begin{array}{|l|l|}\hline x^2+5x=6 & x^2+5x=-6\\ x^2+5x-6=0 & x^2+5x+6=0\\ x_1\cdot x_2=-6 & x_3\cdot x_4=6\\ \hline\end{array}$$

$x_1\cdot x_2\cdot x_3\cdot x_4=-6\cdot 6=-36$

Javob: (C)

Izoh: ildizlari ko'paytmasini topishda Viyet teoremasini qo'llang (Diskiriminant musbat bo'lishi lozim).

3494. $|x^2+x|=2$ tenglamaning ildizlari yig'indisini toping.

A) Ø B) 0,5 C) 0 D) -1

3495. $|2x^2+5x|=2$ tenglamaning ildizlari yig'indisini toping.

A) 5 B) -1 C) $-2,5$ D) -5

3496. $|x^2+9x|=20$ tenglamaning ildizlari ko'paytmasini toping.

A) -8 B) -20 C) 20 D) -400

✓ $|x-1|\cdot|x+2|=4$ tenglamaning ildizlari nechta?

A) 3 B) 1 C) 4 D) 2

Yechimi:

$$|x-1|\cdot|x+2|=4$$

$$|(x-1)\cdot(x+2)|=4$$

$$|x^2+x-2|=4 \Rightarrow \begin{array}{|l|l|}\hline x^2+x-2=4 & x^2+x-2=-4\\ x^2+x-6=0 & x^2+x+2=0\\ x_1=-3;\ x_2=2 & \varnothing\\ \hline\end{array}$$

2 ta ildizi bor

Javob: (D)

3497. $|5x+12|\cdot|x-1|=22$ tenglamaning ildizlari nechta?

A) 2 B) 5 C) 4 D) 1

3498. $|x+4|\cdot|x+8|=2$ tenglamaning ildizlari nechta?

A) 1 B) 4 C) 2 D) 5

3499. $|x+3|\cdot|x-7|=0$ tenglamaning ildizlari nechta?

A) 2 B) 4 C) 0 D) 3

✓ $|x-1|^2-8=2|x-1|$ tenglamaning ildizlari ko'paytmasini toping.

A) -3 B) 5 C) -15 D) 15

Yechimi: Belgilash kiritish lozim.

$$|x-1|^2-8=2|x-1|$$

$$\underbrace{|x-1|^2}_{t^2}-2\underbrace{|x-1|}_{t}-8=0$$

$t^2-2t-8=0$

bu kvadrat tenglamani yechamiz: $t_1=-2$ $t_2=4$

$|x-1|=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$|x-1|=-2$ $|x-1|=4$

$\varnothing$ ↙ ↘ $x_1\cdot x_2=-3\cdot 5=-15$

$x-1=4$	$x-1=-4$
$x_1=5$	$x_2=-3$

Javob: (C)

3500. $|x-2|^2+4|x-2|-45=0$ tenglamaning ildizlari yig'indisini toping.

A) 10 B) –3 C) –2 D) 4

3501. $|2x-1|^2-9|2x-1|-52=0$ tenglamaning ildizlari ko'paytmasini toping.

A) –6 B) –56 C) 7 D) –42

3502. $5|x+1|^2-16|x+1|+3=0$ tenglamaning ildizlari yig'indisini toping.

A) Ø B) 5 C) –5 D) –4

✓ $x^2+|x|-2=0$ tenglamaning ildizlari nechta?

A) 3 B) 1 C) 4 D) 2

Yechimi:

$x^2+|x|-2=0 \Rightarrow$

$x>0$	$x\le 0$
$x^2+x-2=0$	$x^2-x-2=0$
$x_1=-2$ ✗	$x_3=-1$
$x_2=1$	$x_4=2$ ✗

2 ta ildizi bor

Javob: (D)

Izoh: modul ichidagi bitta "+" bitta "–" ochishda:
"+" ga " > 0" qilish lozim.
"–" ga " ≤ 0" qilish lozim.
yana bir misol:

$x^2+|x+3|-59=0$

↙ ↘

$x+3>0$ $x+3\le 0$

$x>-3$ $x\le -3$

$x^2+x+3-59=0$	$x^2-x-3-59=0$
$x^2+x-56=0$	$x^2-x-62=0$
$x_1=-8$ ×	$x_3=\frac{1-\sqrt{249}}{2}$
$x_2=7$	$x_4=\frac{1+\sqrt{249}}{2}$ ×

3503. $|x|=3x-5$ tenglamani yeching.

A) 2,5 B) ±2 C) ±3 D) –0,2

3504. $|x|=x^2-6$ tenglamani yeching.

A) 2; 3 B) ±2 C) ±3 D) –3

3505. $|x|=x^2+x-4$ tenglamaning ildizlari yig'indisini toping.

A) $1-2\sqrt{5}$ B) $-1-\sqrt{5}$ C) $2-\sqrt{5}$ D) $1-\sqrt{5}$

3506. $|x|=x^2-5x+3$ tenglamaning ildizlari yig'indisini toping.

A) $7-\sqrt{6}$ B) 6 C) $3+\sqrt{6}$ D) $1-\sqrt{6}$

3507. $|x|+x+5=x^2$ tenglamaning ildizlari nechta?

A) 2 B) 4 C) 1 D) 3

✓ $1+\cfrac{20}{1+\cfrac{20}{1+\cfrac{20}{\ddots}}}=?$

A) 3 B) 4 C) 2 D) 5

Yechimi: Belgilash kiritish lozim.

$1+\cfrac{20}{1+\cfrac{20}{1+\cfrac{20}{\ddots}}}=?$

$1+\cfrac{20}{1+\cfrac{20}{1+\cfrac{20}{\ddots}}}=x$

$1+\cfrac{20}{1+\cfrac{20}{x}}=x$

$1+\cfrac{20}{x}=x \quad (\cdot x)$

$x+20=x^2$

$x^2-x-20=0$

bu kvadrat tenglamani yechamiz:

$x_1=-4$ $x_2=5$

Javob: 5 (D)

Izoh: kasr yig'indisi "–" li bo'lmaydi, shuning uchun "–4" javobi olinmaydi.

3508. $1+\cfrac{56}{1+\cfrac{56}{1+\cfrac{56}{\ddots}}}=?$

A) 8 B) ±8 C) ±7 D) –7

3509. $1+\cfrac{5}{1+\cfrac{5}{1+\cfrac{5}{\ddots}}}=?$

A) $\frac{6}{5}$ B) $\frac{5}{6}$ C) $\frac{5}{4}$ D) $\frac{4}{5}$

3510. $\cfrac{6}{\cfrac{6}{\cfrac{6}{\ddots}+1}+1}+1=?$

A) 2 B) –2 C) –3 D) 3

3511. $1-\cfrac{1-\cfrac{1}{7}}{1-\cfrac{7}{7}}=?$

A) $\frac{7}{6}$ B) $\frac{7}{8}$ C) $\frac{7}{5}$ D) $\frac{8}{7}$

✓ 5200 000 sonining nechta natural bo'luvchisi bor?

A) 96 B) 42 C) 24 D) 48

Yechimi: berilgan sonni kanonik yoyilmasini (tub ko'paytuvchilar) topamiz.

$$5200\,000 = 52 \cdot 10^5 = 13 \cdot 4 \cdot (2 \cdot 5)^5 =$$

$$= 13 \cdot 2^2 \cdot 2^5 \cdot 5^5 = 13 \cdot 2^7 \cdot 5^5$$

$$NBS(5200000) = (1+1)(7+1)(5+1)$$

$$NBS(5200000) = 2 \cdot 8 \cdot 6 = 96$$

Javob: 96 (A)

3512. 5000 000 sonining nechta natural bo'luvchisi bor?

A) 45 B) 56 C) 46 D) 48

3513. 350 000 sonining nechta natural bo'luvchisi bor?

A) 60 B) 40 C) 30 D) 50

3514. 1440 sonining barchanatural bo'luvchilari yig'indisini toping.

A) 5225 B) 2317 C) 198 D) 4914

3515. 49000 sonining barchanatural bo'luvchilari yig'indisini toping.

A) 256898 B) 349050 C) 133380 D) 484720

✓ $4^{10} \cdot 15^3 \cdot 25^8$ ko'paytma necha xonali son?

A) 24 B) 19 C) 21 D) 18

Yechimi: berilgan sonni kanonik yoyilmasini topamiz.

$$4^{10} \cdot 15^3 \cdot 25^8 = \left(2^2\right)^{10} \cdot (3 \cdot 5)^3 \cdot \left(5^2\right)^8 =$$

$$= 2^{20} \cdot 3^3 \cdot 5^3 \cdot 5^{16} = 2^{20} \cdot 3^3 \cdot 5^{19} =$$

$$= 3^3 \cdot 2 \cdot 2^{19} \cdot 5^{19} = 3^3 \cdot 2 \cdot (2 \cdot 5)^{19} =$$

$$= 27 \cdot 2 \cdot 10^{19} = 54 \cdot 10^{19}$$

berilgan ko'paytma 5, 4 va 19 ta nol raqamlaridan hosil bo'lganni uchun 21 xonali sondir.

Javob: 21 (C)

Izoh: 10 ning darajalari qilib olish lozim.

3516. $8^{18} \cdot 5^{55}$ ko'paytma necha xonali son?

A) 54 B) 55 C) 73 D) 36

3517. $2^{10} \cdot 5^9 \cdot 4^6 \cdot 25^4$ ko'paytma necha xonali son?

A) 19 B) 21 C) 20 D) 18

✓ 2017 *va* 2018 ikkita ketma-ket kelgan sonlarga nisbatan qaysi tasdiq to'gri?

1) EKUB(2017, 2018)=1;
2) Tub sonlar;
3) O'zaro tub;
4) Ular kvadratlari ham o'zaro tub;

A) 1; 3; 4 B) 1; 2 C) 2; 4 D) 2; 3; 4

Yechimi: Ikkita ketma-ket kelgan natural sonlar doim o'zaro tub, va kvadratlari ham o'zaro tubdir. o'zaro tub sonlar EKUB = 1 bo'ladi.

Javob: 1; 3; 4 (A)

3518. Quyidagi misollarning qaysilari to'g'ri?

1) $EKUB\,(89,88)=1$
2) $EKUB(25,36)=1$
3) $EKUB(39,51)=1$
4) $EKUB(31,23)=1$

A) 1; 3; 4 B) 1; 2 C) 1; 2; 4 D) 1; 3

3519. Quyidagi tasdiqlarning qaysilari to'g'ri? $n \in N$

1) $EKUB\,(n, n+1)=1$
2) $EKUB(n^2,(n+1)^2)=1$
3) $EKUB(39,91)=1$
4) $EKUB(2018,2020)=1$

A) 1; 3; 4 B) 1; 2 C) 1; 2; 4 D) 1; 3

3520. Quyidagi tasdiqlarning qaysilari to'g'ri?

1) Toq va juft sonlar doimo o'zaro tub;
2) Ikkita juft son o'zaro tub bo'la olmaydi;
3) Ikkita turli tub sonlar doim o'zaro tub;
4) Ikkita ketma-ket natural sonlar doim o'zaro tub;

A) 1; 3; 4 B) 1; 2 4 C) 2; 4 D) 2; 3; 4

✓ 1601 sonni tub son ekanligini aniqlash uchun uni ketma-ket 2,3,5,7 va hokazo tub sonlarga bo'lamiz. Qanday songa yetganda bo'lishni to'xtatamiz ?

A) 29 B) 31 C) 41 D) 37

Yechimi: Eratosfen teoremasi:

n sonini tub son ekanligini aniqlashda $\sqrt{n}$ dan kichik , birinchi tub songacha bo'lish lozim.

$\sqrt{1601} \approx 40$

40 dan kichik birinchi tub son: 37

37 gacha bo'lish davom etadi degani

Javob: 37 (D)

3521. 2501 sonni tub son ekanligini aniqlash uchun uni ketma-ket 2,3,5,7 va hokazo tub sonlarga bo'lamiz. Qanday songa yetganda bo'lishni to'xtatamiz ?

A) 47 B) 43 C) 49 D) 39

3522. 4901 sonni tub son ekanligini aniqlash uchun uni ketma-ket 2,3,5,7 va hokazo tub sonlarga bo'lamiz. Qanday songa yetganda bo'lishni to'xtatamiz ?

A) 69 B) 67 C) 47 D) 49

3523. 8101 sonni tub son ekanligini aniqlash uchun uni ketma-ket 2,3,5,7 va hokazo tub sonlarga bo'lamiz. Qanday songa yetganda bo'lishni to'xtatamiz ?

A) 83 B) 87 C) 91 D) 89

✓ $\begin{cases} n+m=20 \\ EKUB(m,\ n)=5 \end{cases}$ sistemani qanoatlantiruvchi n *va* m natural sonlar juftini toping.

A) $(10;10)$ *va* $(5;15)$ B) $(-5;20)$ *va* $(5;15)$

C) $(15;5)$ *va* $(5;15)$ D) $(5;15)$

Yechimi:

$\begin{cases} n+m=20 \\ EKUB(m,\ n)=5 \end{cases}$

$n=5x \quad m=5y$

$5x+5y=20$

$5(x+y)=20$

$x+y=4$

$x+y=4$

$1+3=4 \quad x=1,\ y=3$

$3+1=4 \quad x=3,\ y=1$

$2+2=4$

$x=1,\ y=3 \Rightarrow \quad n=5x \quad m=5y \quad n=5 \quad m=15 \quad (5;15)$

$x=3,\ y=1 \Rightarrow \quad n=5x \quad m=5y \quad n=15 \quad m=5 \quad (15;5)$

Javob: (C)

3524. $\begin{cases} n+m=35 \\ EKUB(m,\ n)=7 \end{cases}$ sistemani qanoatlantiruvchi n *va* m natural sonlar juftini toping.

A) $(7;28)$ *va* $(28;7)$ B) $(21;14)$ *va* $(7;28)$

C) $(14;21),(7;28)$ *va* $(21;14),(28;7)$ D) $(-5;30)$

3525. $\begin{cases} n+m=12 \\ EKUB(m,\ n)=4 \end{cases}$ sistemani qanoatlantiruvchi n *va* m nechta natural sonlar juftini bor?

A) 2 B) 4 C) 1 D) 3

3526. $\begin{cases} n+m=36 \\ EKUB(m,\ n)=6 \end{cases}$ sistemani qanoatlantiruvchi n *va* m natural sonlar juftini toping.

A) 6 B) 4 C) 5 D) 2

Berzu Teoremasi

✓ x^5+x+20 ni $x+2$ ga bo'lishdan chiqadigan qoldiqni toping.

A) -14 B) 14 C) 4 D) 2

Yechimi: Berzu Teoremasi:

P(x) ko'phadni $x-a$ ga bo'lishdan chiqadigan r qoldiq shu $x=a$ ko'phadning dagi qiymatiga teng.

$r=P(a)$ Masalan: x^5+x+20 ni $x+2$ ga bo'lishdan chiqadigan qoldiq $r=(-2)^5+(-2)+20=-14$

Javob: (A)

Izoh: nimaga bo'lish kerak desa shuni "0" ga tenglab $(x+2=0 \Rightarrow x=-2)$ ifodaga qo'yish x^5+x+20 lozim. $r=(-2)^5+(-2)+20=-14$

3527. x^4-3x^2+1 ni $x-2$ ga bo'lishdan chiqadigan qoldiqni toping.

A) 0,5 B) 5 C) ± 5 D) $-0,4$

3528. $x^5-4x^3+x^2$ ni $x-3$ ga bo'lishdan chiqadigan qoldiqni toping.

A) 144 B) 154 C) 132 D) -144

3529. $x^6+x^4-3x^2+5$ ni $x^2-\sqrt{3}$ ga bo'lishdan chiqadigan qoldiqni toping.

A) 6 B) 8 C) 5 D) 7

3530. $x^{2001}+3x^{2000}+3x+13$ ni $x+3$ ga bo'lishdan chiqadigan qoldiqni toping.

A) 3 B) 5 C) 4 D) 2

3531. Quyidagilardan qaysilari P(x) ko'phad D(x) ko'phadga bo'linadi?

1) $P(x)=x^{100}-3x+2, \quad D(x)=x-1$

2) $P(x)=x^{100}-3x+2, \quad D(x)=x+1$

3) $P(x)=x^{100}-3x^2+2, \quad D(x)=x^2-1$

4) $P(x)=x^{100}-3x+2, \quad D(x)=2x^2-1$

A) 3; 4 B) hech biri C) 1; 4 D) 1; 3

✓ $x^3-px^2-qx+4=0$ tenglamaning ildizlaridan biri 1 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) 1 B) 5 C) 0 D) 8

Yechimi: tenlamaning ildizi berilgan bo'lsa, o'rniga qo'ying.

$x^3-px^2-qx+4=0$

$\boxed{x=1}$

$1^3-p\cdot 1^2-q\cdot 1+4=0$

bu tenglamani yechsak

$\boxed{p+q=5}$

demak, $x^3-px^2-qx+4=0$

Shu tenglamaning barcha koeffitsiyentlari yig'indisini $1-p-q+4=$

$=1-(p+q)+4=$

$=1-5+4=0$

Javob: (C)

3532. $x^3-2x^2-qx+4=0$ tenglamaning ildizlaridan biri 2 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.

A) -4 B) -1 C) 3 D) 1

3533. $5x^3 - px^2 - 2x + 4 = 0$ tenglamaning ildizlaridan biri 1 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) 9 B) 15 C) 0 D) 24

3534. $7x^3 - px^2 + 3x - q = 0$ tenglamaning ildizlaridan biri -1 ga teng. Shu tenglamaning barcha koeffitsiyentlari yig'indisini toping.
A) 20 B) 15 C) 0 D) 14

✓ $x^3 - 5x^2 + 8x - 1 = 0$ tenglama ildizlari yig'indisini toping.
A) 4 B) 5 C) 3 D) 1

Yechimi: Tenglamaning darajasi "3" bo'lganidan uning 3 ta ildizi bor.
Viyet teoremasi formulasi:

$$x^3 + px^2 + qx + r = 0$$
$$x_1 + x_2 + x_3 = -p$$
$$x_1 \cdot x_2 + x_2 \cdot x_3 + x_1 \cdot x_3 = q$$
$$x_1 \cdot x_2 \cdot x_3 = -r$$

$$x^3 - 5x^2 + 8x - 1 = 0$$
$$x_1 + x_2 + x_3 = 5$$
$$x_1 \cdot x_2 + x_2 \cdot x_3 + x_1 \cdot x_3 = 8$$
$$x_1 \cdot x_2 \cdot x_3 = 1$$

Javob: (B)
Izoh: Viyet teoremasi tenglamani yechmasdan oldin javobini (ildizlarining yig'indisini va ko'paytmasini) topib bera oladi.

3535. $x^3 - 4x^2 - 27x + 90 = 0$ tenglama ildizlari yig'indisini toping.
A) -4 B) 4 C) 90 D) 27

3536. $3x^3 - 4x^2 + 5x - 18 = 0$ tenglama ildizlarining ko'paytmasini toping.
A) -6 B) 4/3 C) 6 D) $-4/3$

3537. $x^3 + 7x^2 + 14x + 8 = 0$ tenglama ildizlari yig'indisini toping.
A) 7 B) -8 C) -7 D) 8

3538. $2x^3 - 5x^2 + 8x - 3 = 0$ tenglama ildizlari ko'paytmasini toping.
A) -2, B) 1,5 C) 2,5 D) $-1,5$

3539. $x^3 + 2x^2 - 9x - 18 = 0$ tenglama ildizlari ko'paytmasini toping.
A) 18 B) -18 C) 9 D) -2

3540. $x^3 + 3x^2 - 4x - 12 = 0$ tenglama ildizlari yig'indisini toping.
A) -4 B) 12 C) 3 D) -3

3541. $x^3 - 3x^2 - 4x + 12 = 0$ tenglama ildizlari ko'paytmasini toping.
A) -3 B) -12 C) 3 D) 12

3542. $x^3 + 5x^2 - 4x - 20 = 0$ tenglama ildizlarining yig'indisini toping.
A) -5 B) 5 C) -20 D) 20

3543. $x^3 - 13x + 12 = 0$ tenglama ildizlari yig'indisini toping.
A) -3 B) 0 C) 3 D) 12

✓ $x^3 - 5x^2 - 2x + 10 = 0$ tenglama ildizlaridan biri 2 ga teng qolgan ildizlari yig'indisini toping.
A) 4 B) 5 C) 3 D) 1

Yechimi:

$$x^3 - 5x^2 - 2x + 10 = 0$$
$$\boxed{2} + x_2 + x_3 = 5$$
$$x_1 \cdot x_2 + x_2 \cdot x_3 + x_1 \cdot x_3 = 2$$
$$x_1 \cdot x_2 \cdot x_3 = -10$$

$$\boxed{2} + x_2 + x_3 = 5$$
$$x_2 + x_3 = 5 - \boxed{2}$$
$$x_2 + x_3 = 3$$

J: (C)

Izoh: Viyet teoremasi qo'llang va berilgan ildizni qo'ying.

3544. $x^3 + 2x^2 - 9x - 18 = 0$ tenglama ildizlaridan biri 3 ga teng, qolgan ildizlari yig'indisini toping.
A) -5 B) -18 C) 9 D) -6

3545. $x^3 + 3x^2 - 4x - 12 = 0$ tenglama ildizlaridan biri 2 ga teng qolgan, ildizlari ko'paytmasini toping.
A) -6 B) 12 C) 5 D) 6

3546. $x^3 + 5x^2 - 4x - 20 = 0$ tenglama ildizlaridan biri 3 ga teng, qolgan ildizlari yig'indisini toping.
A) -8 B) 5 C) -20 D) 20

3547. $x^3 - 7x - 6 = 0$ tenglamaning barcha haqiqiy ildizlari o'rta geometriginitoping.
A) $\sqrt[3]{7}$ B) $-\sqrt[3]{6}$ C) $\sqrt[3]{6}$ D) 0

3548. $x^3 - 5x^2 - 2x - 10 = 0$ tenglamaning barcha haqiqiy ildizlari o'rta arifmetigini toping.
A) $-1\frac{2}{3}$ B) $1\frac{2}{3}$ C) 3 D) 12

3549. $x^3 - 13x + 12 = 0$ tenglamaning barcha haqiqiy ildizlari o'rta arifmetigini toping.
A) -4 B) 6,5 C) 0 D) 4

✓ $x^5 + 6x^4 - 7x^3 - 21x^2 - 4x - 12 = 0$ tenglama ildizlari yig'indisini toping.
A) 4 B) -6 C) 12 D) -12

Yechimi: Viyet teoremasi formulasi:

$$x^n + a_1 x^{n-1} + a_2 x^{n-2} + \ldots + a_{n-1} x + a_n = 0$$

$$x_1 + x_2 + \ldots + x_n = -a_1$$
$$x_1 \cdot x_2 + x_1 \cdot x_3 + \ldots + x_{n-1} \cdot x_n = a_2$$
$$\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$$
$$x_1 \cdot x_2 \cdot \ldots \cdot x_{n-1} \cdot x_n = (-1)^n \cdot a_n$$

Tenglamaning darajasi "5" bo'lganidan uning 5 ta ildizi bor.

$x^5+6x^4-7x^3-21x^2-4x-12=0$

$x_1+x_2+x_3+x_4+x_5=-6$

$x_1\cdot x_2+\ldots+x_4\cdot x_5=7$

.....

$x_1\cdot x_2\cdot x_3\cdot x_4\cdot x_5=(-1)^5\cdot(-12)=12$

Javob: (B)

3550. $x^4-x^3+x+2=0$ tenglama ildizlari yig'indisini toping.

A) –4 B) –2 C) 1 D) 2

3551. $4x^4+8x^3-3x^2-7x+3=0$ tenglama ildizlarining ko'paytmasini toping.

A) –6 B) 4/3 C) 3/4 D) –3/4

3552. $x^5+2x^4-7x^3-21x^2-4x-12=0$ tenglama ildizlari yig'indisini toping.

A) 7 B) –2 C) –7 D) 8

3553. $x^7-3x^6+64=0$ tenglama ildizlari ko'paytmasini toping.

A) –64 B) 1,5 C) 2,5 D) –1,5

3554. $x^{11}-6x^{10}+5x^9+78732=0$ tenglama ildizlari yig'indisini toping.

A) 6 B) –78732 C) 5 D) –5

3555. $x^{100}-3x+2$ tenglama ildizlari yig'indisini toping.

A) –3 B) 2 C) 3 D) 0

3556. $x^{100}-3x^2+2$ tenglama ildizlari ko'paytmasini toping.

A) –2 B) 2 C) 3 D) 0

Kvadrat Tengsizliklar

✓ $(x-1)(x-3)>0$ tengsizlikni yeching.

A) $(-\infty;1)$ B) $(-\infty;1)\cup(3;+\infty)$

C) $(3;+\infty)$ D) $(5;+\infty)$

Yechimi: "0" ga tenglab yechamiz :

$(x-1)(x-3)>0$

$\begin{array}{|c} x-1=0 \\ x=1 \end{array}\Leftrightarrow\begin{array}{|c} x-3=0 \\ x=3 \end{array}$ intervalga qo'yamiz (oraliqlarga ajratamiz).

Bundan ko'rinib turibdiki son o'qi 3 ta oraliqga ajraldi. Har bir oraliqdagi $(x-1)(x-3)>0$ ni ishorasini aniqlaymiz.

I) $(-\infty;1)$ da masalan:

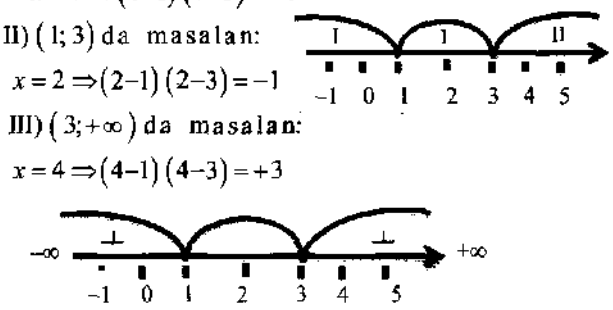
$x=0\Rightarrow(0-1)(0-3)=+3$

II) $(1;3)$ da masalan:

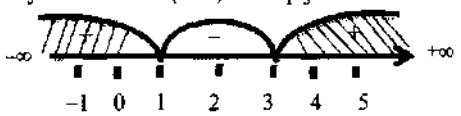
$x=2\Rightarrow(2-1)(2-3)=-1$

III) $(3;+\infty)$ da masalan:

$x=4\Rightarrow(4-1)(4-3)=+3$



Tengsizlik shartiga asosan $(x-1)(x-3)\boxed{>0}$ no'ldan katta ya'ni musbat ("+") oraliq javobdir.



$(-\infty;1)\cup(3;+\infty)$

javob: (B)

Izoh: agar $(x-1)(x-3)\boxed{<0}$ bo'lganda "–" li oraliq javob bo'lardi. $\Rightarrow(1;3)$

3557. $(x+1)(x-4)>0$ tengsizlikni yeching.

A) $(-\infty;-1)\cup(4;+\infty)$ B) $(-\infty;1)\cup(4;+\infty)$

C) $(-1;4)$ D) $(-\infty;1]\cup[4;+\infty)$

3558. $(x+2{,}4)(x+15)\geq 0$ tengsizlikni yeching.

A) $(-\infty;-15]\cup[2{,}4;+\infty)$ B) $(-\infty;-15)\cup(2{,}4;+\infty)$

C) $(-\infty;-15]\cup[-2{,}4;+\infty)$ D) $(-15;-2{,}4)$

3559. $(x-5)(x+3)<0$ tengsizlikni yeching.

A) $(-3;5)$ B) $(-\infty;-3)\cup(5;+\infty)$

C) $[-3;5]$ D) $(5;+\infty)$

3560. $(x-2{,}5)(4-x)>0$ tengsizlikni yeching.

A) $(-\infty;2{,}5)\cup(4;+\infty)$ B) $(2{,}5;4)$

C) $[2{,}5;4]$ ✓ D) $(-\infty;2{,}5]\cup[4;+\infty)$

3561. $(x-7)(x+11)\leq 0$ tengsizlikni yeching.

A) $(-11;7)$ B) $(-\infty;-11)\cup(7;+\infty)$

C) $(-\infty;-11]\cup[7;+\infty)$ D) $[-11;7]$

3562. $(x-13)(x-12)\geq 0$ tengsizlikni yeching.

A) $(12;13)$ B) $(-\infty;12)\cup(13;+\infty)$

C) $(-\infty;12]\cup[13;+\infty)$ D) $[12;13]$

3563. $\left(x+\frac{1}{2}\right)(x-0{,}74)<0$ tengsizlikni yeching.

A) $\left(-\frac{1}{2};0{,}74\right)$ B) $\left(-\infty;\frac{1}{2}\right)\cup(0{,}74;+\infty)$

C) $\left(\frac{1}{2};0{,}74\right)$ D) $\left(-\infty;\frac{1}{2}\right]\cup[0{,}74;+\infty)$

✓ $(x^2-9)(x+1)^2<0$ tengsizlikni yeching.

A) $(-\infty;1)$ B) $(-\infty;1)\cup(3;+\infty)$

C) $(-3;-1)\cup(-1;3)$ D) $(-1;+\infty)$

Yechimi: "0" ga tenglab yechamiz:

$$(x^2-9)(x+1)^2<0$$

$$\begin{array}{|l} x^2-9=0 \\ x^2=9 \\ x_{12}=\pm 3 \end{array} \Leftrightarrow \begin{array}{|l} (x+1)^2=0 \\ x+1=0 \\ x_3=-1 \end{array}$$

intervalga qo'yamiz (oraliqlarga ajratamiz).

Tengsizlik shartiga asosan $(x^2-9)(x+1)^2<0$ no'ldan kichik ya'ni manfiy ("–") oraliq javobdir.

$$(-3;-1)\cup(-1;3)$$

Izoh: Bundan ko'rinib turibdiki son o'qi 4 ta oraliqga ajraldi. Har bir oraliqdagi $(x^2-9)(x+1)^2<0$ ni ishorasini aniqlaymiz.

I) $(-\infty;-3)$ da masalan:

$x=-4 \Rightarrow ((-4)^2-9)(-4+1)^2=+63$

II) $(-3;-1)$ da masalan:

$x=-2 \Rightarrow ((-2)^2-9)(-2+1)^2=-5$

III) $(-1;3)$ da masalan:

$x=2 \Rightarrow (0^2-9)(0+1)^2=-9$

IV) $(3;+\infty)$ da masalan:

$x=4 \Rightarrow (4^2-9)(4+1)^2=+175$

javob: (C)

3564. $x^3-16x<0$ tengsizlikni yeching.

A) $(-\infty;-4)\cup(0;4)$ B) $(0;4)$

C) $[-4;4]$ D) $(-4;+\infty)$

3565. $4x^3-x>0$ tengsizlikni yeching.

A) $\left(-\infty;-\frac{1}{2}\right)\cup(0;+\infty)$ B) $\left(-\frac{1}{2};0\right)\cup\left(\frac{1}{2};+\infty\right)$

C) $[-0,5;0]$ D) $\left(-\frac{1}{2};0\right)$

3566. $\left(x^2-1\right)(x+3)<0$ tengsizlikni yeching.

A) $(-1;1)$ B) $(-\infty;-3)\cup(1;+\infty)$

C) $(-\infty;-3]\cup[1;+\infty)$ D) $(-\infty;-3)\cup(-1;1)$

3567. $\left(x^2-4\right)(x-5)>0$ tengsizlikni yeching.

A) $(-2;5)$ B) $(-\infty;-2)\cup(5;+\infty)$

C) $(-2;2)\cup(5;+\infty)$ D) $[-2;5]$

3568. $\left(x+\frac{1}{2}\right)(x-0,74)<0$ tengsizlikni yeching.

A) $\left(-\frac{1}{2};0,74\right)$ B) $\left(-\infty;\frac{1}{2}\right)\cup(0,74;+\infty)$

C) $\left(\frac{1}{2};0,74\right)$ D) $\left(-\infty;\frac{1}{2}\right]\cup[0,74;+\infty)$

3569. $(x-4)(2x+6)^2>0$ tengsizlikni yeching.

A) $(-\infty;-5]\cup[4;+\infty)$ B) $(-\infty;-3)\cup(4;+\infty)$

C) $(4;+\infty)$ D) $(-15;-2,4)$

✓ $(x+7)^2\left(x^2-49\right)<0$ tengsizlikni yeching.

A) $(-\infty;1)$ B) $(-7;7)$

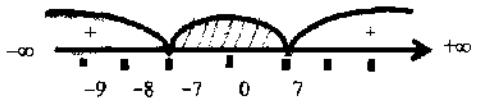
C) $(3;+\infty)$ D) $(7;+\infty)$

Yechimi: "0" ga tenglab yechamiz :

$$(x+7)^2\left(x^2-49\right)<0$$

$$\begin{array}{|l} (x+7)^2=0 \\ x+7=0 \\ x_1=-7 \end{array} \Leftrightarrow \begin{array}{|l} x^2-49=0 \\ x^2=49 \\ x_{23}=\pm 7 \end{array}$$

intervalga qo'yamiz (oraliqlarga ajratamiz).



Tengsizlik shartiga asosan $(x+7)^2\left(x^2-49\right)\boxed{<0}$ no'ldan kichik ya'ni manfiy ("–") oraliq javobdir.

$$(-7;7)$$

javob: (B)

Izoh: bir xil ildizlardan 1 tasi olinadi $x_1=-7$, $x_{23}=\pm 7$ bo'lganda $x_{23}=\pm 7$ bo'ladi.

3570. $(x-5)^2\left(x^2-25\right)>0$ tengsizlikni yeching.

A) $(-\infty;-5)\cup(0;5)$ B) $(-5;5)$

C) $[-5;5]$ D) $(-\infty;-5)\cup(5;+\infty)$

3571. $(x-3)\left(x^2-9\right)<0$ tengsizlikni yeching.

A) $x>0$ B) $-3<x<3$

C) $x>-3$ D) $x<-3$

3572. $(x-4)\left(x^2-16\right)>0$ tengsizlikni yeching.

A) $(-4;4)\cup(4;+\infty)$ B) $(-\infty;-4)\cup(4;+\infty)$

C) $(-\infty;-4]\cup[4;+\infty)$ D) $(-\infty;-5)\cup(-4;4)$

✓ $(x^2-9)(x+1)^2 \ge 0$ tengsizlikni yeching.

A) $(-\infty;-3]\cup[3;+\infty)$ B) $(-\infty;1)\cup(3;+\infty)$

C) $(-3;-1)\cup(-1;3)$ D) $(-1;+\infty)$

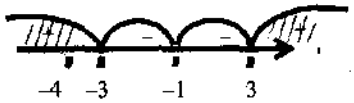
Yechimi: "0" ga tenglab yechamiz:

$$(x^2-9)(x+1)^2 \ge 0$$

$$\begin{array}{|l} x^2-9=0 \\ x^2=9 \\ x_{12}=\pm 3 \end{array} \Leftrightarrow \begin{array}{|l} (x+1)^2=0 \\ x+1=0 \\ x_3=-1 \end{array}$$

intervalga qo'yamiz (oraliqlarga ajratamiz).

Tengsizlik shartiga asosan $(x^2-9)(x+1)^2 \ge 0$ no'ldan katta ya'ni musbat ("+") oraliq javobdir.



$(-\infty;-3]\cup[3;+\infty)\cup\{-1\}$ **javob: (A)**

Izoh: agar " ≥ " yoki " ≤ " belgilar bo'lsa, "0" ga teng nuqtalarni tengsizlikka qo'yib ko'rish lozim. $x_1=-1$ bo'lganda $((-1)^2-9)(-1+1)^2 \ge 0$, $-8 \cdot 0 = 0 \ge 0$ shuning uchun $\{-1\}$ bo'ladi.

3573. $(x^2-1)(x-8)(x-1) \ge 0$ tengsizlikni yeching.

A) $(-\infty;-1]\cup[8;+\infty)\cup\{1\}$ B) $(-\infty;-1)\cup(8;+\infty)$

C) $(-1;8)\cup(5;+\infty)$ D) $[-1;8]$

3574. $(x^2-4)(x+2)(x-5) \le 0$ tengsizlikni yeching.

A) $[-2;5]$ B) $[2;5]\cup\{-2\}$

C) $[-2;5]\cup\{2\}$ D) $(-\infty;-2]\cup[5;+\infty)$

3575. $(x-4)(2x+6)^2 \ge 0$ tengsizlikni yeching.

A) $[-3;+\infty)\cup\{4\}$ B) $(-\infty;-3)\cup(4;+\infty)$

C) $[4;+\infty)\cup\{-3\}$ D) $(4;+\infty)\cup\{-3\}$

3576. $(x+2)(x-1)^2 \le 0$ tengsizlikni yeching.

A) $(-1;2)$ B) $(-\infty;-2)\cup(1;+\infty)$

C) $(-\infty;-2]\cup\{1\}$ D) $(-\infty;2]$

✓ $x^2-9 \ge 0$ tengsizlikni yeching.

A) $(-\infty;3)\cup(3;+\infty)$ B) $(-\infty;-3]\cup[3;+\infty)$

C) $(-3;-1)\cup(-1;3)$ D) $(-1;+\infty)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz: $x^2-9 \ge 0$, $x_{12}=\pm 3$

$(-\infty;-3]\cup[3;+\infty)$

Izoh: oldingi misollardan farqi misolning berilishidadir, ya'ni chala kvadrat tenglama ekanligidadir qolganlari yerlari Yechimi bir xil.

3577. $x^2-36 \le 0$ tengsizlikni yeching.

A) $(-\infty;-6]\cup[6;+\infty)$ B) $(-\infty;-6)\cup(6;+\infty)$

C) $(-1;6)\cup(6;+\infty)$ D) $[-6;6]$

3578. $-4x^2+1 \ge 0$ tengsizlikni yeching.

A) $[-2;2]$ B) $\left(-\infty;-\frac{1}{2}\right]\cup\left[\frac{1}{2};+\infty\right)$

C) $\left(-\infty;-\frac{1}{2}\right)\cup\left(\frac{1}{2};+\infty\right)$ D) $\left[-\frac{1}{2};\frac{1}{2}\right]$

3579. $4 > x^2$ tengsizlikni yeching.

A) $(-2;2)$ B) $(-\infty;-2)\cup(2;+\infty)$

C) $[2;+\infty)$ D) $(-2;+\infty)$

3580. $-5x^2-x \ge 0$ tengsizlikni yeching.

A) $\left[-\frac{1}{5};0\right]$ B) $\left(-\infty;-\frac{1}{5}\right)\cup(0;+\infty)$

C) $\left(-\infty;-\frac{1}{5}\right]$ D) $(-\infty;0]$

3581. $-3x^2+x \le 0$ tengsizlikni yeching.

A) $(-\infty;0]\cup[3;+\infty)$ B) $\left[\frac{1}{3};0\right]$

C) $\left(0;\frac{1}{3}\right)$ D) $(-\infty;0]\cup\left[\frac{1}{3};+\infty\right)$

3582. $x^2 > x$ tengsizlikni yeching.

A) $[-1;0]$ B) $(0;1)$

C) $[0;1]$ D) $(-\infty;0)\cup(1;+\infty)$

3583. $-9x^2+1 \le 0$ tengsizlikni yeching.

A) $\left(-\infty;-\frac{1}{3}\right]\cup\left[\frac{1}{3};+\infty\right)$ B) $(-\infty;-3)\cup(3;+\infty)$

C) $(-\infty;-3]$ D) $(-\infty;3]$

✓ $x^2-2x-3>0$ tengsizlikni yeching.

A) $(-\infty;-3)\cup(3;+\infty)$ B) $(-\infty;-1)\cup(3;+\infty)$

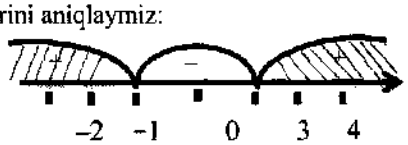
C) $(-3;-1)\cup(-1;3)$ D) $(-1;+\infty)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-2x-3>0$

$x_1=3 \quad x_2=-1$

$(x-3)(x+1)>0$



$(-\infty;-1)\cup(3;+\infty)$

javob: (B)

Izoh: oldingi misollardan farqi misolning berilishidadir, ya'ni kvadrat tenglama ekanligidadir qolganlari yerlari Yechimi bir xil.

3584. $x^2+x-12<0$ tengsizlikni yeching.

A) $(-\infty;-4]\cup[3;+\infty)$ B) $(-4;3)$

C) $(-\infty;4)\cup(3;+\infty)$ D) $[-4;3]$

3585. $-2x^2+4x+30<0$ tengsizlikni yeching.

A) $(-\infty;-3)\cup(5;+\infty)$ B) $(-\infty;-3]\cup[5;+\infty)$

C) $[-3;5]$ D) $\left[-\frac{1}{3};\frac{1}{5}\right]$

3586. $-2x^2+9x-4>0$ tengsizlikni yeching.

A) $(-2;4)$ B) $[4;+\infty)$

C) $\left(\frac{1}{2};4\right)$ D) $(-2;+\infty)$

✓ $x^2-2x+1>0$ tengsizlikni yeching.

A) $(-\infty;-3)\cup(3;+\infty)$ B) $(-\infty;-1)\cup(3;+\infty)$

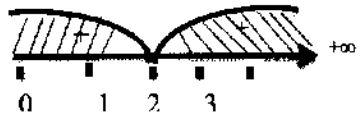
C) $(-\infty;1)\cup(1;+\infty)$ D) $(-1;+\infty)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-2x+1>0$

$(x-1)^2>0$

$x_1=1$



$(-\infty;1)\cup(1;+\infty)$

yoki

$x\neq 1$

javob: (C)

Izoh: dikriminant "0" bo'lganda 1 ta ildiz chiqar edi, shuning uchun 1 ta ildizni intervalga qo'yamiz.

3587. $x^2+10x+25>0$ tengsizlikni yeching.

A) $\left[-\frac{1}{5};0\right]$ B) $\left(-\infty;-\frac{1}{5}\right]$

C) $(-\infty;-5)\cup(-5;+\infty)$ D) $(-\infty;0]$

3588. $-x^2+6x-9<0$ tengsizlikni yeching.

A) $x=-3$ B) $x=3$ C) $x\neq -3$ D) $x\neq 3$

3589. $-x^2+x-\frac{1}{4}<0$ tengsizlikni yeching.

A) $\left[-\frac{1}{2};0\right]$ B) $\left(-\frac{1}{2};\frac{1}{2}\right)$

C) $[0;1]$ D) $\left(-\infty;\frac{1}{2}\right)\cup\left(\frac{1}{2};+\infty\right)$

3590. $-4x^2-12x-9<0$ tengsizlikni yeching.

A) $x=1,5$ B) $x\neq -1,5$ C) $x\neq 1,5$ D) $x=1,5$

3591. $\frac{1}{9}x^2-\frac{4}{3}x+4>0$ tengsizlikni yeching.

A) $(-\infty;-6]\cup[6;+\infty)$ B) $(-\infty;6)\cup(6;+\infty)$

C) $(-1;6)\cup(6;+\infty)$ D) $[-6;6]$

✓ $x^2-2x+1<0$ tengsizlikni yeching.

A) $(1;+\infty)$ B) $(-\infty;-1)$

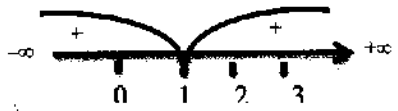
C) $(-\infty;1)\cup(1;+\infty)$ D) $\varnothing$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-2x+1<0$

$x_1=1$

$(x-1)^2<0$



$\varnothing$

javob: (D)

Izoh: E'tibor bering "–" li oraliq yo'q.

3592. $x^2+10x+25<0$ tengsizlikni yeching.

A) $\left[-\frac{1}{5};0\right]$ B) $\left(-\infty;-\frac{1}{5}\right]$

C) $\varnothing$ D) $(-\infty;0]$

3593. $-x^2+6x-9>0$ tengsizlikni yeching.

A) $x=-3$ B) $x=3$ C) $x\neq -3$ D) $\varnothing$

✓ $x^2-2x+1\leq 0$ tengsizlikni yeching.

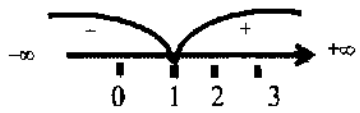
A) $x=1$ B) $x\neq 1$ C) $x=-1$ D) $\varnothing$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-2x+1\leq 0$

$x_1=1$

$(x-1)^2\leq 0$



$x=1$

javob: (A)

Izoh: "≤" bo'lgani uchun yechimi yo'q deb qo'yilmasin.

3594. $x^2-8x+16\leq 0$ tengsizlikni yeching.

A) $x=4$ B) $\varnothing$

C) $(-\infty;4)\cup(4;+\infty)$ D) $[-4;4]$

3595. $x^2-24x+144\leq 0$ tengsizlikni yeching.

A) $x\neq 5$ B) $x\neq 12$ C) $x=12$ D) $x=6$

✓ $x^2-12x+36\geq 0$ tengsizlikni yeching.

A) $(-\infty;+\infty)$ B) $(-\infty;-1)\cup(3;+\infty)$

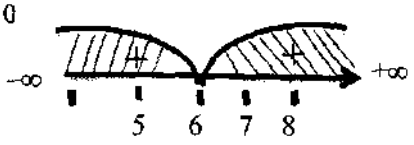
C) $(-\infty;1)\cup(1;+\infty)$ D) $(-1;+\infty)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-12x+36\geq 0$

$x_1=6$

$(x-6)^2\geq 0$



$(-\infty;6]\cup[6;+\infty)$ *bu javob bo'lmaydi*

$x\in R$ *yoki cheksiz ko'p*

$(-\infty;+\infty)$

javob: (A)

3596. $x^2+4x+4\geq 0$ tengsizlikni yeching.

A) $x\in R$ B) $(-\infty;2]\cup[2;+\infty)$

C) $(-\infty;-2)\cup(-2;+\infty)$ D) $[-2;2]$

3597. $9x^2-30x+25\geq 0$ tengsizlikni yeching.

A) $\left(-\frac{3}{5};\frac{3}{5}\right)$ B) $\left(-\infty;\frac{3}{5}\right)\cup\left(\frac{3}{5};+\infty\right)$

C) $(-\infty;+\infty)$ D) $(-2;+\infty)$

3598. $16x^2+1\geq 8x$ tengsizlikni yeching.

A) $\left[\frac{1}{4};0\right]$ B) $\left(-\infty;-\frac{1}{5}\right)\cup(0;+\infty)$

C) cheksiz ko'p D) $(-\infty;0]$

3599. $0,49+1,4x+x^2\geq 0$ tengsizlikni yeching.

A) $(-\infty;0,7]\cup[0,7;+\infty)$ B) $\left[\frac{1}{7};0\right]$

C) $\left(0;\frac{1}{7}\right)$ D) $(-\infty;+\infty)$

✓ $\frac{x-2}{x+5}\leq 0$ tengsizlikni yeching.

A) $(-\infty;+\infty)$ B) $(-5;2]$

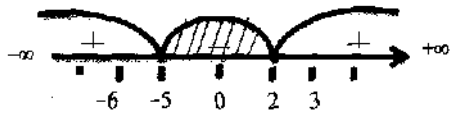
C) $[-5;2]$ D) $(-1;+\infty)$

Yechimi: suratni ham mahrajni ham "0" ga tenglab yechamiz :

$$\frac{x-2}{x+5}\leq 0$$

$$\begin{array}{l|l} x-2=0 & x+5=0 \\ x_1=2 & x_2=-5 \end{array} \Leftrightarrow$$

intervalga qo'yamiz (oraliqlarga ajratamiz).



Tengsizlik shartiga asosan $\frac{x-2}{x+5}\boxed{\leq 0}$ no'ldan kichik ya'ni manfiy ("–") oraliq javobdir.

$(-5;2]$

Bundan ko'rinib turibdiki son o'qi 3 ta oraliqga ajraldi.

Har bir oraliqdagi $\frac{x-2}{x+5}\leq 0$ ni ishorasini aniqlaymiz.

I) $(-\infty;-5)$ da masalan:

$x=-6\Rightarrow \frac{-6-2}{-6+5}=\frac{-}{-}=+$

II) $(-5;2)$ da masalan:

$x=0\Rightarrow \frac{-0-2}{-0+5}=\frac{-}{+}=-$

III) $(2;+\infty)$ da masalan:

$x=3\Rightarrow \frac{3-2}{3+5}=\frac{+}{+}=+$

javob: (B)

Izoh: maxraj "0" bo'lmaydi shuning uchun "–5" ga kichkina qavs "(" yoki ")" ni qo'yamiz. Quyidagicha xato qilinmasin:

$[-5;2]$

3600. $\frac{x-4}{x+3}\geq 0$ tengsizlikni yeching.

A) $(-\infty;-3]\cup[4;+\infty)$ B) $(-\infty;-3)\cup[4;+\infty)$

C) $(-\infty;-3)\cup(4;+\infty)$ D) $[-3;4]$

3601. $\frac{1,5-x}{3+x}\geq 0$ tengsizlikni yeching.

A) $[-3;1,5]$ B) $(-3;1,5]$

C) $(-3;1,5)$ D) $(1,5;+\infty)$

3602. $\frac{-1,7}{0,5x-2}>0$ tengsizlikni yeching.

A) $(-\infty;4)$ B) $(4;+\infty)$

C) cheksiz ko'p D) $\varnothing$

3603. $\frac{(2x+1)(x+2)}{x-3}<0$ tengsizlikni yeching.

A) $(-\infty;-2)\cup(-0,5;3)$ B) $(-\infty;-2)\cup(-0,5;+\infty)$

C) cheksiz ko'p D) $(-\infty;-2]\cup[-0,5;3)$

3604. $\frac{x^2+2x-3}{(x-2)^2}>0$ tengsizlikni yeching.

A) $(-\infty;-3)\cup(1;2)$ B) $(1;2)\cup(2;+\infty)$

C) $(-\infty;-3)\cup(1;2)\cup(2;+\infty)$ D) $(-\infty;-3)\cup(2;+\infty)$

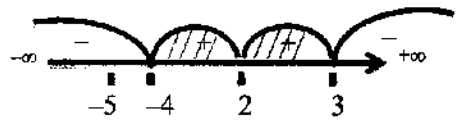
✓ $\frac{(x+4)(3-x)}{(x-2)^2}>0$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisini toping.

A) 3 B) 2 C) –2 D) –4

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$$\frac{(x+4)(3-x)}{(x-2)^2}>0$$

$x_1=-4 \quad x_2=2 \quad x_3=3$



$(-4;2)\cup(2;3)$

eng katta butun yechimi "1"
eng kichik butun yechimi "–3"
eng katta va eng kichik butun yechimlari yig'indisi
$1+(-3)=-2$ **javob: (C)**

3605. $2x^2-8\le 0$ tengsizlikning eng kichik butun yechimini toping.
A) –2 B) –1 C) –3 D) 2

3606. $3x^2-9<0$ tengsizlikning butun yechimlari nechta?
A) 4 B) 3 C) 2 D) 1

3607. $-3x^2+27\ge 0$ tengsizlikning eng katta butun yechimini toping.
A) –10 B) 7 C) 3 D) 8

3608. $x^2+7x<0$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisini toping.
A) –10 B) –7 C) 9 D) 8

3609. $-4x^2+8x-3>0$ tengsizlikning butun yechimlari nechta?
A) 4 B) 3 C) 2 D) 1

3610. $\frac{x^2-1}{x^2-x-6}\ge 0$ tengsizlikni yeching.
A) $x<-2;\ -1\le x\le 1;\ x>3;$ B) $-2<x<3$
C) $-1\le x<3$ D) $x\ne -2;\ x\ne 3$

3611. $x^2+6x+5<0$ tengsizlikning barcha butun yechimlari ko'paytmasini toping.
A) 48 B) –24 C) 12 D) 24

3612. $\frac{x^2+x}{-x^2+6x-8}\ge 0$ tengsizlikning eng katta butun yechimini toping.
A) –1 B) 4 C) 3 D) 2

3613. $\frac{x^2-6x-7}{x^2+4x+4}\le 0$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisini toping.
A) –6 B) 6 C) 8 D) –7

✓ $\frac{x^2}{10}+1{,}2\le\frac{7x}{10}$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisini toping.
A) 3 B) 7 C) –2 D) –7

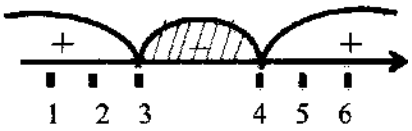
Yechimi: umumiy maxraj berib "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$\frac{x^2}{10}+1{,}2\le\frac{7x}{10}\quad(\cdot 10)$

$x^2+12\le 7x$

$x^2-7x+12\le 0$

$x_1=3 \quad x_2=4$



$[3;4]$

eng katta butun yechimi "4"
eng kichik butun yechimi "3"
eng katta va eng kichik butun yechimlari yig'indisi
$4+3=7$ **javob: (B)**

3614. $\frac{x^2}{3}-\frac{5x}{3}<\frac{x-10}{4}$ tengsizlikning eng kichik butun yechimini toping.
A) 3 B) –1 C) –3 D) 2

3615. $\frac{1}{3}x-\frac{4}{9}x^2<1-x$ tengsizlikning butun yechimlari nechta?
A) 4 B) cheksiz ko'p C) 2 D) 1

3616. $\frac{1}{3}x(x+1)\ge(x+1)^2$ tengsizlikning eng katta butun yechimini toping.
A) –1 B) 7 C) 1,5 D) –1,5

✓ $\frac{9}{2x+2}+\frac{x}{x-1}\ge\frac{1-3x}{2-2x}$ tengsizlikning eng katta va eng kichik butun yechimlari yig'indisini toping.
A) 8 B) 7 C) –8 D) –7

Yechimi: umumiy maxraj berib "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz :

$$\frac{9}{2x+2}+\frac{x}{x-1}-\frac{1-3x}{2-2x}\ge 0$$

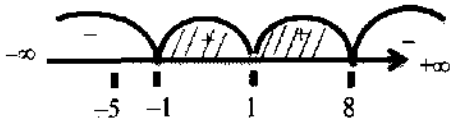
$$\frac{9}{2(x+1)}+\frac{x}{x-1}-\frac{1-3x}{2(1-x)}\ge 0$$

$$\frac{9}{2(x+1)}+\frac{x}{x-1}+\frac{1-3x}{2(x-1)}\ge 0$$

$$\frac{9(x-1)-2x(x+1)+(x+1)(1-3x)}{2(x^2-1)}\ge 0$$

$$\frac{-x^2+9x-8}{2(x^2-1)}\le 0$$

$x_1=1 \quad x_2=8 \quad x_3=-1 \quad x_4=1$



$(-1;1)\cup(1;8]$

eng katta butun yechimi "8"

eng kichik butun yechimi "0"

eng katta va eng kichik butun yechimlari yig'indisi

$0+8=8$ **Javob: (A)**

Izoh: mahrajda noma'lum bo'lsa, umumiy mahraj berilsin, ammo mahrajni tashlab yuborilmasin (bu tengsizlik, tenglama emas). mahrajni ham no'lga tenglab intervalga qo'yish lozim.

3617. $\frac{1}{x}\geq x$ tengsizlikning eng katta butun yechimini toping.

A) -1 B) 1 C) **0** D) **2**

3618. $\frac{2x-1}{x}<2$ tengsizlikning eng kichik butun yechimini toping.

A) 3 B) **0** C) 2 D) **1**

3619. $\frac{x}{x-2}+\frac{3}{x}>\frac{3}{x-2}$ tengsizlikni yeching.

A) $x<-\sqrt{6};\ 0<x<2;\ x>\sqrt{6}$

B) $0<x<2;\ x>\sqrt{6}$ C) $0\leq x<2$

D) $x<-\sqrt{6};\ 0<x<2$

3620. $\frac{x^2}{x^2+3x}+\frac{2-x}{x+3}<\frac{5-x}{x}$ tengsizlikning barcha butun yechimlari ko'paytmasini toping.

A) 8 B) 6 C) 2 D) -6

3621. $\frac{2}{x-\sqrt{2}}>\frac{2}{x+\sqrt{2}}$ tengsizlikning yechimi bo'lmaydigan butun yechimlarini yig'indisini toping.

A) -1 B) 1 C) **0** D) 2

3622. $\frac{\sqrt{3}}{3-x^2}<\frac{2}{\sqrt{3}-x}$ tengsizlikni yeching.

A) $\left(-\infty;-\sqrt{3}\right)$ B) $\left(-\infty;-\sqrt{3}\right)\cup\left(-\frac{\sqrt{3}}{2};\sqrt{3}\right)$

C) $\left(-\frac{\sqrt{3}}{2};\sqrt{3}\right)$ D) $\left(\frac{\sqrt{3}}{2};-\sqrt{3}\right)$

✓ $x^2-4x+6>0$ tengsizlikni yeching.

A) $\varnothing$ B) $(3;+\infty)$ C) $x\in R$ D) $(-\infty;-3)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-4x+6>0$

$D=4^2-6\cdot4=-8$

diskiriminant<0

$x=1$ ni qo'yib ko'rish

javobni tezlashtiradi

$1^2-4\cdot1+6>0$

$3>0$ $(to'g'ri)$ $\Rightarrow$ $x\in R$, *yoki* $(-\infty;+\infty)$

javob: (C)

Izoh: har doim tengsizlikka "1" ni qo'yib tekshiring. Quyidagicha bo'lganda :

$x^2-4x+6<0$

diskiriminant<0

$x=1$ ni qo'yib ko'rish

javobni tezlashtiradi

$1^2-4\cdot1+6<0$

$3<0$ $(noto'g'ri)$

$\varnothing$

3623. $x^2+6x+10<0$ tengsizlikni yeching.

A) $\varnothing$ B) $(-\infty;+\infty)$

C) $(-\infty;-2)\cup(-2;+\infty)$ D) $x\in R$

3624. $-x^2+3x-5\leq0$ tengsizlikni yeching.

A) $\varnothing$ B) $(-\infty;3)\cup(3;+\infty)$

C) $(-\infty;+\infty)$ D) $(-2;+\infty)$

3625. $x^2+x+2>0$ tengsizlikni yeching.

A) $\varnothing$ B) $(-\infty;-4)\cup(4;+\infty)$

C) cheksiz ko'p D) $(-\infty;4]$

3626. $-2x^2+3x-7>0$ tengsizlikni yeching.

A) $(-\infty;-7]\cup[0;+\infty)$ B) $(-\infty;+\infty)$

C) $\left(0;\frac{1}{7}\right)$ D) $\varnothing$

✓ $\frac{x^2+2x+3}{(x-2)^2}\leq0$ tengsizlikni yeching.

A) $\varnothing$ B) $(3;+\infty)$

C) $x\in R$ D) $(-\infty;-3)$

Yechimi: "0" ga tenglab, intervalga qo'yamiz va oraliqlarni ishoralarini aniqlaymiz:

$x^2-2x+3=0$

diskiriminant<0

$x=1$ ni qo'yib ko'rish

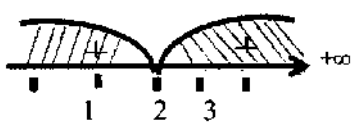
javobni tezlashtiradi

$1^2+2\cdot1+3=6$

$6>0$ $(musbat)$

$\frac{+}{(x-2)^2}\leq0$

$x=2$



$\varnothing$

sababi "–" li oraliq yo'q. **javob: (A)**

Izoh: tengsizlikda $D<0$ bo'lganda "+" mi yoki "–" mi shunisiga qarash lozim. Qolganlarini intervalga qo'yish lozim.

3627. $\frac{(x+4)^2}{2x^2-3x+4} \geq 0$ tengsizlikni yeching.

A) $\varnothing$ B) $(-\infty;4)\cup(4;+\infty)$

C) $(-\infty;-4)\cup(-4;+\infty)$ D) $x \in R$

3628. $(x^2+3x-5)(x^2-x+12) \leq 0$ tengsizlikni yeching.

A) $\varnothing$ B) $\left[-\frac{3+\sqrt{29}}{2};\frac{-3+\sqrt{29}}{2}\right]$

C) $(-\infty;+\infty)$ D) $\left(-\infty;\frac{3+\sqrt{29}}{2}\right)$

3629. $\frac{x^2-4x+5}{x-2} \geq 0$ tengsizlikni yeching.

A) $x>2$ B) $x<2$ C) cheksiz ko'p D) $\varnothing$

3630. $\frac{(x+3)(x-7)}{-2x^2+x-1} > 0$ tengsizlikni yeching.

A) $(-\infty;-7]\cup[0;+\infty)$ B) $(-\infty;+\infty)$ C) $(-3;7)$ D) $\varnothing$

3631. $\frac{x^2-2x+3}{x-1} \geq 0$ tengsizlikni yeching.

A) $\varnothing$ B) $x<1$ C) cheksiz ko'p D) $x>1$

3632. $\frac{x+2-x^2}{x^3+1} \geq 0$ tengsizlikni yeching.

A) $(-\infty;-1)\cup(-1;2]$ B) $\varnothing$

C) $(-1;2)$ D) $(-\infty;+\infty)$

✓ Quyidagi tengsizliklardan qaysilari x ning barcha qiymatlarida o'rinli?

1) $(x+3)(x+5)<(x+2)(x+6)$

2) $(3x-2)(x+2)<(1+2x)^2$

3) $x^2+16>8x$

4) $(x-6)(x-3)<(x-5)(x-4)$

A) 2; 4 B) 2; 3 C) 1; 3 D) 1; 4

Yechimi:

1) $(x+3)(x+5)<(x+2)(x+6)$

$x^2+5x+3x+15<x^2+6x+2x+12$

$x^2+5x+3x+15<x^2+6x+2x+12$

$15<12$

$\varnothing$ (noto'g'ri)

2) $(3x-2)(x+2)<(1+2x)^2$

$3x^2+6x-2x-4<1+4x+4x^2$

$-x^2-5<0$

$D<0$

$x=1$ da

$-1^2-5<0 \Rightarrow x \in R$

(to'g'ri)

3) $x^2+16>8x$

$x^2-8x+16>0$

$D=0$

$(x-4)^2>0$

$(-\infty;+\infty)$ (to'g'ri)

4) $(x-6)(x-3)>(x-5)(x-4)$

$x^2-3x-6x+18>x^2-4x-5x+20$

$x^2-3x-6x+18>x^2-4x-5x+20$

$18>20$

(noto'g'ri)

Javob: (B)

Izoh: "x ning barcha qiymatlarida" degani $x \in R$ *yoki* $(-\infty;+\infty)$ deganidir.

3633. Quyidagi tengsizliklardan qaysilari x ning barcha qiymatlarida o'rinli?

1) $x^3<(x+1)(x^2-x+1)$ 2) $x^3<(x-1)(x^2+x+1)$

3) $(x+7)(x+1)<(x+6)(x+2)$ 4) $4x^2+9>12x$

A) 1; 3 B) 2; 4 C) 1; 4 D) 2; 3

3634. Quyidagi tengsizliklardan qaysilari x ning barcha qiymatlarida o'rinli?

1) $(x-7)(x-4)<(x-6)(x-5)$ 2) $(x+2)(x+4)>(x+1)(x+5)$

3) $(x-8)(x-4)<(x-9)(x-3)$ 4) $4x^2+9>-12x$

A) 3; 4 B) barchasi C) 1; 4 D) 1; 2

3635. Quyidagi tengsizliklardan qaysilari x ning barcha qiymatlarida o'rinli?

1) $1+(3x-1)^2<(1-2x)(1-4x)$ 2) $1+(3x+1)^2>(1+2x)(1+4x)$

3) $(x-3)(x-4)>(x-2)(x-5)$ 4) $x^2+16>-8x$

A) 2; 3 B) barchasi C) 1; 3 D) 1; 4

Parametrli chiziqli tenglamalar

✓ $mx+4=m+x$ tenglamani yeching.

A) $\frac{m+4}{m-1}$ B) $\frac{m-4}{m+1}$ C) $\frac{m+4}{m+1}$ D) $\frac{m-4}{m-1}$

Yechimi:

$mx+4=m+x$

$mx-x=m-4$

$(m-1)x=m-4$ **Javob: (D)**

$x=\frac{m-4}{m-1}$

Izoh: malumlarni (sonlarni ya'ni $m,n,a,b\ldots$) bir tomonga noma'lumlarni (x, y, z) bir tomonga qilib yechish lozim.

3636. $my-1=m$ tenglamani yeching.

A) $\frac{m+1}{m}$ B) $\frac{m-1}{m}$ C) $\frac{m}{m-1}$ D) $\frac{m}{m+1}$

3637. $y(m-4)=4m$ tenglamani yeching.

A) $\frac{m-4}{4m}$ B) $\frac{m+4}{4m}$ C) $\frac{4m}{m-4}$ D) $\frac{4m}{m+4}$

3638. $3my+6=-my+7m$ tenglamani yeching.

A) $\frac{7m-6}{4m}$ B) $\frac{7m+6}{4m}$ C) $\frac{7m}{4m-6}$ D) $\frac{4m}{7m-6}$

3639. $y+m=6my+5$ tenglamani yeching.

A) $\frac{5+m}{1-6m}$ B) $\frac{5-m}{1-6m}$ C) $\frac{5-m}{1+6m}$ D) $\frac{5+m}{1+6m}$

3640. $a(y+5)=18y$ tenglamani yeching.

A) $-\frac{5a}{a-18}$ B) $\frac{5a}{a-18}$ C) $-\frac{5a}{a+18}$ D) $\frac{a-18}{5a}$

3641. $ny+8=9(n-7)$ tenglamani yeching.

A) $\frac{9n+71}{n}$ B) $\frac{n}{9n-71}$ C) $\frac{9n-71}{n}$ D) $\frac{9n-81}{n}$

3642. $m^2(y-1)=y-m$ tenglamani yeching.

A) $\frac{m+1}{m}$ B) $\frac{m^2-1}{m}$ C) $\frac{m}{m+1}$ D) $\frac{m^2}{m-1}$

3643. $6x-m-6=(m+2)(x+2)$ tenglamani yeching.

A) $\frac{-m+4}{3m+10}$ B) $\frac{3m+10}{m+4}$ C) $\frac{3m-10}{m-4}$ D) $\frac{3m+10}{-m+4}$

✓ p ning qanday qiymatlarida $p(3x-p)=6x-4$ tenglama manfiy ildizga ega?

A) $p<-2$ B) $p>2$ C) $p<2$ D) $p>-2$

Yechimi:

$$p(3x-p)=6x-4$$
$$3px-p^2=6x-4$$
$$3px-6x=p^2-4$$
$$(3p-6)x=p^2-4$$
$$x=\frac{p^2-4}{3p-6}$$

$$\Rightarrow x=\frac{(p-2)(p+2)}{3(p-2)}$$
$$x=\frac{p+2}{3}<0$$

$\frac{p+2}{3}<0$ tengsizlikni yechamiz.

$\frac{p+2}{3}<0\ (\cdot 3)$

$p+2<0$ **Javob:** $p<-2$ **(A)**

$p<-2$

Izoh: tenglamani yechib manfiy desa, " < 0 " musbat desa " > 0 " qilib tengsizlikni yechish lozim.

3644. p ning qanday qiymatlarida $6x-11p=7$ tenglama manfiy ildizga ega?

A) $p<\frac{7}{11}$ B) $\frac{-7}{11}<p$ C) $p<\frac{-7}{11}$ D) $\frac{7}{11}<p$

3645. p ning qanday qiymatlarida $3x-5p=3$ tenglama musbat ildizga ega?

A) $p<\frac{-3}{5}$ B) $\frac{-3}{5}<p$ C) $p<\frac{3}{5}$ D) $\frac{3}{5}<p$

3646. p ning qanday qiymatlarida $5x-4p=3$ tenglama musbat ildizga ega?

A) $\frac{-3}{4}<p$ B) $\frac{3}{4}<p$ C) $p<\frac{3}{4}$ D) $p<\frac{-3}{4}$

3647. p ning qanday qiymatlarida $3x+7p=3$ tenglama manfiy ildizga ega?

A) $p<\frac{3}{7}$ B) $\frac{-3}{7}<p$ C) $\frac{3}{7}<p$ D) $p<\frac{-3}{7}$

3648. p ning qanday qiymatlarida $4x-7p=4$ tenglama musbat ildizga ega?

A) $\frac{4}{7}<p$ B) $p<\frac{4}{7}$ C) $\frac{-4}{7}<p$ D) $p<\frac{-4}{7}$

✓ p ning qanday qiymatlarida $p(x-5)=2x+p$ tenglama manfiy ildizga ega?

A) $(-1;2)$ B) $(1;2)$ C) $(-2;2)$ D) $(0;2)$

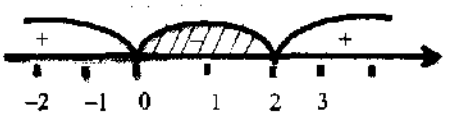
Yechimi: Bu tenglamani yechib x ni topamiz va "<0" qilamiz.

$$p(x-5)=2x+p$$
$$px-5p=2x+p$$
$$px-2x=5p+p$$
$$x=\frac{6p}{p-2}$$

$\frac{6p}{p-2}<0$ tengsizlikni yechamiz.

yechishda intervalga qo'yamiz

$p_1=0$ $p_2=2$



$(0;2)$

Javob: (D)

Izoh: Tengsizlikni yechishda kasr bo'lgani uchun intervalga qo'yish lozim.

3649. p ning qanday qiymatlarida $p(2x-1)=8x+1$ tenglama manfiy ildizga ega?

A) $(-1;3)$ B) $(-3;2)$ C) $(-1;4)$ D) $(-4;1)$

3650. p ning qanday qiymatlarida $p(x-5)=3p+6$ tenglama musbat ildizga ega?

A) $\left(-\infty;-\frac{3}{4}\right)$ B) $\left(-\infty;-\frac{3}{4}\right)\cup(0;+\infty)$

C) $\left(-\infty;\frac{3}{4}\right)\cup(0;+\infty)$ D) $\left(-\infty;\frac{4}{3}\right)\cup(0;+\infty)$

3651. t ning qanday qiymatlarida $5tx-8=4t+8x$ tenglama musbat ildizga ega?

A) $(-\infty;-2)\cup(\frac{8}{5};+\infty)$ B) $(-\infty;-2)\cup(\frac{5}{8};+\infty)$

C) $(-\infty;-\frac{8}{5})\cup(2;+\infty)$ D) $(-\infty;-1)\cup(2;+\infty)$

✓ a ning qanday qiymatlarida $3(x+1)=4+ax$ tenglamaning ildizi -1 dan katta bo'ladi?

A) $(-\infty;3)\cup(4;+\infty)$ B) $(3;4)$

C) $(4;+\infty)$ D) $(-\infty;3)$

Yechimi: bu tenglamani yechib x ni topamiz va "> -1" qilamiz.

$$3(x+1)=4+ax$$
$$3x+3=4+ax$$
$$3x-ax=4-3$$
$$x=\frac{1}{3-a}$$

$\frac{1}{3-a}>-1$ tengsizlikni yechamiz.

yechishda intervalga qo'yamiz

$a_1=3$ $a_2=4$

$(-\infty;3)\cup(4;+\infty)$

Javob: (A)

Izoh: tengsizlikni yechishda kasr bo'lgani uchun intervalga qo'yishda umumiy mahraj berish lozim.

3652. a ning qanday qiymatlarida $8(x-a)=ax+7$ tenglama ildizi -1 dan katta bo'ladi?

A) $\left(\frac{15}{7};8\right)$ B) $(-3;8)$ C) $(-1;4)$ D) $\left(-\frac{15}{7};8\right)$

3653. a ning qanday qiymatlarida $3a(x+4)=2x(a-5)$ tenglama ildizi -1 dan katta bo'ladi?

A) $\left(-\infty;-\frac{10}{11}\right)$ B) $\left(-\infty;-\frac{10}{11}\right)\cup(10;+\infty)$

C) $(-\infty;-10)\cup\left(\frac{10}{11};+\infty\right)$ D) $\left(-10;\frac{10}{11}\right)$

✓ m ning qanday qiymatlarida $m(x+5)=18x$ tenglama yechimga ega bo'lmaydi.

A) -18 B) 18 C) 20 D) 0

Yechimi:

$m(x+5)=18x$
$mx+5m=18x$
$mx-18x=-5m$
$(m-18)x=-5m$

formula	misol
$Ax=B$	$(m-18)x=-5m$
$A=0$	$m-18=0 \quad m=18$
$B\neq 0$	$-5m\neq 0$
	$m\neq 0$

Javob: 18 (B)

3654. m ning qanday qiymatlarida $2y=5-my$ tenglama yechimga ega bo'lmaydi?

A) 0 B) -2 C) 1 D) 2

3655. m ning qanday qiymatlarida $my+4=m^2+4y$ tenglama yechimga ega bo'lmaydi?

A) 4 B) -4 C) -1 D) 2

3656. n ning qanday qiymatlarida $n^2x-29=n^4+12x$ tenglama yechimga ega bo'lmaydi?

A) $\pm\sqrt{29}$ B) ±5 C) $\pm2\sqrt{3}$ D) 12

3657. m ning qanday qiymatlarida $6x-m-6=(m+2)(x+2)$ tenglama yechimga ega bo'lmaydi?

A) -4 B) 3 C) 4 D) $-10/3$

3658. n ning qanday qiymatlarida $n^2x-11=n^6-2x$ tenglama yechimga ega bo'lmaydi?

A) $\pm\sqrt{11}$ B) ±5 C) $\varnothing$ D) 12

3659. m ning qanday qiymatlarida $m^4x-3=m^4-5x$ tenglama yechimga ega bo'lmaydi?

A) $\pm\sqrt{3}$ B) ±5 C) $\varnothing$ D) 12

3660. m ning qanday qiymatlarida $m^2y-35=m(my+2/m)$ tenglama yechimga ega bo'lmaydi?

A) 0 B) $x\in R$ C) 70 D) $\varnothing$

✓ n ning qanday qiymatlarida $n^2(x-1)=x-n$ tenglama yechimga ega bo'lmaydi?

A) -1 B) 2 C) 1 D) ±1

Yechimi:

$n^2(x-1)=x-n$
$n^2x-n^2=x-n$
$n^2x-x=n^2-n$
$(n^2-1)x=n^2-n$

formula	misol
$Ax=B$	$(n^2-1)x=n^2-n$
$A=0$	$n^2-1=0$
$B\neq 0$	$n=\pm1$
	$n^2-n\neq 0$
	$n\neq 0 \quad n\neq 1$

Javob: -1 (A)

3661. m ning qanday qiymatlarida $my+4=m^2-2y$ tenglama yechimga ega bo'lmaydi?

A) -2 B) 2 C) ±2 D) 3

3662. m ning qanday qiymatlarida $mx-1=m^2+2m-x$ tenglama yechimga ega bo'lmaydi?

A) -1 B) 2 C) $\varnothing$ D) ±1

3663. m ning qanday qiymatlarida $(a^2-2)x=a(x-a)+4$ tenglama yechimga ega bo'lmaydi?

A) -1 B) 2 C) ±1 D) -2

3664. k ning qanday qiymatlarida $\frac{3x-k}{5}=\frac{kx-4}{3}$ tenglama yechimga ega bo'lmaydi?

A) $-\frac{9}{5}$ B) $\frac{9}{5}$ C) $\frac{20}{3}$ D) $\frac{5}{9}$

✓ a ning qanday qiymatlarida $a^2x-a=x+1$ tenglama cheksiz ko'p yechimga ega bo'ladi?

A) -1 B) 2 C) 1 D) ±1

Yechimi:

$a^2x-a=x+1$
$a^2x-x=a+1$
$(a^2-1)x=a+1$

formula	misol
$Ax=B$	$(a^2-1)x=a+1$
$A=0$	$a^2-1=0$
$B=0$	$a=\pm1$
	$a+1=0$
	$a=-1$

Javob: -1 (A)

3665. a ning qanday qiymatlarida $ax-a=x-1$ tenglama cheksiz ko'p yechimga ega bo'ladi?

A) 1 B) 2 C) ±1 D) 3

3666. a ning qanday qiymatlarida $a(ax-1)=16x+4$ tenglama cheksiz ko'p yechimga ega bo'ladi?
A) -1 B) 3 C) 0 D) -4

3667. a ning qanday qiymatlarida $(a^2-2)x=a(x-a)+4$ tenglama cheksiz ko'p yechimga ega bo'ladi?
A) -1 B) -2 C) 2 D) ± 2

3668. a ning qanday qiymatlarida $10(ax-1)=2a-5x-9$ tenglama cheksiz ko'p yechimga ega bo'ladi?
A) $-\frac{1}{5}$ B) $-0,5$ C) $\frac{2}{3}$ D) 0,5

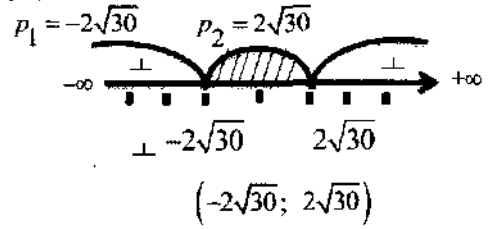
3669. a ning qanday qiymatlarida $(a^2-4a+2)x=a-x-3$ tenglama cheksiz ko'p yechimga ega bo'ladi?
A) 3 B) 1 C) ± 1 D) -3

Parametrli kvadrat tenglamalar

✓ p ning nechta natural qiymatlarida $x^2+px+30=0$ tenglama haqiqiy ildizga ega emas?
A) 13 B)10 C) 8 D)11
Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$x^2+px+30=0$
$D<0$	$D=p^2-30\cdot 4<0$
	$p^2-120<0$

$p^2-120<0$ tengsizlikni yechamiz. yechishda intervalga qo'yamiz.



$\left(-2\sqrt{30};\ 2\sqrt{30}\right)$

p ning nechta natural qiymatlarida : 1,2,3,4,5,6,7,8,9,10
Javob: (B)
Izoh: kvadrat tenglama haqiqiy ildizga ega emas desa:
$ax^2+bx+c=0$
$D<0$

3670. p ning nechta natural qiymatlarida $x^2+px+12=0$ tenglama haqiqiy ildizga ega emas?
A) 6 B) 5 C) 7 D) 8

3671. p ning nechta natural qiymatlarida $x^2+px+10=0$ tenglama haqiqiy ildizga ega emas?
A) 6 B) 8 C) 5 D) 7

3672. $kx^2+3kx+2k-1=0$ tenglama yechimga ega bo'lmaydigan k ning butun qiymatlari o'rta arifmetigini toping ?
A) -3 B) 3 C) -2 D) 1,5

✓ p ning qanday eng kichik butun qiymatida $x^2-2(p+3)x+20+p^2=0$ tenglama 2 ta turli haqiqiy ildizga ega bo'ladi?
A) 5 B) 4 C) 2 D) 3
Yechimi:

formula	*misol*
$ax^2+bx+c=0$	$x^2-2(p+3)x+20+p^2=0$
$D>0$	$D=(2(p+3))^2-4(20+p^2)>0$
	$4p^2+24p+36-80-4p^2>0$
	$24p>44$
	$p>\frac{11}{6}$

p ning qanday eng kichik butun qiymatida : 2 **J: (C)**
Izoh: kvadrat tenglama 2 ta turli haqiqiy ildizga ega desa:

3673. p ning qanday eng kichik butun qiymatlarida $x^2+(2p+3)x+9+p^2=0$ tenglama 2 ta turli haqiqiy ildizga ega bo'ladi?
A) 6 B) 2 C) 7 D) 3

3674. p ning qanday eng kichik butun qiymatlarida $x^2+(3p+2)x+5+2,25p^2=0$ tenglama 2 ta turli haqiqiy ildizga ega bo'ladi?
A) 0 B) 1 C) 2 D) 3

✓ $y^2-ty+\frac{1}{2}t+2=0$ tenglama teng ildizlarga ega bo'ladigan t ning barcha qiymatlari yig'indisini toping.
A) 1,5 B) -1 C) 1 D) 2
Yechimi:

formula	*misol*
	$y^2-t\,y+\frac{1}{2}t+2=0$
	b c
$ax^2+bx+c=0$	$D=t^2-4(\frac{1}{2}t+2)=0$
$D=0$	$t^2-2t-8=0$
	$t_1+t_2=2$

t ning barcha qiymatlari yig'indisini : 2
Javob: (D)
Izoh: Quyidagi gaplarda:
- kvadrat tenglama teng ildizlarga ega;
- to'la kvadrat shaklda tasvirlang;
- kvadrat tenglama 1 ta ildizga ega;

$ax^2+bx+c=0$
$D=0$
$a=0$ *da ham*

3675. a ning qanday qiymatlarida $x^2+2(1-a)x+a+5=0$ tenglamaning yechimlari o'zaro teng bo'ladi ?

A) 4 B) $-1;2$ C) -1 D) $-1;4$

3676. k ning qanday musbat qiymatida $25x^2+kx+2=0$ tenglama 1 ta ildizga ega bo'ladi?

A) $10\sqrt{2}$ B) $5\sqrt{2}$ C) 10 D) $\pm 10\sqrt{2}$

3677. b ning qanday qiymatida $x^2+\frac{2}{3}x+b$ ifoda to'la kvadrat bo'ladi?

A) 9 B) 3 C) $\frac{1}{9}$ D) $\frac{1}{3}$

3678. k ning qanday qiymatida $x^2+2(k-9)x+k^2+3k+4$ ifodani to'la kvadrat shaklida tasvirlab bo'ladi?

A) 4 B) 3 C) $\frac{5}{7}$ D) $\frac{11}{3}$

3679. a ning qanday qiymatlarida $ax^2-2x+3=0$ tenglama 1 ta ildizga ega bo'ladi?

A) 0 va 1 B) $\frac{1}{3}$ va 0 C) $\frac{1}{3}$ va 1 D) 3 va 1,5

3680. a ning qanday qiymatlarida $ax^2-3x+3=0$ tenglama 1 ta ildizga ega bo'ladi?

A) 0 va 1 B) $\frac{1}{3}$ va 0 C) $\frac{3}{4}$ va 0 D) $\frac{3}{4}$

3681. a ning qanday qiymatlarida $ax^2-(a+1)x+2a-1=0$ tenglama bitta ildizga ega bo'ladi?

A) $\frac{1}{7};-1$ B) $-1;0$ C) $-\frac{1}{7};-1$ D) $-\frac{1}{7};0;1$

✓ m ning qanday qiymatida $x(x+a)(x+b)(x+a+b)+4m^2$ ifoda to'la kvadrat bo'ladi?

A) $\frac{a^2b^2}{4}$ B) $\pm\frac{ab}{4}$ C) $\frac{ab^2}{4}$ D) $\pm\frac{a+b}{4}$

Yechimi: boshi bilan oxirini va o'rtalarini o'zaro ko'paytiring.

$x^2+(a+b)x+ab$

$x\underbrace{(x+a)(x+b)}\ \underbrace{(x+a+b)}+4m^2$

$x^2+(a+b)x$

$\underbrace{(x^2+(a+b)x)}_{t}\underbrace{(x^2+(a+b)x+ab)}_{t+ab}+4m^2$

$t^2+ab\,t+4m^2$

$D=a^2b^2-16m^2=0$

$-16m^2=-a^2b^2$

$m^2=\frac{a^2b^2}{16}$

$m=\pm\frac{ab}{4}$

Javob: (B)

3682. m ning qanday qiymatida $x(x+a)(x+b)(x+a+b)+25m^2$ ifoda to'la kvadrat bo'ladi?

A) $\frac{ab}{4}$ B) $\pm\frac{a+b}{10}$ C) $\pm\frac{ab}{10}$ D) $\pm\frac{ab^2}{10}$

3683. m ning qanday qiymatida $x(x+a)(x+b)(x+a+b)+\frac{1}{4}m^2$ ifodani to'la kvadrat shaklida tasvirlab bo'ladi?

A) $\pm\frac{ab}{10}$ B) $\frac{ab}{2}$ C) $\pm\frac{ab}{4}$ D) $\pm ab$

3684. m ning qanday qiymatida $x(x+a)(x+b)(x+a+b)+\frac{25}{4}m^2$ ifodani to'la kvadrat shaklida tasvirlab bo'ladi?

A) $\pm\frac{ab}{10}$ B) $\frac{ab}{2}$ C) $\pm\frac{ab}{4}$ D) $\pm\frac{ab}{5}$

✓ m ning qanday qiymatlarida $2x^2+(2m-8)x-25=0$ tenglamaning ildizlari qarama-qarshi sonlar bo'ladi ?

A) 1,5 B) -1 C) 4 D) 2

Yechimi: tenglama ildizlari qarama-qarshi sonlarda :

formula	*misol*
$ax^2+bx+c=0$	$2x^2+(2m-8)x-25=0$
$b=0$	$2m-8=0$
$(a>0,c<0;\ a<0,c>0)$	$2m=8$
	$m=4$

Javob: (C)

3685. m ning qanday qiymatlarida $3x^2+(3m-15)x-27=0$ tenglamaning ildizlari qarama-qarshi sonlar bo'ladi?

A) 0 B) $-3;3$ C) -5 D) 5

3686. m ning qanday qiymatlarida $4x^2+(\sqrt{3}m-3)x-9=0$ tenglamaning ildizlari qarama-qarshi sonlar bo'ladi?

A) $\sqrt{3}$ B) $-\sqrt{3}$ va $\sqrt{3}$ C) 10 D) 1,5 va $-1,5$

3687. $7x^2+(5k^2-8k-13)x-k=0$ tenglamaning ildizlari qarama-qarshi sonlar bo'ladigan k ning barcha qiymatlarini ko'paytmasini *toping*?

A) -1 **B) 1** C) $-\frac{13}{5}$ D) $\frac{5}{13}$

Parametrli tenglamalar sistemasi

✓ a ning qanday qiymatida $\begin{cases} ax-y=0 \\ x+y=10 \end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) -1 B) 2 C) -2 D) 1

Yechimi: tenglamalar sistemasining yechimga ega bo'lmaslik sharti:

$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\\\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}\end{cases}\Rightarrow\begin{cases}ax-y=0\\x+y=10\\\frac{a}{1}=\frac{-1}{1}\neq\frac{0}{10}\end{cases}$ $\frac{a}{1}=\frac{-1}{1}$ *proporsiyadan* $a=-1$

Javob : (A)

Izoh: tenglamalar sistemasining yechimga ega bo'lmaslik sharti:

$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\end{cases}\Rightarrow\quad\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$

3688. a ning qanday qiymatida $\begin{cases}(a-2)x+3y=5\\7x-18y=1\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $\frac{5}{6}$ B) $-\frac{19}{6}$ C) $-\frac{5}{6}$ D) $\frac{19}{6}$

3689. a ning qanday qiymatida $\begin{cases}(a+2)x-3y=11\\(2-8a)x-y=21\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) -3 B) 25 C) $\frac{4}{25}$ D) -6

3690. a ning qanday qiymatida $\begin{cases}x+ay=1\\ax+y=2a\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $-1;1$ B) $1;0,5$ C) $-\frac{1}{2};1$ D) $-\frac{1}{2};-1$

3691. a ning qanday qiymatida $\begin{cases}(a^2-a-25)x+2,5y-12,5=0\\2x+y+a=0\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) -5 B) -6 C) $-\frac{1}{6}$ D) 6

3692. a ning qanday qiymatida $\begin{cases}(a^2+a-3)x+3y-9=0\\x+y+a=0\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) -5 B) -3 C) $-\frac{1}{6}$ D) 2

✓ a va b ning qanday qiymatida $\begin{cases}ax-9y=4\\4x-6y=b\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $a=-6,\ b\neq-\frac{8}{3}$

B) $a\neq-6,\ b\neq-\frac{8}{3}$

C) $a\neq-6,\ b=-\frac{8}{3}$

D) $a=-6,\ b=-\frac{8}{3}$

Yechimi: tenglamalar sistemasining yechimga ega bo'lmaslik sharti:

$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\\\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}\end{cases}\Rightarrow\begin{cases}ax-9y=4\\4x-6y=b\\\frac{a}{4}=\frac{-9}{6}\neq\frac{4}{b}\end{cases}$

$\frac{a}{4}=\frac{-9}{6}\neq\frac{4}{b}\Rightarrow\begin{cases}\frac{a}{4}=\frac{-9}{6}\\6a=-36\\a=-6\end{cases}\Leftrightarrow\begin{cases}\frac{-9}{6}\neq\frac{4}{b}\\-9b\neq24\\b\neq-\frac{8}{3}\end{cases}$ **J : (A)**

3693. a va b ning qanday qiymatida $\begin{cases}4x-ay=12\\6x-15y=b\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $a\neq10,\ b\neq18$ B) $a=10,\ b\neq18$

C) $a\neq10,\ b=18$ D) $a=10,\ b=18$

3694. a va b ning qanday qiymatida $\begin{cases}3x-ay=15\\4,5x-6y=b\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $a=4,\ b\neq2,25$ B) $a\neq4,\ b\neq22,5$

C) $a=4,\ b\neq22,5$ D) $a=4,\ b=22,5$

3695. a va b ning qanday qiymatida $\begin{cases}ax-5y=-1\\6x+15y=b+3\end{cases}$ tenglamalar sistemasi yechimga ega bo'lmaydi ?

A) $a=2,\ b\neq0$ B) $a=-2,\ b=0$

C) $a\neq-2,\ b\neq0$ D) $a=-2,\ b\neq0$

✓ a va b ning qanday qiymatida $\begin{cases}2x-3y=b\\ax-4,5y=6\end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega ?

A) $a=-3,\ b\neq4$ B) $a\neq-3,\ b\neq-4$

C) $a\neq-3,\ b=-4$ D) $a=-3,\ b=-4$

Yechimi: Tenglamalar sistemasining cheksiz ko'p yechimga ega bo'lish sharti:

$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\\\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}\end{cases}\Rightarrow\begin{cases}2x-3y=b\\ax-4,5y=6\\\frac{2}{a}=\frac{-3}{4,5}=\frac{b}{6}\end{cases}$

$\frac{2}{a}=\frac{-3}{4,5}=\frac{b}{6}\Rightarrow\begin{cases}\frac{2}{a}=\frac{-3}{4,5}\\-3a=9\\a=-3\end{cases}\quad\begin{cases}\frac{-3}{4,5}=\frac{b}{6}\\4,5b=-18\\b=-4\end{cases}$

Javob : (D)

Izoh: tenglamalar sistemasining cheksiz ko'p yechimga ega bo'lish sharti:

$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\end{cases}\Rightarrow\quad\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$

3696. a va b ning qanday qiymatida $\begin{cases}4x-ay=4\\6x-4{,}5y=b\end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega?

A) $a\neq 3,\ b\neq 6$ B) $a=10,\ b\neq 6$

C) $a=3,\ b=6$ D) $a=3,\ b\neq 6$

3697. a va b ning qanday qiymatida $\begin{cases}4x-ay=8\\5x+2{,}5y=b\end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega?

A) $a=4,\ b\neq 10$ B) $a\neq -2,\ b\neq 10$

C) $a=-2,\ b\neq 10$ D) $a=-2,\ b=10$

3698. a va b ning qanday qiymatida $\begin{cases}ax-6y=7\\3x-by=10{,}5\end{cases}$ tenglamalar sistemasi cheksiz ko'p yechimga ega?

A) $a=-2,\ b\neq 9$ B) $a=2,\ b\neq 9$

C) $a\neq -2,\ b\neq 9$ D) $a=2,\ b=9$

✓ a ning qanday qiymatida $\begin{cases}ax+4y=4\\3x+y=1\end{cases}$ tenglamalar sistemasi yagona yechimga ega?

A) $a=12$ B) $a\neq -12$ C) $a\neq 12$ D) $a=-12$

Yechimi: tenglamalar sistemasining yagona (bitta) yechimga ega bo'lish sharti:

$$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\\\dfrac{a_1}{a_2}\neq\dfrac{b_1}{b_2}\end{cases}\Rightarrow\begin{cases}ax+4y=4\\3x+y=1\\\dfrac{a}{3}\neq\dfrac{4}{1}\Rightarrow a\neq 12\end{cases}$$ **J : (C)**

Izoh: Tenglamalar sistemasining yagona (bitta) yechimga ega bo'lish sharti:

$$\begin{cases}a_1x+b_1y=c_1\\a_2x+b_2y=c_2\end{cases}\Rightarrow\ \frac{a_1}{a_2}\neq\frac{b_1}{b_2}$$

3699. $a$ning qanday qiymatida $\begin{cases}2x-y=11\\x-ay=18\end{cases}$ tenglamalar sistemasi yagona yechimga ega?

A) $a\neq\dfrac{1}{2}$ B) $a=\dfrac{18}{11}$ C) $a\neq\dfrac{18}{11}$ D) $a=\dfrac{1}{2}$

3700. a ning qanday qiymatida $\begin{cases}2x-3y=6\\ax-6y=8\end{cases}$ tenglamalar sistemasi bitta yechimga ega?

A) $a=4$ B) $a\neq 4$ C) $a=-4$ D) $a\neq\dfrac{8}{3}$

3701. a ning qanday qiymatida $\begin{cases}5x+ay=15\\10x-6y=5\end{cases}$ tenglamalar sistemasi yagona yechimga ega?

A) $a=-18$ B) $a\neq 18$ C) $a\neq -3$ D) $a=-3$

Aralashmaga oid masalalar

✓ Qotishma mis va qo'rg'oshindan iborat. Qorishmaning 60 % i mis bo'lib, mis qo'rg'oshindan 2 kg ko'p, qotishmada qancha mis bor?

A) 6 B) 1 C) 5 D) 4

Yechimi:

Qotishma mis va qo'rg'oshindan iborat $\Rightarrow$ $m+q=x$

Qorishmaning 60 % i mis bo'lib, $\Rightarrow$ $m=0{,}6\cdot x$

mis qo'rg'oshindan 2 kg ko'p, $\Rightarrow$ $m=q+2$

$$\begin{cases}m+q=x\\m=0{,}6\cdot x\\m=q+2\end{cases}\Rightarrow\begin{cases}m+q=x\\0{,}6x+\underbrace{0{,}6x-2}_{m\quad q}=x\\1{,}2x-x=2\\0{,}2x=2\\x=10\end{cases}$$

qotishmada qancha mis bor? $\Rightarrow$ $m=0{,}6\cdot x$, $m=0{,}6\cdot 10$, $m=6$

Javob : (A)

3702. Qotishma mis va qo'rg'oshindan iborat. Qorishmaning 70 % i mis bo'lib, mis qo'rg'oshindan 4 kg ko'p, qotishmada qancha mis bor?

A) 6 B) 10 C) 5 D) 7

3703. Qotishma mis va qo'rg'oshindan iborat. Qorishmaning 80 % i mis bo'lib, mis qo'rg'oshindan 6 kg ko'p, qotishmada qancha qo'rg'oshin bor?

A) 8 B) 2 C) 5 D) 10

✓ 140 g suvga 60 g tuz qo'shish natiasida hosil bo'lgan tuzli eritmada necha foiz tuz bor?

A) 30 % B) 35 % C) 15 % D) 25 %

Yechimi:

$140+60\ \rightarrow\ 100\ \%\ \Rightarrow\ 200x=6000$

$60\ \rightarrow\ x\ \%\ \Rightarrow\ x=30\ \%$

Javob : (A)

3704. 220 g suvga 80 g tuz qo'shish natiasida hosil bo'lgan tuzli eritmada necha foiz tuz bor?

A) 13 B) 5 C) $26\frac{2}{3}$ D) $21\frac{2}{3}$

3705. 340 g suvga 60 g tuz qo'shish natiasida hosil bo'lgan tuzli eritmada necha foiz tuz bor?

A) 12 B) 5 C) 15 D) 21

✓ Qo'rg'oshin va misdan quyulgan 2 ta quyma bor. 1–quymada 3 kg qo'rg'oshin va 2 kg mis bor. 2–quymada 13 kg qo'rg'oshin va 7 kg mis bor. Qaysi quymada qo'rgoshinning % miqdori ko'p va u necha foiz?

A) 1–quymada 5 % ko'p B) 2–quymada 5 % ko'p

C) 1–quymada 8 % ko'p D) 2–quymada 15 % ko'p

Yechimi:

1–quymada 3 kg qo'rg'oshin va 2 kg mis bor.

$2+3 \rightarrow 100\% \Rightarrow 5x=300$

$3 \rightarrow x\% \qquad x=60\%$

2–quymada 13 kg qo'rg'oshin va 7 kg mis bor.

$13+7 \rightarrow 100\% \Rightarrow 20y=1300$

$13 \rightarrow y\% \qquad y=65\%$

1–quymada qo'rgoshin 60 %

2–quymada qo'rgoshin 65 %

Javob : (B)

3706. Qo'rg'oshin va misdan quyulgan 2 ta quyma bor. 1–quymada 5 kg qo'rg'oshin va 15 kg mis bor. 2–quymada 9 kg qo'rg'oshin va 51 kg mis bor. Qaysi quymada qo'rgoshinning % miqdori ko'p va u necha foiz ?

A) 1–quymada 10 % ko'p B) 2–quymada 25 % ko'p
C) 1–quymada 15 % ko'p D) 2–quymada 10 % ko'p

3707. Qo'rg'oshin va misdan quyulgan 2 ta quyma bor. 1–quymada 3 kg qo'rg'oshin va 7 kg mis bor. 2–quymada 10 kg qo'rg'oshin va 40 kg mis bor. Qaysi quymada misning % miqdori ko'p va u necha foiz ?

A) 1–quymada 10 % ko'p B) 2–quymada 25 % ko'p
C) 1–quymada 15 % ko'p D) 2–quymada 10 % ko'p

Nostandart tenglamalar

✓ Agar $\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}$ va $x+y+z=15$ bo'lsa, x ni toping.

A) 4 **B) 3** C) 6 D) 7

Yechimi:

$$\frac{x-1}{2}=\frac{y-2}{3}=\frac{z-3}{4}=t$$

$$\begin{cases}\frac{x-1}{2}=t \\ x-1=2t \\ x=2t+1\end{cases} \quad \begin{cases}\frac{y-2}{3}=t \\ y-2=3t \\ y=3t+2\end{cases} \quad \begin{cases}\frac{z-3}{4}=t \\ z-3=4t \\ z=4t+3\end{cases}$$

$x+y+z=15$

$2t+1+3t+2+4t+3=15$

$x \quad y \quad z$

$9t=15-6$

$t=1$

$x=2t+1 \quad dan \quad t=1$

$x=2\cdot 1+1=3$

Javob : (B)

3708. Agar $\frac{x-4}{2}=\frac{y-2}{3}=\frac{z-5}{4}$ va $x+y+z=29$ bo'lsa, y ni toping ?

A) 4 B) 13 C) 8 D) 2

3709. Agar $\frac{x+2}{3}=\frac{y-2}{4}=\frac{z+1}{2}$ va $x+y+z=26$ bo'lsa, z ni toping ?

A) 3 B) 5 C) 7 D) 2

3710. Agar $\frac{x-2}{7}=\frac{y-1}{5}=\frac{z-5}{4}$ va $x+y+z=24$ bo'lsa, y ni toping ?

A) 1 B) 9 C) 8 D) 6

✓ Agar $(x-64)^2+(x-y^2)^2=0$ va $x+y$ ning qiymatini toping.

A) 50 B) 48 va 80 C) 56 va 72 D) 72

Yechimi:

$$(x-64)^2+(x-y^2)^2=0$$

$$\begin{cases}x-64=0 \\ x=64\end{cases} \quad \begin{cases}x-y^2=0 \\ x=y^2 \\ 64=y^2 \\ y_{1,2}=\pm 8\end{cases}$$

$$x+y=\begin{cases}64+8=72 \\ 64-8=56\end{cases}$$

Javob : 56 va 72 (C)

3711. Agar $(x-81)^2+(x-y^2)^2=0$ va $x+y$ ning qiymatini toping ?

A) 65 B) 63 va 99
C) 72 va 90 D) 97

3712. Agar $(x-100)^2+(x-y^2)^2=0$ va $x+y$ ning qiymatini toping ?

A) 118 B) 90 va 110
C) 80 va 120 D) 82

3713. Agar $(x-121)^2+(x-y^2)^2=0$ va $x+y$ ning qiymatini toping ?

A) 99 va 143 B) 141
C) 101 D) 110 va 132

✓ a va b raqamlar yigindisi 7 ga qoldiqsiz bo'linadi. Agar aba ko'rinishidagi uch xonali sonlarni 7 ga bo'lganda bir xil qoldiq qolsa, shu qoldiqni toping.

A) 4 B) 0 C) 6 D) 2

Yechimi:

a va b raqamlar yigindisi 7 ga qoldiqsiz bo'linadi $\Rightarrow a+b=7$

$$a+b=7 \Rightarrow \begin{cases}1+6=7 \\ 2+5=7 \\ 3+4=7 \\ 7+0=7\end{cases} \Leftrightarrow aba \Rightarrow \begin{cases}161 \\ 252 \\ 343 \\ 707\end{cases}$$

161; 252; 343; 707 sonlarini 7 ga bo'linsa qoldiq "0"

Javob : (B)

Izoh: Aytilgan shartiga binoan sonlarni olib 3 xonali son tuzildi.

3714. Agar a va b natural sonlar yig'indisi 7 ga qoldiqsiz bo'linsa, $37a+9b$ ni 7 ga bo'lgandagi qoldiqni toping?

A) 1 B) 6 C) 0 D) 2

3715. a va b raqamlar yig'indisi 13 ga qoldiqsiz bo'linadi. Agar aba ko'rinishdagi uch xonali sonlarni 13 ga bo'lganda bir xil qoldiq qolsa, shu qoldiqni toping?

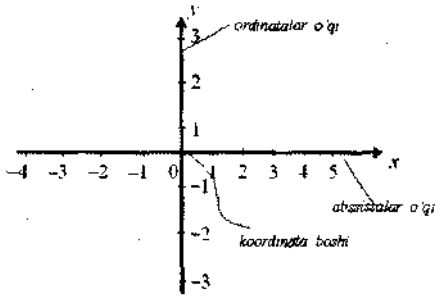
A) 3 B) 0 C) 7 D) 2

3716. Agar a va b natural sonlar yig'indisi 13 ga qoldiqsiz bo'linsa, $39a+26b$ ni 13 ga bo'lgandagi qoldiqni toping?

A) 1 B) 9 C) 8 D) 0

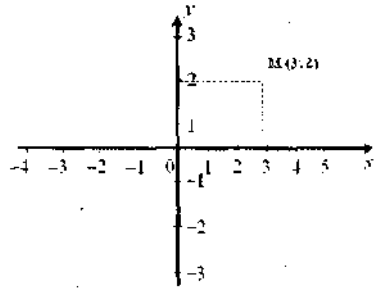
To'g'ri burchakli koordinatalar sistemasi

To'g'ri burchakli (Dekart) koordinatalar sistemasi:

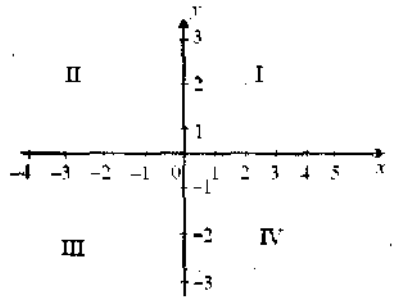


oy— ordinatalar o'qidir. *ox— abssissalar o'qidir.*

✓ M $(x; y)$ yozuv— M nuqta x abssissaga va y ordinataga ega ekanligini bildiradi. Misol: M (3; 2) nuqtani yasang.



koordinatar o'qida to'rtta chorak bor.



Izoh: M (3; 2) nuqtani koordinatalar o'qiga qo'yishda 3 ni *ox* o'qidan va 2 ni *oy* o'qidan olinadi.
chunki M (3; 2) nuqtada 3 soni –abssissadan va 2 soni– ordinatadan olinadi.

3717. Quyidagi berilgan nuqtalardan qaysilarining abssissasi 7 ga teng?
1) K (7; 4) 2) N(4; 7) 3) L(7; 3) 4) E(0; 7)
A) 1; 3 B) 2; 3 C) 2; 4 D) barchasi

3718. Quyidagi berilgan nuqtalardan qaysilarining ordinatasi 2 ga teng?
1) K (2; 4) 2) L(4; 2) 3) M(2; 3) 4) N(0; 2)
A) 1; 3 B) 2; 3 C) 2; 4 D) barchasi

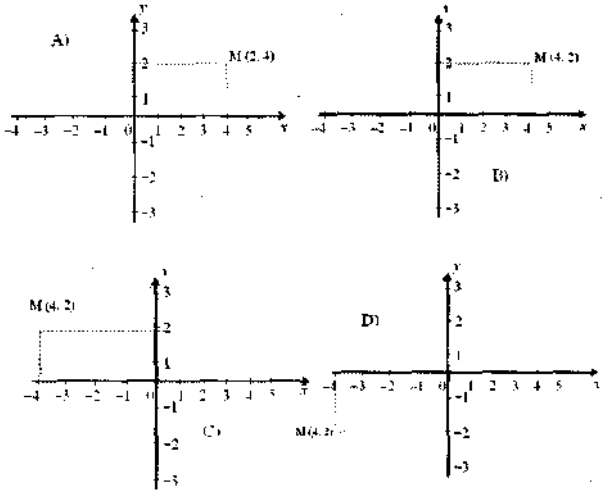
3719. Quyidagi berilgan nuqtalardan qaysilarining abssissasi 0 ga teng?
1) K (0; 4) 2) N(0; 0) 3) L(0; –1) 4) E(0; 7)
A) 1; 3 B) 2; 3 C) 2; 4 D) barchasi

3720. Quyidagi berilgan nuqtalardan qaysilarining ordinatasi 0 ga teng?
1) K (2; 4) 2) L(4; 2) 3) M (0; 3) 4) N(0; 2)
A) 1; 3 B) 2; 3 C) 2; 4 D) hech biri

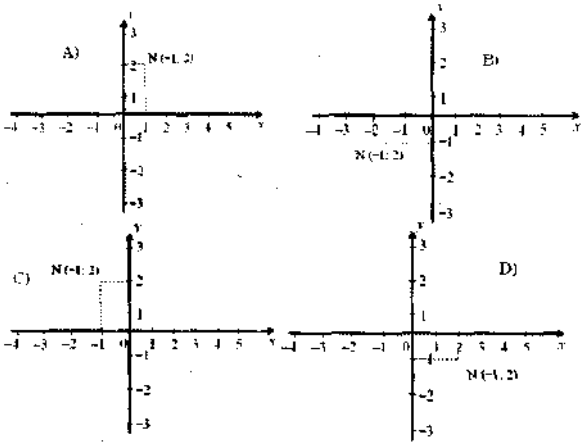
3721. Quyidagi berilgan nuqtalardan qaysilarining abssissasi manfiy ?
1) K (–1; 4) 2) N(0; –8) 3) L(0; –1) 4) E(–2,5; 7)
A) 1; 3 B) 2; 3 C) 1; 4 D) barchasi

3722. Quyidagi berilgan nuqtalardan qaysilarining ordinatasi musbat?
1) K (–2; –4) 2) L(–4; 2) 3) M (0; 3) 4) N(0; 0)
A) 1; 3 B) 2; 3 C) 2; 4 D) hech biri

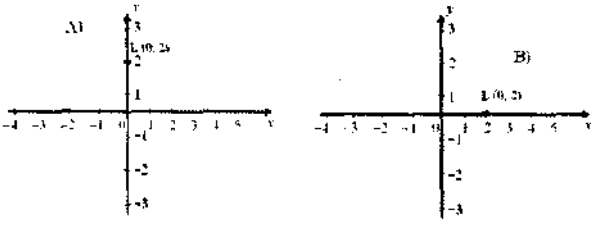
3723. Qaysi javobda M (4; 2) nuqta to'g'ri qo'yilgan?

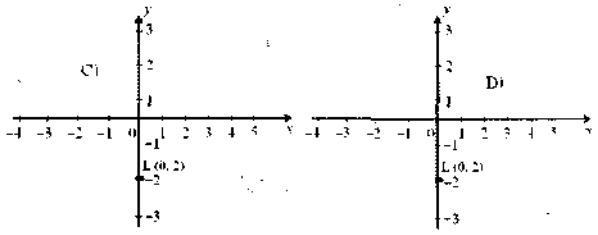


3724. Qaysi javobda N (–1; 2) nuqta to'g'ri qo'yilgan?

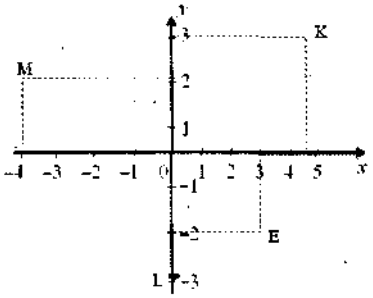


3725. Qaysi javobda L (0; 2) nuqta to'g'ri qo'yilgan ?



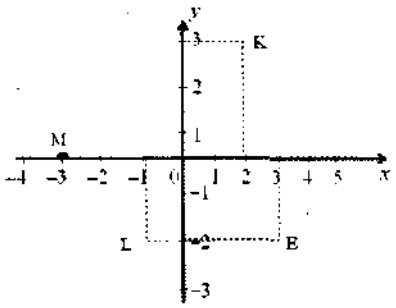


3726. M, K, L, E nuqtalarning koordinatalarini toping.



A) M (2; –4) ; K (5; 3) ; L(–3; 0) ; E (3; –2)
B) M (–4; 2) ; K (5; 3) ; L(–3; 0) ; E (3; –2)
C) M (–4; 2) ; K (5; 3) ; L(0; –3) ; E (3; –2)
D) M (–4; 2) ; K (3; 5) ; L(0; –3) ; E (3; –2)

3727. M, K, L, E nuqtalarning koordinatalarini toping.



A) M (–3; 0) ; K (2; 3) ; L(–1; –2) ; E (3; 2)
B) M (–3; 0) ; K (2; 3) ; L(–1; –2) ; E (3; –2)
C) M (0; –3) ; K (2; 3) ; L(–1; 2) ; E (3; –2)
D) M (0; –3) ; K (2; 3) ; L(–1; –2) ; E (3; –2)

3728. M (0; 2), K (–1; 0,5), L(0; 2,5), E (2,5;0) nuqtalardan qaysi biri *Ox* o'qida yotadi ?
A) M ; K B) M ; L C) E D) L; E

3729. M (0,4; 0,7), K (–1,8; 0), L(0; 2,5), E (2,5;0) nuqtalardan qaysi biri *Oy* o'qida yotadi ?
A) E ; K B) M ; E C) M ; L D) L

3730. M (7; 0), K (1; 0,9), L(0,7; 2,5), E (3,5;0) nuqtalardan qaysi biri *Ox* o'qida yotadi ?
A) hech bir B) M ; E C) M ; L D) L; E

3731. M (4; 0,7), K (0; 0,2), L(0; 2,5), E (2,5;0) nuqtalardan qaysi biri *Oy* o'qida yotadi ?
A) L ; K B) M ; E C) M ; L D) K; E

3732. M (–1; 2), K (1; 0,5), L(–4; 3,5), E (2,5;0) nuqtalardan qaysi biri II–chorakda yotadi ?
A) M ; K B) M ; L C) E D) L; E

3733. M (4; 7), K (–1,8; 0), L(–3; –4,5), E (2; 5) nuqtalardan qaysi biri III–chorakda yotadi ?
A) E ; K B) M ; E C) M ; L D) L

3734. M (7; –3), K (–1; 2), L(7; 5), E (5;–10) nuqtalardan qaysi biri IV–chorakda yotadi ?
A) hech bir B) M ; E C) M ; L D) L; E

3735. M (–4; 0,7), K (7; 0,2), L(3; 2,1), E (2,5;0) nuqtalardan qaysi biri I –chorakda yotadi ?
A) L ; K B) M ; E C) M ; L D) K; E

3736. M $(x; y)$ nuqta uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?
1) $x > 0$, $y > 0$ bo'lsa, bu nuqtalar I–chorakkda yotadi.
2) $x > 0$, $y > 0$ bo'lsa, bu nuqtalar II–chorakkda yotadi.
3) $x < 0$, $y > 0$ bo'lsa, bu nuqtalar II–chorakkda yotadi.
4) $x > 0$, $y < 0$ bo'lsa, bu nuqtalar III–chorakkda yotadi.
5) *Ox* o'qida yotishi uchun $y = 0$ bo'lishi lozim.
A) 1; 3; 5 B) 1; 4; 5 C) 1; 2; 5 D) barchasi

3737. M $(x; y)$ nuqta uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?
1) $x < 0$, $y < 0$ bo'lsa, bu nuqtalar III–chorakkda yotadi.
2) $x > 0$, $y > 0$ bo'lsa, bu nuqtalar IV–chorakkda yotadi.
3) $x < 0$, $y > 0$ bo'lsa, bu nuqtalar III–chorakkda yotadi.
4) $x > 0$, $y < 0$ bo'lsa, bu nuqtalar IV–chorakkda yotadi.
5) *Oy* o'qida yotishi uchun $x = 0$ bo'lishi lozim.
A) 1; 4 B) 1; 2 C) 1; 4; 5 D) hech biri

Chiziqli funksiyalar

✓ $f(x) = (2x+3)(\frac{3}{x}-3)$ *funksiya berilgan bo'lsa,* $f(3) = ?$
A) –18 B) 22 C) 18 D) –24
Yechilishi: x ning o'rniga berilgan sonni qo'yish lozim ya'ni

$$f(x) = (2x+3)(\frac{3}{x}-3)$$

J: –18 (B)

$$f(3) = (2\cdot 3+3)(\frac{3}{3}-3) = 9\cdot(1-3) = -18$$

3738. $f(x) = -\frac{2}{7}x - 1$ funksiya berilgan bo'lsa, $f(7) = ?$
A) –1 B) 2 C) 1 D) –3

3739. $P(x) = \frac{1}{3}(2x+1)$ funksiya berilgan bo'lsa, $p(4) = ?$
A) –4 B) 3 C) 9 D) –3

3740. $y(x)=-x-3$ funksiya berilgan bo'lsa, $y(0)=$?

A) -1 B) 2 C) 1 D) -3

3741. Funksiya $f(x)=2-5x$ formula bilan berilgan. to'g'ri tengliklarni toping.

1) $f(-2)=12$ 2) $f(-\frac{1}{5})=3$ 3) $f(4)=20$ 4) $f(\frac{1}{2})=0,5$

A) 1; 2 B) 1; 3 C) 2; 4 D) barchasi

3742. $g(x)=(3+\frac{1}{x})(11+4x)$ funksiya berilgan bo'lsa, $g(\frac{1}{2})+g(-1)=$?

A) 89 B) 14 C) 79 D) -65

3743. $\varphi(x)=x^2-5x+6$ funksiya berilgan bo'lsa, $2018+\varphi(-1)-\varphi(6)=$?

A) 2010 B) 2014 C) 2018 D) -2018

✓ $f(x)=2x+5$ funksiya berilgan bo'lsa, x ning $f(x)=10$ bo'lgandagi qiymatini toping.

A) -18 B) 2,2 C) 2,5 D) 4,5

Yechilishi:

$f(x)=2x+5$

$2x+5=10$

$2x=10-5$

$2x=5$

$x=2,5$

$f(x)=2x+5$ funksiyani berilgan songa (10 ga) tenglab x ni toppish lozim ya'ni:

J: 2,5 (C)

3744. $g(x)=-6x-5$ funksiya berilgan bo'lsa, x ning $g(x)=7$ bo'lgandagi qiymatini toping.

A) -1 B) -2 C) 2 D) -3

3745. $P(x)=\frac{1}{3}(2x+1)$ funksiya berilgan bo'lsa, x ning $P(x)=\frac{1}{2}$ bo'lgandagi qiymatini toping.

A) -4 B) 0,25 C) 4 D) $-0,25$

3746. $y(x)=0,5x+6$ funksiya berilgan bo'lsa, x ning $y(x)=-16$ bo'lgandagi qiymatini toping.

A) -44 B) -22 C) 44 D) -4

3747. $\varphi(x)=-3x+1,5$ funksiya berilgan bo'lsa, x ning $\varphi(x)=-4,5$ bo'lgandagi qiymatini toping.

A) -2 B) 0,5 C) 2 D) $-0,2$

✓ $y=2x$ funksiya grafigi yasalgan javobni toping.

Yechilishi:

Funksiya grafigini chizishda ixtiyoriy 2 ta qiymat berib $(x;\ y)$ nuqtalarni aniqlash kifoya.

Quyidagi jadvalni to'ldirib topish qulay :

x	1	-1
y		

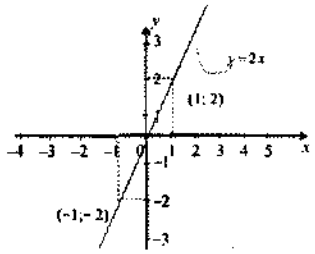
⇨

x	1	-1
y	2	-2

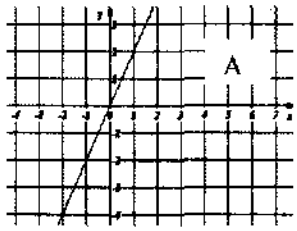
jadvalni to'ldirishda $y=2x$ funksiyaga berilgan $x=1$ va $x=-1$ ni qo'yib hisoblaymiz ya'ni:

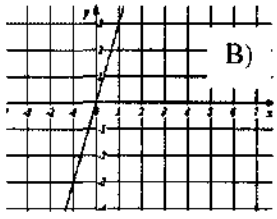
$y=2\cdot 1=2$; $y=2\cdot(-1)=-2$ keyin esa ushbu nuqtalarga ega bo'lamiz.

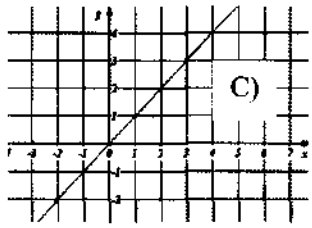
$(x;\ y)$ (1; 2) (−1; −2) bu nutalardan o'tuvchi to'g'ri chiziq $y=2x$ funksiya grafigidir.

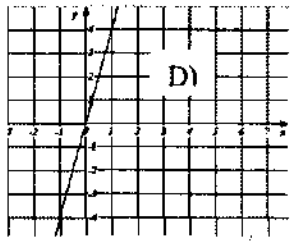


3748. $y=3x$ funksiya grafigi yasalgan javobni toping.

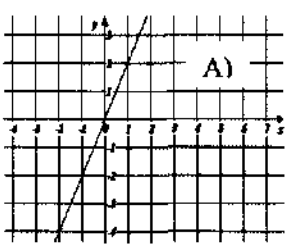


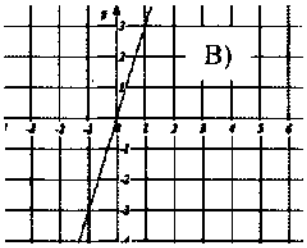


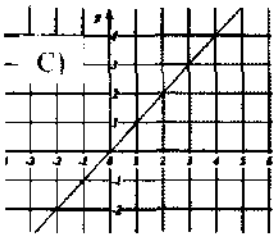


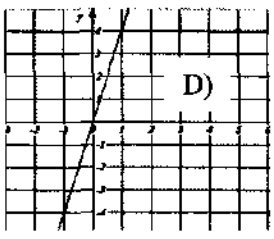


3749. $y=x$ funksiya grafigi yasalgan javobni toping.

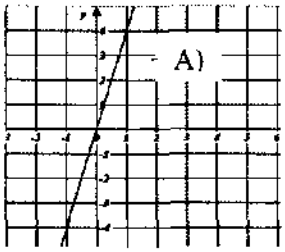


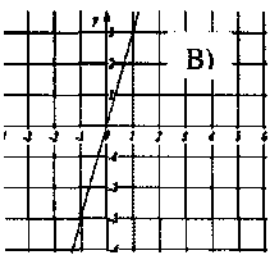


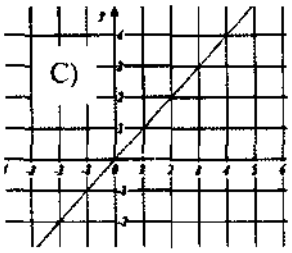


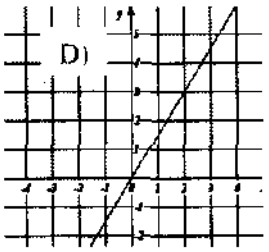


3750. $y=1,5x$ funksiya grafigi yasalgan javobni toping.

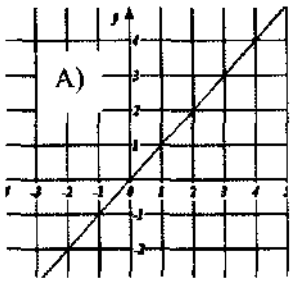


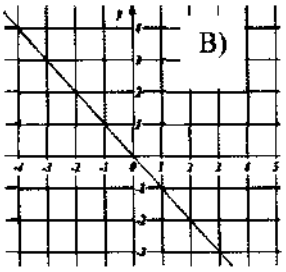


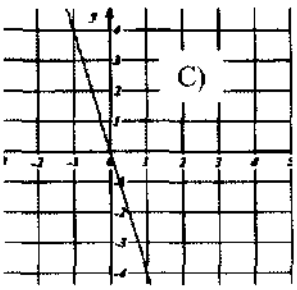


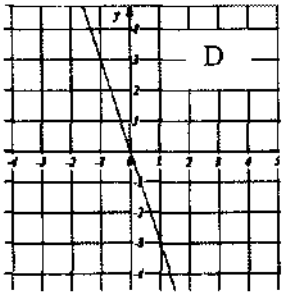


3751. $y=-4x$ funksiya grafigi yasalgan javobni toping.

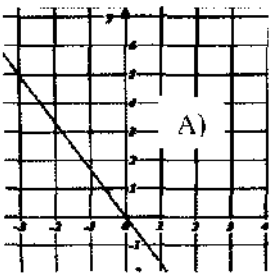


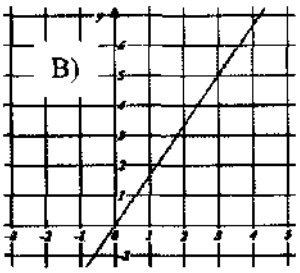


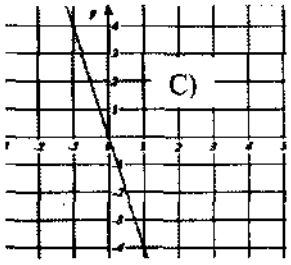


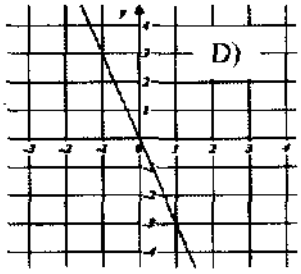


3752. $y=-\frac{5}{3}x$ funksiya grafigi yasalgan javobni toping.

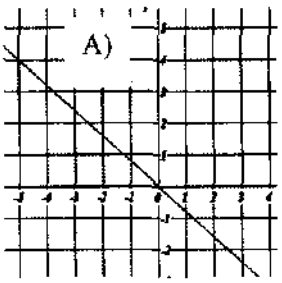


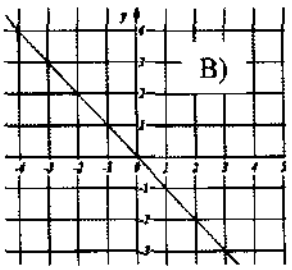


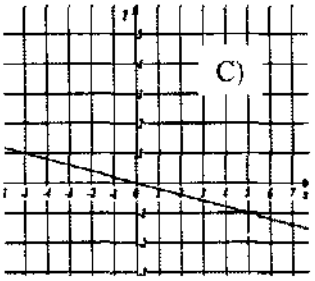


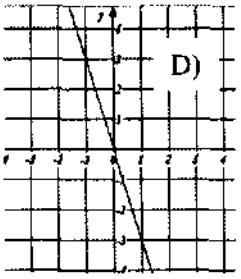


3753. $y=-0,2x$ funksiya grafigi yasalgan javobni toping.









✓ $y=\frac{1}{2}x-3$ funksiya grafigi yasalgan javobni toping.

Yechilishi:

Funksiya grafigini chizishda ixtiyoriy 2 ta qiymat berib $(x;\ y)$ nuqtalarni aniqlash kifoya.

Quyidagi jadvalni to'ldirib topish qulay:

x	0	
y		0

⇨

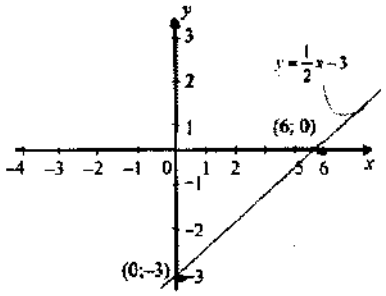
x	0	6
y	−3	0

jadvalni to'ldirishda $y=\frac{1}{2}x-3$ funksiyaga berilgan $x=0$ va $y=0$ ni qo'yib hisoblaymiz ya'ni:

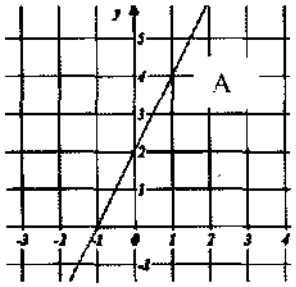
$\underline{x=0}\Rightarrow \boxed{y=\frac{1}{2}\cdot 0-3=-3\Rightarrow y=-3}$ keyin esa ushbu

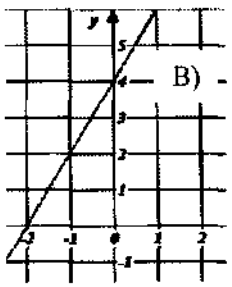
$\underline{y=0}\Rightarrow \boxed{0=\frac{1}{2}\cdot x-3\ \Rightarrow x=6}$

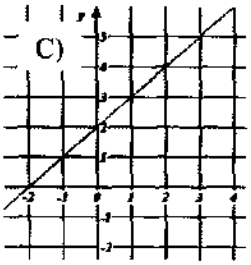
nuqtalarga ega bo'lamiz. $(x;\ y)$ $(6;\ 0)$ $(0;\ -3)$ bu nutalardan o'tuvchi to'g'ri chiziq $y=\frac{1}{2}x-3$ funksiya grafigidir.

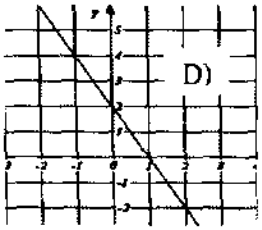


3754. $y=2x+2$ funksiya grafigi yasalgan javobni toping.

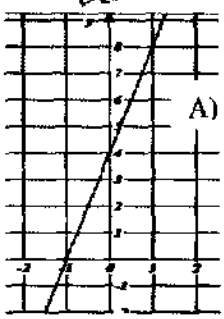


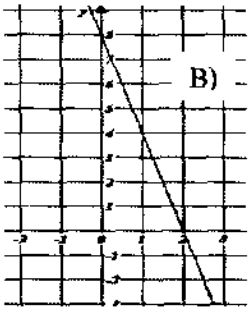


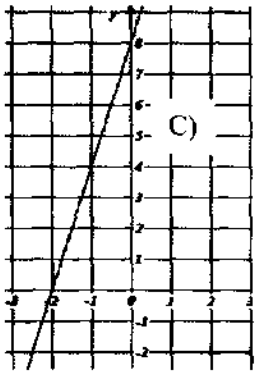


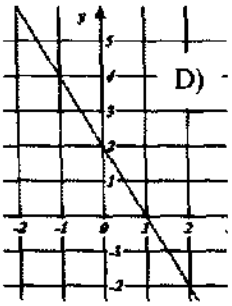


3755. $y=4x+8$ funksiya grafigi yasalgan javobni toping.

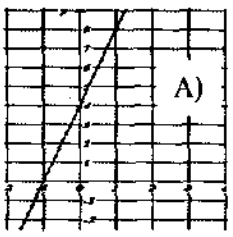


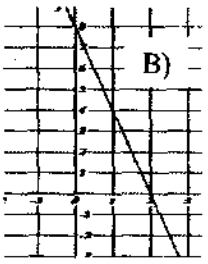


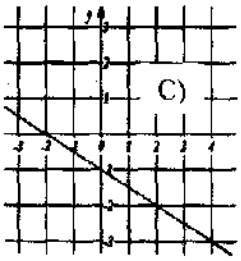


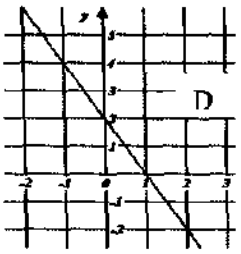


3756. $y=-\frac{1}{2}x-1$ funksiya grafigi yasalgan javobni toping.









✓ $y=-2x-4$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) barchasi

Yechilishi:

Funksiyaning grafigini chizamiz va qaysi choraklardan o'tayotganini aniqlaymiz.

$\underline{x=0} \Rightarrow y=-2\cdot 0-4=-4$

$\underline{y=0} \Rightarrow 0=-2\cdot x-4 \Rightarrow x=-2$ jadvalni to'ldirishda

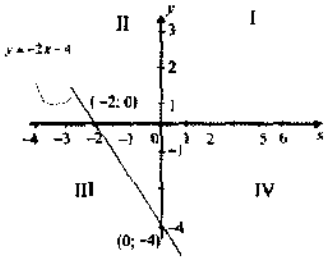
$y=-2x-4$ funksiyaga berilgan $x=0$ *va* $y=0$ ni qo'yib hisoblaymiz ya'ni: keyin esa ushbu nuqtalarga ega bo'lamiz.

x	0	
y		0

⇒

x	0	-2
y	-4	0

$(x;y)=(0;-4)$ $(-2;0)$ bu nutalardan o'tuvchi to'g'ri chiziq $y=-2x-4$ funksiya grafigidir.



javob: II, III, IV choraklar

3757. $y=x-4$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) I, IV, III

3758. $y=0,4x$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, III C) II, III, IV D) barchasi

3759. $y=-2x+3$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) II, I, IV

3760. $y=-\frac{2}{5}x$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) barchasi

3761. $y=-0,9x-11$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) barchasi

3762. Agar $k<0$, $b>0$ *da* $y=kx+b$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) II, I, IV

3763. Agar $k>0$, $b<0$ *da* $y=kx+b$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, IV, III C) II, III, IV D) II, I, IV

3764. Agar $k<0$; *da* $y=kx$ funksiya grafigi qaysi choraklarda joylashgan ?

A) II, IV B) I, II, III C) II, III, IV D) II, I, IV

✓ Quyidagi nuqtalarning qaysi biri $y=-2x+5$ funksiyaning grafigiga tegishli?

1) (1; 2) 2) (2; 1) 3) (3; 1) 4) (−1; 7)

A) 1; 4 B) 1; 2 C) 2; 4 D) hech biri

Yechilishi:

1) (1; 2) $y=-2\cdot1+5=3$ *tegishli emas*

2) (2; 1) $y=-2\cdot2+5=1$ *tegishli*

3) (3; 1) $y=-2\cdot3+5=-1$ *tegishli emas*

4) (–1; 7) $y=-2\cdot(-1)+5=7$ *tegishli*

Javob: 2; 4 (C)

3765. Quyidagi nuqtalarning qaysi biri $y=-3x+4$ funksiyaning grafigiga tegishli?

1) (2; –2) 2)(5; –3) 3) (–3; 5) 4) (3; –5)

A) 1; 3 B) 1; 2 C) 1; 4; D) barchasi

3766. Quyidagi nuqtalarning qaysi biri $y=\frac{3}{4}x-1$ funksiyaning grafigiga tegishli?

1) (2; –2) 2)(5; –3) 3) (–4; –4) 4) (0; –1)

A) 2; 4 B) 3; 4 C) 1; 4 D) hech biri

3767. Quyidagi nuqtalarning qaysi biri $y=-x+\frac{4}{5}$ funksiyaning grafigiga tegishli?

1) (2; –2) 2)(5; –3) 3) (–3; 5) 4) (3; –5)

A) 1; 4 B) 1; 2 C) 3; 4 D) hech biri

✓ k ni toping agar $y=kx$ to'g'ri chiziq (2; –5) nuqtadan o'tsa.

A) 1,4 B) –1,2 C) 2,4 D) –2,5

Yechilishi:

$$\begin{array}{l} y=kx \\ (2;-5)\Leftrightarrow(x;y) \end{array}\Bigg| \Leftrightarrow \Bigg| \begin{array}{l} -5=2k \\ k=-2,5 \end{array}$$

J: –2,5 (D)

Izoh: $y=kx$ funksiya berilgan nuqtadan o'tsa, $(x; y)$= (2; –5) nuqtani qo'yish lozim. ya'ni x=2 ni y=–5

3768. k ni toping agar $y=kx$ to'g'ri chiziq (–4; 8) nuqtadan o'tsa.

A) – 2 B) 2 C) 0,5; D) 0,4

3769. k ni toping agar $y=kx+2$ to'g'ri chiziq (–7; –12) nuqtadan o'tsa.

A) –0,5 B) 2 C) 0,5; D) 0,4

3770. k ni toping agar $y=kx+3$ to'g'ri chiziq (–2; 6) nuqtadan o'tsa.

A) –0,5 B) 2 C) –2,5; D) –1,5

3771. k ni toping agar $y=kx+6$ to'g'ri chiziq (3; 0,5) nuqtadan o'tsa.

A) –0,5 B) $\frac{6}{11}$ C) $-\frac{11}{6}$ D) $\frac{11}{6}$

3772. b ni toping agar $y=-1,5x+b$ to'g'ri chiziq (–2; 9) nuqtadan o'tsa.

A) –6 B) 2 C) 6 D) 4

✓ $y=kx+b$ to'g'ri chiziq tenglamasini tuzing, agar (–2; –8) *va* (1; 10) nuqtadan o'tsa.

A) $y=6x-4$ B) $y=6x+4$

C) $y=-6x+4$ D) $y=-6x-8$

Yechilishi: sistemani yechamiz

$$-\frac{\begin{cases}-2k+b=-8\\ k+b=10\end{cases}}{\begin{array}{r}-3k=-18\\ k=6\end{array}}\Rightarrow\Bigg|\begin{array}{l}k+b=10\ \Rightarrow\ 6+b=10\\ b=4\\ y=kx+b\Leftrightarrow y=6x+4\end{array}$$

Javob: (B)

3773. $y=kx+b$ to'g'ri chiziq tenglamasini tuzing, agar (1; 2) *va* (2; –5) nuqtadan o'tsa.

A) $y=9x-7$ B) $y=-7x+9$

C) $y=-7x-9$ D) $y=-6x-8$

3774. $y=kx+b$ to'g'ri chiziq tenglamasini tuzing, agar (–2; 3) *va* (2; 5) nuqtadan o'tsa.

A) $y=0,5x+4$ B) $y=2x-1$

C) $y=3x+9$ D) $y=x+3$

3775. $f(0)=3$ *va* $f(3)=0$ shartni qanoatlantiruvchi chiziqli funksiyani aniqlang.

A) $f(x)=-x-3$ B) $f(x)=-x+3$

C) $f(x)=-6x-3$ D) $f(x)=-3x-2$

✓ $y=10x-8$ *va* $y=-3x+5$ funksiyalarning grafiklari kesishish nuqtalari koordinatasini toping.

A) (1; 2) B) (–1; 2) C) (2; 4) D) (–2; 5)

Yechilishi: 1-usul

$y=10x-8$ *va* $y=-3x+5$

$y=y$

$10x-8=-3x+5$

$13x=13$

$x=1$

$y(1)=10\cdot1-8=2$

(1; 2)

2-usul

$$-\frac{\begin{cases}y=10x-8\\ y=-3x+5\end{cases}}{0=13x-13}$$

$13=13x$

$x=1$

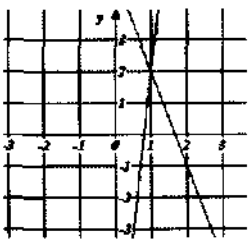
$y=10\cdot1-8=2$

(1; 2)

Javob: (1; 2) (A)

funksiyalar kesishadi deyilsa, doim y=y tenglansin, yoki sistema qilinsin. $\begin{cases}y=10x-8\\ y=-3x+5\end{cases}$

Agar chizib ko'rsak ham bo'ladi.



3776. $y=37x-8$ *va* $y=25x+4$ funksiyalarning grafiklari kesishish nuqtalari koordinatasini toping.

A) (– 1; 29) B) (2; 9) C) (29; 1) D) (1; 29)

3777. $y=14-2,5x$ *va* $y=1,5x-18$ funksiyalarning grafiklari kesishish nuqtalari koordinatasini toping.

A) (– 8; 6) B) (5; 9) C) (8; 6) D) (8; –6)

3778. $y=14x$ va $y=x+26$ funksiyalarning grafiklari kesishish nuqtalari koordinatasini toping.
A) (– 1; 29) B) (2; 28) C) (28; 2) D) (1; 29)

3779. $y=\frac{1}{2}x-1$ va $y=0,5x+2$ funksiyalarning grafiklari kesishish nuqtalari koordinatasini toping.
A) (– 1; 29) B) kesishmaydi
C) (28; 2) D) (1; 29)

✓ Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-3x-8$ funksiya grafigi bilan kesishadi?

$y_1=10x-8;$ $y_2=-3x+1;$ $y_3=-x+2;$
$y_4=-3x+4;$ $y_5=3x-8;$ $y_6=-3x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$
C) $y_2;\ y_4;\ y_6$ D) $y_1;\ y_3;\ y_5$

Yechilishi:
$\begin{cases} y_1=k_1x+b_1; \\ y_2=k_2x+b_2; \end{cases}$ funksiyalar kesishishi uchun, doim $k_1\neq k_2$ shart bajarilsin.

Berilgan $y=\boxed{-3}x-8$ funksiya

$y_1=\boxed{10}x-8;$ $y_2=-3x+1;$ $y_3=\boxed{-1}x+2;$
$y_4=-3x+4;$ $y_5=\boxed{3}x-8;$ $y_6=-3x-2;$

Javob: $y_1;\ y_3;\ y_5$ **(D)**

3780. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-5x+1$ funksiya grafigi bilan kesishadi?

$y_1=-5x+1;$ $y_2=x+1;$ $y_3=-x+2;$
$y_4=-6x+4;$ $y_5=-5x-8;$ $y_6=3x-2;$

A) $y_2;\ y_3;\ y_4;\ y_6$ B) $y_1;\ y_4;\ y_5$
C) $y_2;\ y_4;\ y_6$ D) $y_1;\ y_3;\ y_5$

3781. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=x+1$ funksiya grafigi bilan kesishadi?

$y_1=10x-8;$ $y_2=-3x+1;$ $y_3=-x+2;$
$y_4=-3x+4;$ $y_5=3x-8;$ $y_6=-3x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$
C) $y_2;\ y_4;\ y_6$ D) barchasi

3782. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-x+1$ funksiya grafigi bilan kesishadi?

$y_1=-x-8;$ $y_2=-x+1;$ $y_3=x+2;$
$y_4=-x+4;$ $y_5=-x-8;$ $y_6=-x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$ C) y_3 D) barchasi

✓ Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-2x-1$ funksiya grafigi bilan perpendikulyar kesishadi ?

$y_1=-4x-8;$ $y_2=-2x+1;$ $y_3=-x+2;$
$y_4=-4x+4;$ $y_5=3x-8;$ $y_6=\frac{1}{2}x-2;$

A) $y_3;\ y_6$ B) y_6 C) $y_1;\ y_4$ D) $y_1;\ y_3;\ y_5$

Yechilishi: $\begin{cases} y_1=k_1x+b_1; \\ y_2=k_2x+b_2; \end{cases}$ funksiyalar kesishishi uchun, doim $k_1\cdot k_2=-1$ shart bajarilsin.

berilgan $y=-2x-1$ funksiya

$y_1=-4x-8;$ $y_2=-2x+1;$ $y_3=-x+2;$
$y_4=-4x+4;$ $y_5=3x-8;$ $y_6=\boxed{\frac{1}{2}}x-2;$ **Javob:** y_6 **(B)**

3783. Quyidagi berilgan funksiyalardan qaysi birining grafigi $y=0,2x+3$ funksiya grafigi bilan perpendikulyar kesishadi ?

$y_1=5x+1;$ $y_2=\frac{1}{4}x+3;$ $y_3=-5x+2;$
$y_4=-6x+4;$ $y_5=0,25x+3;$ $y_6=25x-2;$

A) y_3 B) $y_1;\ y_4;\ y_5$ C) $y_2;\ y_4;\ y_6$ D) y_1

3784. Quyidagi berilgan funksiyalardan qaysi birining grafigi $y=0,4x+6$ funksiya grafigi bilan perpendikulyar kesishadi ?

$y_1=0,4x-8;$ $y_2=-3x+1;$ $y_3=2,5x+2;$
$y_4=0,4x+4;$ $y_5=0,4x-8;$ $y_6=-2,5x-2;$

A) $y_2;\ y_3;\ y_5$ B) y_6 C) $y_2;\ y_4;\ y_6$ D) hech biri

3785. Quyidagi berilgan funksiyalardan qaysi birining grafigi $y=-0,6x+1$ funksiya grafigi bilan perpendikulyar kesishadi ?

$y_1=0,4x-8;$ $y_2=\frac{-3}{5}x+1;$ $y_3=1,(6)x+2;$
$y_4=-0,6x+4;$ $y_5=3x-8;$ $y_6=-0,6x-2;$

A) $y_2;\ y_4;\ y_6$ B) $y_1;\ y_4;\ y_5$ C) y_2 D) y_3

✓ Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-4x-8$ funksiya grafigi bilan kesishmaydi?

$y_1=-4x+8;$ $y_2=2x+1;$ $y_3=-x+2;$
$y_4=-4x+4;$ $y_5=3x-8;$ $y_6=-3x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$
C) $y_1;\ y_4$ D) $y_1;\ y_3;\ y_5$

Yechilishi: $\begin{cases} y_1=k_1x+b_1; \\ y_2=k_2x+b_2; \end{cases}$ funksiyalar kesishishi uchun, doim $k_1=k_2$ shart bajarilsin.

berilgan $y=\boxed{-4}x-8$ funksiya

$y_1=\boxed{-4}x-8;$ $y_2=2x+1;$ $y_3=-x+2;$
$y_4=\boxed{-4}x+4;$ $y_5=3x-8;$ $y_6=-3x-2;$

Javob: $y_1;\ y_4$ **(C)**

3786. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=0,2x+1$ funksiya grafigi bilan kesishmaydi?

$y_1=\frac{1}{5}x+1;\quad y_2=x+1;\quad y_3=-x+2;$

$y_4=-6x+4;\quad y_5=0,2x-8;\quad y_6=3x-2;$

A) y_5 B) $y_1;\ y_4;\ y_5$

C) $y_2;\ y_4;\ y_6$ D) $y_1;\ y_5$

3787. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=x+1$ funksiya grafigi bilan kesishmaydi?

$y_1=10x-8;\quad y_2=-3x+1;\quad y_3=-x+2;$

$y_4=-3x+4;\quad y_5=3x-8;\quad y_6=-3x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$

C) $y_2;\ y_4;\ y_6$ D) hech biri

3788. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-x+1$ funksiya grafigi bilan kesishmaydi?

$y_1=0,4x-8;\quad y_2=8x+1;\quad y_3=-x+2;$

$y_4=5x+4;\quad y_5=3x-8;\quad y_6=x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$

C) y_3 D) $y_1;\ y_3;\ y_5$

✓ Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=2x+1$ funksiya grafigi bilan ustma-ust tushadi?

$y_1=-4x-8;\quad y_2=2x-1;\quad y_3=2x+2;$

$y_4=-4x+4;\quad y_5=3x-8;\quad y_6=2x+1;$

A) $y_3;\ y_6$ B) $y_1;\ y_4;\ y_5$

C) $y_1;\ y_4$ D) $y_1;\ y_3;\ y_5$

Yechilishi: berilgan $y=2x+1$ funksiya

$y_1=-4x-8;\quad y_2=2x-1;\quad \boxed{y_3=2x+1;}$

$y_4=-4x+4;\quad y_5=3x-8;\quad \boxed{y_6=2x+1;}$

Javob: $y_3;\ y_6$ **(A)**

$\begin{cases}y_1=k_1x+b_1;\\ y_2=k_2x+b_2;\end{cases}$ funksiyalar kesishishi uchun, doim $k_1=k_2,\ b_1=b_2$ shart bajarilsin.

3789. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=0,25x+3$ funksiya grafigi bilan ustma-ust tushadi ?

$y_1=x+1;\quad y_2=\frac{1}{4}x+3;\quad y_3=0,25x+2;$

$y_4=-6x+4;\quad y_5=0,25x+3;\quad y_6=25x-2;$

A) $y_2;\ y_5$ B) $y_1;\ y_4;\ y_5$

C) $y_2;\ y_4;\ y_6$ D) y_5

3790. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=0,4x+6$ funksiya grafigi bilan ustma-ust tushadi ?

$y_1=0,4x-8;\quad y_2=-3x+1;\quad y_3=-x+2;$

$y_4=0,4x+4;\quad y_5=0,4x-8;\quad y_6=-3x-2;$

A) $y_2;\ y_3;\ y_5$ B) $y_1;\ y_4;\ y_5$

C) $y_2;\ y_4;\ y_6$ D) hech biri

3791. Quyidagi berilgan funksiyalardan qaysilarining grafigi $y=-0,6x+1$ funksiya grafigi bilan ustma-ust tushadi ?

$y_1=0,4x-8;\quad y_2=\frac{-3}{5}x+1;\quad y_3=-x+2;$

$y_4=-0,6x+4;\quad y_5=3x-8;\quad y_6=-0,6x-2;$

A) $y_2;\ y_4;\ y_6$ B) $y_1;\ y_4;\ y_5$

C) y_2 D) $y_1;\ y_3;\ y_5$

✓ a va b ning qanday qiymatlarida $ax+by=-4$ va $2x-2y=4$ to'g'ri chiziqlar ustma-ust tushadi ?

A) $a=2;\ b=-2$ B) $a=-2;\ b=2$

C) $a=b=2$ D) $a=2;\ b=-1$

Yechilishi: $a_1x+b_1y=c_1$ va $a_2x+b_2y=c_2$ to'g'ri chiziqlar :

$\begin{cases}a_1x+b_1y=c_1\\ a_2x+b_2y=c_2\end{cases}\qquad \begin{cases}ax+by=-4\\ 2x-2y=4\end{cases}$

$\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}\ \Rightarrow\quad \frac{a}{2}=\frac{b}{-2}=\frac{-4}{4}$

$\frac{a}{2}=\frac{b}{-2}=\frac{-4}{4}$

$\frac{a}{2}=\frac{-4}{4}\qquad \frac{b}{-2}=\frac{-4}{4}$ **Javob: (B)**

$\frac{a}{2}=-1\qquad \frac{b}{-2}=-1$

$a=-2\qquad b=2$

Izoh: $a_1x+b_1y=c_1$ va $a_2x+b_2y=c_2$ to'g'ri chiziqlar :

1) $\frac{a_1}{a_2}\neq\frac{b_1}{b_2}$ kesishadi;

2) $\frac{a_1}{a_2}=\frac{b_1}{b_2}\neq\frac{c_1}{c_2}$ kesishmaydi (paralel);

3) $\frac{a_1}{a_2}=\frac{b_1}{b_2}=\frac{c_1}{c_2}$ ustma-ust tushadi;

3792. a ning qanday qiymatlarida $x-ay=-4$ va $2x-y=11$ to'g'ri chiziqlar kesishadi ?

A) $a\neq\frac{1}{2}$ B) $a=\frac{18}{11}$ C) $a\neq\frac{18}{11}$ D) $a=\frac{1}{2}$

3793. $a$ning qanday qiymatlarida $ax+2y=4$ va $y-x=4$ to'g'riparallel bo'ladi ?

A) $a\neq-2$ B) $a=-2$ C) $a\neq2$ D) $a=\frac{1}{2}$

3794. a va b ning qanday qiymatlarida $ax-9y=4$ va $4x-6y=b$ to'g'ri chiziqlar ustma-ust tushadi ?

A) $a\neq6;\ a=\frac{8}{3}$ B) $a=6;\ a=\frac{8}{3}$

C) $a\neq 6;\ a\neq\frac{8}{3}$ D) $a=6$

3795. a ning qanday qiymatlarida $2x-3y=6$ va $ax-6y=8$ to'g'ri chiziqlar kesishadi ?

A) $a\neq\frac{8}{3}$ B) $a=\frac{8}{3}$ C) $a\neq 4$ D) $a=4$

3796. k ning qanday qiymatlarida $kx+3y+1=0$ va $2x+(k+1)y+2=0$ to'g'ri parallel bo'ladi ?

A) 2 va -3 B) -2 C) 2 D) -2 va 2

3797. $x+y=1$ to'g'ri chiziqqa parallel to'g'ri chiziqni toping.

A) $2y+x-1=0$ B) $2x+2y+3=0$

C) $y-x+1=0$ D) $x-y=2$

3798. k ning qanday qiymatlarida $y_1=-\frac{21}{5}x$ va $y_2=kx-\frac{21}{5}$ to'g'ri chiziqlar o'zaro perpendikulyar bo'ladi ?

A) $\frac{5}{21}$ B) $-\left(\frac{5}{21}\right)^{-1}$ C) $\left(\frac{5}{21}\right)^{-1}$ D) $-\frac{5}{21}$

3799. k ning qanday qiymatlarida $y_1=-\frac{41}{5}x$ va $y_2=kx+\frac{41}{5}$ to'g'ri chiziqlar parallel bo'ladi ?

A) $\frac{5}{41}$ B) $-\frac{5}{41}$ C) $\left(\frac{5}{41}\right)^{-1}$ D) $-\left(\frac{5}{41}\right)^{-1}$

✓ m va n ning qanday qiymatlarida $2mx-3ny=12$ va $3mx+2ny=44$ to'g'ri chiziqlar $(1;2)$ nuqtada kesishadi ?

A) $n=2;\ m=-2$ B) $m=12;\ n=2$

C) $n=m=2$ D) $m=2;\ n=-12$

Yechilishi: $(1;2)=(x;y)$ nuqtani qo'yamiz va sistemani yechamiz:

$$\begin{cases}2mx-3ny=12\\3mx+2ny=44\end{cases}\Leftarrow(x;y)=(1;2)\begin{cases}2m\cdot 1-3n\cdot 2=12\\3m\cdot 1+2n\cdot 2=44\end{cases}$$

$$\begin{cases}2m-6n=12\ (\cdot 2)\\3m+4n=44\ (\cdot 3)\end{cases}\Leftrightarrow+\begin{cases}4m-12n=24\\9m+12n=132\end{cases}$$

$$13m=156$$

$$m=12$$

$2m-6n=12\Rightarrow 2\cdot 12-6n=12\Rightarrow n=2$

Javob: $m=12;\ n=2$ **(B)**

3800. a va b ning qanday qiymatlarida $ax+2yb=6$ va $3bx-ay=10$ to'g'ri chiziqlar $(1;2)$ nuqtada kesishadi ?

A) $a=2,\ b=-2$ B) $a=-2,\ b=2$

C) $a=2,\ b=-1$ D) $a=-2,\ b=-2$

3801. a va b ning qanday qiymatlarida $ax-8yb=6$ va $4bx-ay=10$ to'g'ri chiziqlar $(2;-1)$ nuqtada kesishadi ?

A) $a=4,\ b=\frac{7}{4}$ B) $a=-4,\ b=-\frac{7}{4}$

C) $a=4,\ b=1$ D) $a=-4,\ b=\frac{7}{4}$

✓ $(2;-5)$ nuqtadan o'tuvchi va $y=2x-5$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini ko'rsating.

A) $y=2x-9$ B) $y=2x-6$

C) $y=2x+9$ D) $y=-2x-9$

Yechilishi: biz tuzmoqachi bo'lgan to'g'ri chiziq tenglamasi $y=kx+b$ ko'rinishida.

$y=2x-5$ va $y=kx+b$ parallel bo'lgan to'g'ri chiziqlar demak, $y=\boxed{2}x-5$ va $y=\boxed{2}x+b$ bu $(2;-5)$ nuqtadan o'tgani uchun $-5=2\cdot 2+b\Rightarrow b=-9$ u holda to'g'ri chiziq tenglamasi $y=2x-9$

Javob: (A)

3802. $(3;1)$ nuqtadan o'tuvchi va $y=2x-3$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini yozing.

A) $y=2x-1$ B) $y=2x-5$

C) $y=2x-4$ D) $y=x-5$

3803. $(2;4)$ nuqtadan o'tuvchi va $y=4x+19$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini yozing.

A) $y=-2x+4$ B) $y=4x+4$

C) $y=4x-4$ D) $y=4x-2$

3804. $(1;5)$ nuqtadan o'tuvchi va $y=\frac{1}{3}x+5$ to'g'ri chiziqqa perpendikulyar bo'lgan to'g'ri chiziq tenglamasini yozing.

A) $y=3x+2$ B) $y=x+3$

C) $y=-3x+8$ D) $y=\frac{1}{3}x+8$

3805. $(6;15)$ nuqtadan o'tuvchi va $y=\frac{2}{5}x-3$ to'g'ri chiziqqa perpendikulyar bo'lgan to'g'ri chiziq tenglamasini yozing.

A) $y=3x+2$ B) $y=-2,5x+3$

C) $y=-2,5x+30$ D) $y=2,5x+8$

3806. $(-2;5)$ nuqtadan o'tuvchi va $5x-7y-4=0$ to'g'ri chiziqqa parallel bo'lgan to'g'ri chiziq tenglamasini yozing.

A) $5x-7y+45=0$ B) $3x+4y-35=0$

C) $5x-7y-45=0$ D) $y=x-5$

✓ n ning qanday qiymatida $2y=8+n-(3n+4)x$ va $3y=5-2n-(4n-3)x$ to'g'ri chiziqlarning kesishish nuqtasi Oy o'qda yotadi ?

A) $n=2$ B) $n=12$ C) $n=-2$ D) $n=-12$

Yechilishi: kesishish nuqtasi Oy o'qda yotadi degani $(0; y)$ bo'ladi deganidir.

$$\begin{cases}2y=8+n-(3n+4)x\\3y=5-2n-(4n-3)x\end{cases}(x;y)=(0;y)\begin{cases}2y=8+n-(3n+4)\cdot 0\\3y=5-2n-(4n-3)\cdot 0\end{cases}$$

$$\begin{cases}2y=8+n-0(\cdot 3)\\3y=5-2n-0(\cdot 2)\end{cases}-\begin{cases}6y=24+3n\\6y=10-4n\end{cases}$$

$$0=14+7n$$

$$-7n=14$$

$$n=-2$$

Javob: (C)

Izoh: kesishish nuqtasi Ox o'qda yotadi degani $(x; 0)$ bo'ladi deganidir.

3807. n ning qanday qiymatida $3y=6-(3n-1)x$ va $4y=11-2n-(5n+2)x$ to'g'ri chiziqlarning kesishish nuqtasi Oy o'qda yotadi?

A) 8 B) 2,5 C) 2 D) 1,5

3808. a ning qanday qiymatida $-10y=8-4a-(3a+4)x$ va $11y=1+3a-(4a-3)x$ to'g'ri chiziqlarning kesishish nuqtasi Oy o'qda yotadi?

A) 7 B) 0 C) 2 D) 1,5

3809. m ning qanday qiymatida $-y=2mx+9$ va $-my=1-x$ to'g'ri chiziqlarning kesishish nuqtasi Ox o'qda yotadi?

A) 1 B) $-4,5$ C) 2 D) 1,5

3810. b ning qanday qiymatida $3by=5-x$ va $2y=b-4-4x$ to'g'ri chiziqlarning kesishish nuqtasi Ox o'qda yotadi?

A) 6 B) 12 C) 24 **D) 15**

✓ m ning qanday qiymatida $x-my=1$ va $2mx-y=9$ to'g'ri chiziqlarning kesishish nuqtasi koordinatalar teksligining IV-choragiga tegishli bo'ladi?

A) $\left(\frac{9}{2};+\infty\right)$ B) $\left(-\frac{\sqrt{2}}{2};\frac{\sqrt{2}}{2}\right)$

C) $\left(-\frac{\sqrt{2}}{2};\frac{\sqrt{2}}{2}\right)\cup\left(\frac{9}{2};+\infty\right)$ D) $(1;+\infty)$

Yechilishi: IV-chorak ishoralari $x>0$, $y<0$.

$$\begin{cases}x-my=1\\2mx-y=9\end{cases}\Leftrightarrow\begin{cases}x-my=1\ (\cdot 2m)\\2mx-y=9\end{cases}\Leftrightarrow-\begin{cases}2mx-2m^2y=2m\\2mx-y=9\end{cases}$$

$$-2m^2y+y=2m-9$$

$$(-2m^2+1)y=2m-9$$

$$y=\frac{2m-9}{-2m^2+1}$$

$$\begin{cases}x-my=1\\2mx-y=9\end{cases}\Leftrightarrow\begin{cases}x-my=1\\2mx-y=9\ (\cdot m)\end{cases}\Leftrightarrow-\begin{cases}x-my=1\\2m^2x-my=9m\end{cases}$$

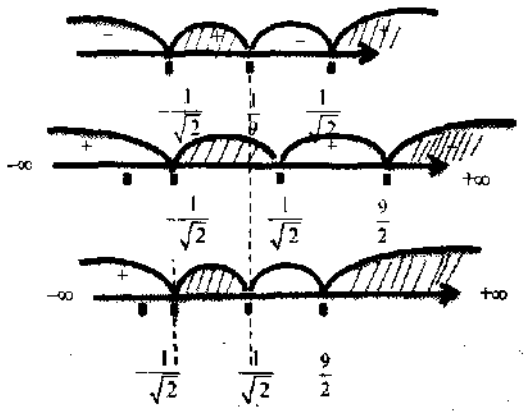
$$x-2m^2x=1-9m$$

$$x(1-2m^2)=1-9m$$

$$x=\frac{1-9m}{1-2m^2}$$

$x>0$ $\quad\frac{1-9m}{1-2m^2}>0$

$$\begin{cases}x>0\\y<0\end{cases}\Rightarrow\begin{cases}\frac{1-9m}{1-2m^2}>0\\\frac{2m-9}{1-2m^2}<0\end{cases}$$



$\left(-\frac{\sqrt{2}}{2};\frac{\sqrt{2}}{2}\right)\cup\left(\frac{9}{2};+\infty\right)$ **Javob: (C)**

3811. m ning qanday qiymatida $x-y=m-1$ va $2x-y=3m-4$ to'g'ri chiziqlarning kesishish nuqtasi koordinatalar teksligining I-choragiga tegishli bo'ladi?

A) $(1,5;+\infty)$ B) $(2;+\infty)$ C) $(1,5;2)$ D) $(1;+\infty)$

3812. m ning qanday qiymatida $2x+3y=4m-3$ va $2x-y=2m-1$ to'g'ri chiziqlarning kesishish nuqtasi koordinatalar teksligining II-choragiga tegishli bo'ladi?

A) $(0,6;1)$ B) $(0,6;+\infty)$ C) Ø D) $(1;+\infty)$

3813. m ning qanday qiymatida $x+y=7m-11$ va $3x-y=m-5$ to'g'ri chiziqlarning kesishish nuqtasi koordinatalar teksligining III-choragiga tegishli bo'ladi?

A) $x<1,4$ B) $1,4<x<2$ C) $x<2$ D) $x>1,4$

3814. m ning qanday qiymatida $x+y=4m-1$ va $2x-3y=m+8$ to'g'ri chiziqlarning kesishish nuqtasi koordinatalar teksligining IV-choragiga tegishli bo'ladi?

A) $x<\frac{10}{7}$ B) $x>\frac{10}{7}$

C) $-\frac{5}{13}<x$ D) $-\frac{5}{13}<x<\frac{10}{7}$

3815. a ning qanday qiymatida $3x-4y=3$ va $3x-2ay=5$ to'g'ri chiziqlarning kesishish nuqtasi musbat ordinataga ega?

A) $a<2$ B) $a<-2$ C) $a<1,5$ D) $a>2$

3816. a ning qanday qiymatida $2ax+3y=3$ va $4x-3y=7$ to'g'ri chiziqlarning kesishish nuqtasining absissasi manfiy bo'ladi?

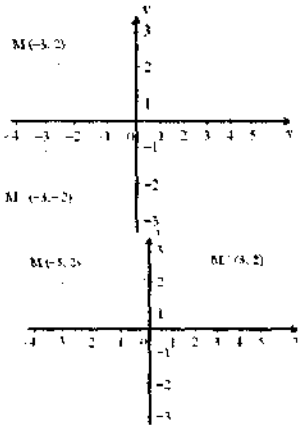
A) $a>-2$ B) $a>2$ C) $a<-2$ D) $a<2$

SIMMETRIK NUQTALAR

✓ M (–3; 2) nuqtani Ox o'qiga nisbatan simmetrik ko'chiring.

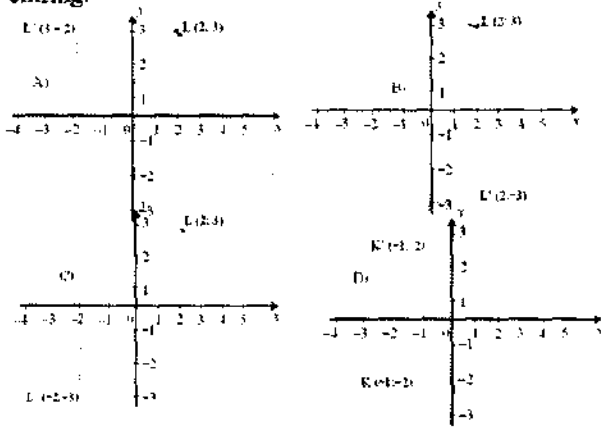
Yechilishi :

A $(x; y)$ nuqtani
Quyidagi o'qqa nisbatan simmetrik:
Ox — A' $(x; -y)$
Oy — A' $(-x; y)$
Koordinata boshiga : A' $(-x; -y)$
demak, M (–3; 2) ni
Ox — M' (–3; –2)

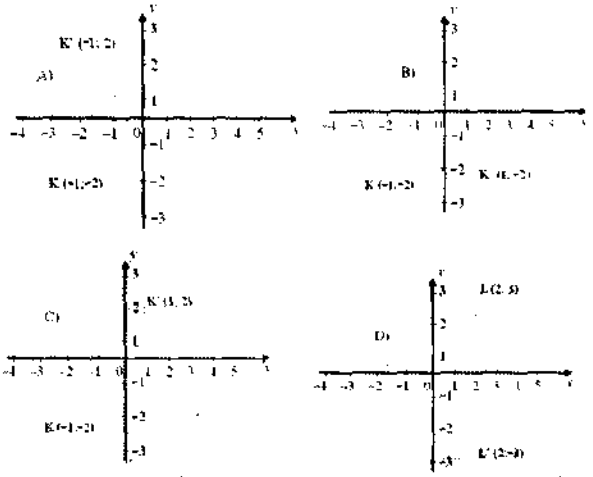


M (–3; 2) nuqtani OY o'qiga nisbatan simmetrik ko'chiring.

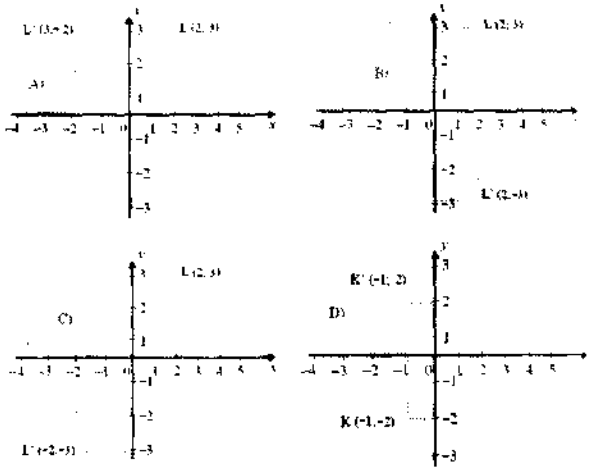
3817. L (2; 3) nuqtani Ox o'qiga nisbatan simmetrik ko'chiring.



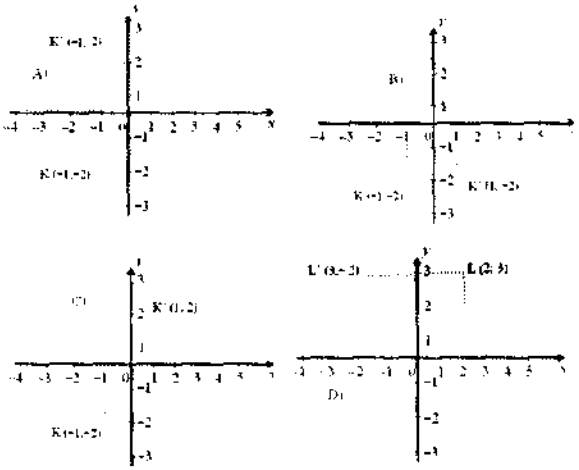
3818. K (–1;–2) nuqtani Ox o'qiga nisbatan simmetrik ko'chiring.



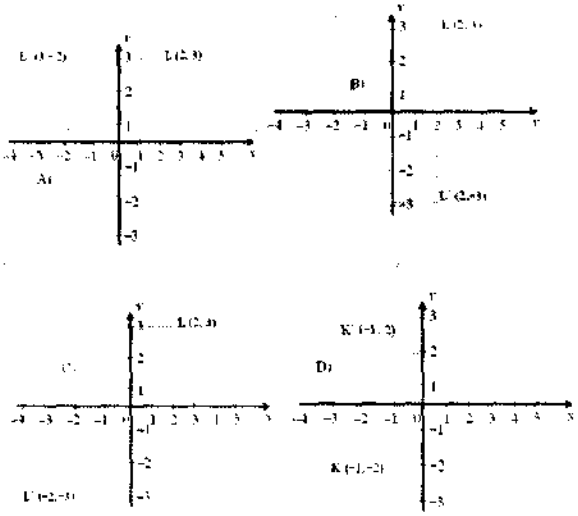
3819. L (2; 3) nuqtani Oy o'qiga nisbatan simmetrik ko'chiring.



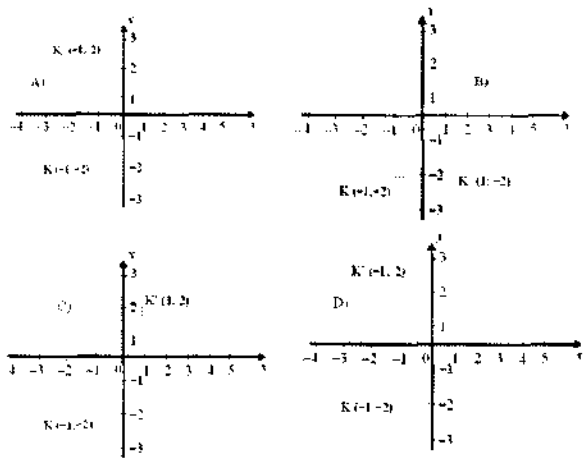
3820. K (–1;–2) nuqtani Oy o'qiga nisbatan simmetrik ko'chiring.



3821. L (2; 3) nuqtani koordinata boshiga nisbatan simmetrik ko'chiring.



3822. K (−1;−2) nuqtani koordinata boshiga nisbatan simmetrik ko'chiring.



3823. A (−0,2; 1) nuqtani Ox o'qiga nisbatan simmetrik ko'chirilgandagi A' nuqtaning koordinatalarini ko'rsating.

A) (0,2; −1) B) (−0,4; −1)
C) (−0,2; 1) D) (−0,2; −1)

3824. B (−2,3; −0,4) nuqtani Oy o'qiga nisbatan simmetrik ko'chirilgandagi B' nuqtaning koordinatalarini ko'rsating.

A) (2,3; 0,4) B) (−2,3; 0,4)
C) (2,3; −0,4) D) (−0,2; −1)

3825. C (3; −1,1) nuqtani koordinata boshiga nisbatan simmetrik ko'chirilgandagi C' nuqtaning koordinatalarini ko'rsating.

A) (−3; 1,1) B) (−3; −1,1)
C) (3; 1,1) D) (3; −1,1)

3826. A $(-2; -\frac{4}{7})$ nuqtani Ox o'qiga nisbatan simmetrik ko'chirilgandagi A' nuqtaning koordinatalarini ko'rsating.

A) $(2; -\frac{4}{7})$ B) $(2; \frac{4}{7})$ C) $(-2; -\frac{4}{7})$ D) $(-2; \frac{4}{7})$

3827. B $(1\frac{2}{9}; -3\frac{4}{11})$ nuqtani Oy o'qiga nisbatan simmetrik ko'chirilgandagi B' nuqtaning koordinatalarini ko'rsating.

A) $(1\frac{2}{9}; 3\frac{4}{11})$ B) $(1\frac{2}{9}; -3\frac{4}{11})$
C) $(-1\frac{2}{9}; -3\frac{4}{11})$ D) $(-1\frac{2}{9}; 3\frac{4}{11})$

3828. C (4; 2,(4)) nuqtani koordinata boshiga nisbatan simmetrik ko'chirilgandagi C' nuqtaning koordinatalarini ko'rsating.

A) $(-4; -2\frac{4}{9})$ B) (−4; −2,4)
C) (4; 2,4) D) (4; −2,(4))

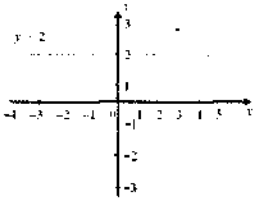
3829. Simmetrik nuqta uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?

1) Ox o'qiga nisbatan simmetriyada nuqtaning absissasi o'zgarmaydi, ordinatasi esa qarama-qarshiga o'zgaradi.
2) Oy o'qiga nisbatan simmetriyada nuqtaning absissasi o'zgarmaydi, ordinatasi esa qarama-qarshiga o'zgaradi.
3) Oy o'qiga nisbatan simmetriyada nuqtaning ordinatasi o'zgarmaydi, absissasi esa qarama-qarshiga o'zgaradi.
4) Ox o'qiga nisbatan simmetriyada nuqtaning ordinatasi o'zgarmaydi, absissasi esa qarama-qarshiga o'zgaradi.
5) O'qlarda yotgan nuqtaning koordinatalari o'zgarmaydi.

A) 1; 4 B) 1; 3 C) 1; 3; 5 D) hech biri

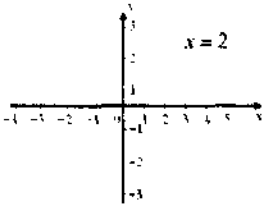
✓ $y=2$ funksiyaning grafigini yasang.

$y=2$ Oy o'qidan berilgan sonni tanlab to'g'ri chiziq chizamiz. Bu chiziq "gorizontal" chiziq yoki Ox ga "paralel" chiziq ham diyiladi.

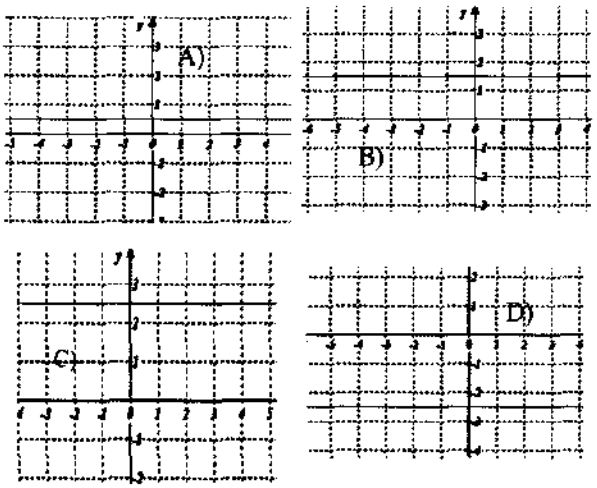


$x=2$ funksiyaning grafigini yasang.

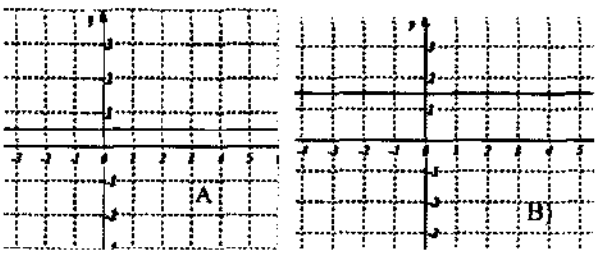
$x=2$ Ox o'qidan berilgan sonni tanlab to'g'ri chiziq chizamiz. Bu chiziq "vertikal" chiziq yoki Oy ga "paralel" chiziq ham diyiladi.

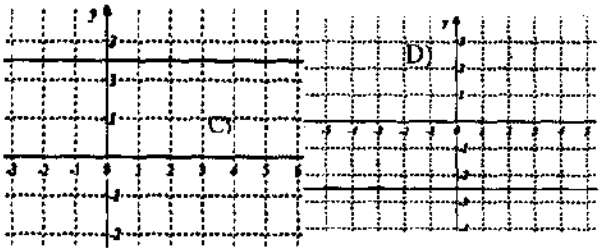


3830. $y=2,5$ funksiyaning grafigini yasang.

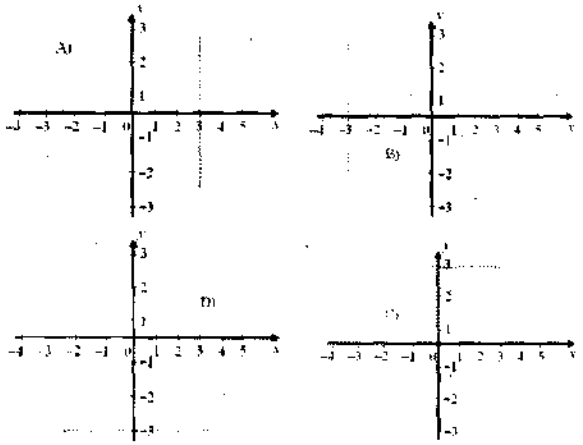


3831. $y=-2,5$ funksiyaning grafigini yasang.

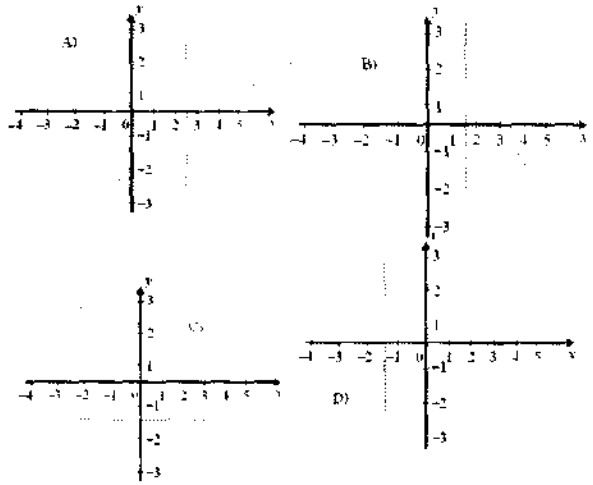




3832. $x=-3$ funksiyaning grafigini yasang.



3833. $x=-1{,}5$ funksiyaning grafigini yasang.



3834. Agar $k<0$ bo'lsa, $x=k$ funksiya grafigi qaysi choraklarda joylashgan?
A) II, IV B) I, II C) I, IV D) II, III

3835. Agar $k<0$ bo'lsa, $y=k$ funksiya grafigi qaysi choraklarda joylashgan?
A) II, IV B) I, II, IV C) II, III, IV D) II, I

3836. Agar $k>0$ bo'lsa, $x=k$ funksiya grafigi qaysi choraklarda joylashgan?
A) I, IV B) I, II C) II, III D) II, I, IV

3837. Agar $k>0$ bo'lsa, $y=k$ funksiya grafigi qaysi choraklarda joylashgan?
A) I, II B) I, IV C) II, III D) II, I, IV

✓ $y=2x-1$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.
A) $y=-2x+2$ B) $y=-2x+1$
C) $y=2x-1$ D) $y=-2x-1$

Yechimi:

$\boxed{y=kx+b}$ *funksiyaning*

1) *Oy o'qiga* nisbatan *simmetrigi*: $\boxed{y=-kx+b}$

2) *Ox o'qiga* nisbatan *simmetrigi*: $\boxed{y=-kx-b}$

3) *koordinata boshiga* nisbatan *simmetrigi*: $\boxed{y=kx-b}$

Bizga $y=2x-1$ ning Oy o'qiga nisbatan simmetrigini so'ragani uchun: $y=-2x-1$

Izoh: agarda quyidagicha shart bo'lsa,

$\boxed{y=kx+b}$ *funksiyaning*

1) $y=n$ *ga* nisbatan *simmetrigi*: $\boxed{y=2n-kx-b}$

2) $x=n$ *ga* nisbatan *simmetrigi*: $\boxed{y=k(2n-x)+b}$

3) $y=x$ *ga* nisbatan *simmetrigi*: $\boxed{y=\frac{x-b}{k}}$

3838. Ox o'qqa nisbatan $y=-3x+1$ to'g'ri chiziqqa simmetrik bo'lgan to'g'ri chiziqning tenglamasini ko'rsating.
A) $y=3x-1$ B) $y=-3x-1$
C) $y=3x+1$ D) $y=-3x+1$

3839. Oy o'qqa nisbatan $y=-3x+1$ to'g'ri chiziqqa simmetrik bo'lgan to'g'ri chiziqning tenglamasini ko'rsating.
A) $y=3x-1$ B) $y=-3x-1$
C) $y=3x+1$ D) $y=-3x+1$

3840. Ox o'qqa nisbatan $y=4x-6$ to'g'ri chiziqqa simmetrik bo'lgan to'g'ri chiziqning tenglamasini ko'rsating.
A) $y=4x+6$ B) $y=-4x+6$
C) $y=-4x-6$ D) $y=-4x+1$

3841. OY o'qqa nisbatan $y=-2x-4$ to'g'ri chiziqqa simmetrik bo'lgan to'g'ri chiziqning tenglamasini ko'rsating.
A) $y=2x+4$ B) $y=-2x+4$
C) $y=2x-4$ D) $y=4x-2$

3842. $y=-1$ ga nisbatan $y=x+2$ ga simmetrik bo'lgan to'g'ri chiziqning tenglamasini toping.
A) $y=-x+4$ B) $y=-x-4$
C) $y=-5x-4$ D) $y=-3x+5$

3843. $y=2$ ga nisbatan $y=-x-1$ ga simmetrik bo'lgan to'g'ri chiziqning tenglamasini toping.
A) $y=3x-5$ B) $y=-x-5$
C) $y=x+5$ D) $y=-x+5$

3844. $y=-5x-2$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.

A) $y=5x+2$ B) $y=5x-2$

C) $y=-5x+2$ D) $y=-5x-2$

3845. $y=-\frac{1}{3}x+2$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.

A) $y=\frac{1}{3}x+2$ B) $y=-\frac{1}{3}x+2$

C) $y=-\frac{1}{3}x-2$ D) $y=\frac{1}{3}x-2$

3846. $y=-5x-2$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.

A) $y=-5x-2$ B) $y=5x-2$

C) $y=-5x+2$ D) $y=5x+2$

3847. $y=-\frac{1}{3}x+2$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.

A) $y=\frac{1}{3}x+2$ B) $y=-\frac{1}{3}x+2$

C) $y=-\frac{1}{3}x-2$ D) $y=\frac{1}{3}x-2$

3848. $y=x-\frac{2}{5}$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.

A) $y=-x+\frac{2}{5}$ B) $y=x+\frac{2}{5}$

C) $y=x-\frac{2}{5}$ D) $y=-x-\frac{2}{5}$

3849. $y=-\frac{1}{3}x+2$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.

A) $y=\frac{1}{3}x+2$ B) $y=-\frac{1}{3}x+2$

C) $y=-\frac{1}{3}x-2$ D) $y=\frac{1}{3}x-2$

3850. $y=-5x+7$ funksiyani y=3 ga nisbatan simmetrigini aniqlang.

A) $y=-5x-1$ B) $y=5x-1$

C) $y=-5x-13$ D) $y=-5x-2$

3851. $y=9x-10$ funksiyaning y=5 ga nisbatan simmetrigini aniqlang.

A) $y=-9x-20$ B) $y=-9x+20$

C) $y=9x-20$ D) $y=-9x$

3852. $y=x+2$ funksiyaning y=1 ga nisbatan simmetrigini aniqlang.

A) $y=-x$ B) $y=-x+2$

C) $y=x+4$ D) $y=-x-4$

3853. $y=-x+12$ funksiyaning x=3 ga nisbatan simmetrigini aniqlang.

A) $y=x+6$ B) $y=5x+10$

C) $y=x-6$ D) $y=-x-6$

3854. $y=-7x+2$ funksiyaning x=2 ga nisbatan simmetrigini aniqlang.

A) $y=-7x+12$ B) $y=-7x-12$

C) $y=7x-26$ D) $y=7x-12$

3855. $y=6x-100$ funksiyaning x=4 ga nisbatan simmetrigini aniqlang.

A) $y=-6x+52$ B) $y=-6x-52$

C) $y=6x-14$ D) $y=6x+14$

3856. $y=5x-2$ funksiyani $y=x$ ga nisbatan simmetrigini aniqlang.

A) $y=-\frac{x+2}{5}$ B) $y=\frac{x-2}{5}$

C) $y=\frac{x+2}{5}$ D) $y=5x+2$

3857. $y=-\frac{1}{3}x+2$ funksiyaning $y=x$ ga nisbatan simmetrigini aniqlang.

A) $y=\frac{x+2}{3}$ B) $y=-3x-6$

C) $y=3x+6$ D) $y=-3x+6$

✓ $y=2x^2+x-1$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.

A) $y=2x^2-x-1$ B) $y=-2x^2-x-1$

C) $y=-2x^2-x+1$ D) $y=-2x^2+x+1$

Yechimi:

$\boxed{y=ax^2+bx+c}$ *funksiyaning*

1) *Oy o'qiga* nisbatan *simmetrigi*: $\boxed{y=ax^2-bx+c}$

2) *Ox o'qiga* nisbatan *simmetrigi*: $\boxed{y=-ax^2-bx-c}$

3) *koordinata boshiga* nisbatan *simmetrigi*:

$\boxed{y=-ax^2+bx-c}$

Bizga $y=2x^2+x-1$ ning Ox o'qiga nisbatan simmetrigini so'ragani uchun : $y=-2x^2-x+1$

Izoh: agarda quyidagicha shart bo'lsa,

$\boxed{y=ax^2+bx+c}$ *funksiyaning*

1) $y=n$ *ga* nisbatan *simmetrigi*: $\boxed{y=2n-ax^2-bx-c}$

2) $x=n$ *ga* nisbatan *simmetrigi*:

$\boxed{y=a(2n-x)^2+b(2n-x)+c}$

3858. $y=x^2-5x+6$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.

A) $y=-x^2+5x-6$ B) $y=-x^2-5x+6$

C) $y=-x^2-5x-6$ D) $y=x^2-5x-6$

3859. $y=-x^2+9x-10$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.

A) $y=-x^2-9x-10$ B) $y=x^2+9x+10$

C) $y=x^2+9x-10$ D) $y=x^2-9x+10$

3860. $y=-x^2+x+2$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+x-2$ B) $y=x^2-x+2$
C) $y=x^2+x-2$ D) $y=x^2-x-2$

3861. $y=x^2-x+12$ funksiyaning koordinata boshiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+x+12$ B) $y=x^2-x+12$
C) $y=-x^2-x-12$ D) $y=-x^2+x-12$

3862. $y=x^2-5x+6$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+5x-6$ B) $y=-x^2-5x+6$
C) $y=-x^2-5x-6$ D) $y=x^2-5x-6$

3863. $y=-x^2+9x-10$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2-9x-10$ B) $y=x^2+9x+10$
C) $y=x^2+9x-10$ D) $y=x^2-9x+10$

3864. $y=-x^2+x+2$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+x-2$ B) $y=x^2-x+2$
C) $y=x^2+x-2$ D) $y=x^2-x-2$

3865. $y=x^2-x+12$ funksiyaning Ox o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+x+12$ B) $y=x^2-x+12$
C) $y=-x^2-x-12$ D) $y=-x^2+x-12$

3866. $y=x^2-5x+6$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.
A) $y=x^2+5x+6$ B) $y=-x^2-5x+6$
C) $y=-x^2-5x-6$ D) $y=x^2-5x-6$

3867. $y=-x^2+9x-10$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2-9x-10$ B) $y=x^2+9x+10$
C) $y=x^2+9x-10$ D) $y=x^2-9x+10$

3868. $y=-x^2+x+2$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.
A) $y=-x^2+x-2$ B) $y=-x^2-x+2$
C) $y=x^2+x-2$ D) $y=x^2-x-2$

3869. $y=x^2-x+12$ funksiyaning Oy o'qiga nisbatan simmetrigini aniqlang.
A) $y=x^2+x+12$ B) $y=x^2-x+12$
C) $y=-x^2-x-12$ D) $y=-x^2+x-12$

3870. $y=x^2-5x+7$ funksiyani y=3 ga nisbatan simmetrigini aniqlang.
A) $y=x^2+5x-1$ B) $y=-x^2+5x-1$
C) $y=-x^2-5x-13$ D) $y=x^2-5x-2$

3871. $y=-x^2+9x-10$ funksiyaning y=5 ga nisbatan simmetrigini aniqlang.
A) $y=-x^2-9x-20$ B) $y=x^2-9x+20$
C) $y=x^2+9x-20$ D) $y=x^2-9x$

3872. $y=-x^2+x+2$ funksiyaning y=1 ga nisbatan simmetrigini aniqlang.
A) $y=x^2-x$ B) $y=-x^2-x+2$
C) $y=x^2+x+4$ D) $y=x^2-x-4$

3873. $y=3x^2-x+12$ funksiyaning x=3 ga nisbatan simmetrigini aniqlang.
A) $y=3x^2-35x+114$ B) $y=3x^2-35x+104$
C) $y=-3x^2-35x+114$ D) $y=3x^2+35x+114$

3874. $y=-x^2+x+2$ funksiyaning x=1 ga nisbatan simmetrigini aniqlang.
A) $y=x^2-x$ B) $y=-x^2+3x+8$
C) $y=-x^2+3x$ D) $y=x^2-3x$

3875. $y=5x^2-6x-100$ funksiyaning x=4 ga nisbatan simmetrigini aniqlang.
A) $y=5x^2-74x+172$ B) $y=5x^2-74x-172$
C) $y=-5x^2-74x-172$ D) $y=5x^2+74x+172$

3876. Quyidagi tasdiqlarning qaysilari to'g'ri ?.
1) $y=f(x)$ funksiyaning Ox o'qiga nisbatan simmetrigi $y=-f(x)$
2) $y=f(x)$ funksiyaning Oy o'qiga nisbatan simmetrigi $y=f(-x)$
3) $y=f(x)$ funksiyaning koordinatalar boshiga nisbatan simmetrigi $y=-f(-x)$
4) $y=f(x)$ funksiyaning $y=a$ o'qiga nisbatan simmetrigi $y=2a-f(x)$
5) $y=f(x)$ funksiyaning $x=a$ o'qiga nisbatan simmetrigi $y=f(2a-x)$
A) barchasi B) 1; 2; 3; 5
C) hech biri D) 2; 3; 4

3877. Quyidagi tasdiqlarning qaysilari noto'g'ri ?.
1) $y=f(x)$ funksiyaning Ox o'qiga nisbatan simmetrigi $y=-f(x)$
2) $y=f(x)$ funksiyaning Oy o'qiga nisbatan simmetrigi $y=f(-x)$
3) $y=f(x)$ funksiyaning koordinatalar boshiga nisbatan simmetrigi $y=-f(-x)$
4) $y=f(x)$ funksiyaning $y=a$ o'qiga nisbatan simmetrigi $y=2a-f(x)$
4) $y=f(x)$ funksiyaning $x=a$ o'qiga nisbatan simmetrigi $y=f(2a-x)$
A) barchasi B) 1; 2; 3; 5
C) hech biri D) 2; 3; 4

Kvadrat Funksiya

✓ Quyidagi ko'rsatilgan funksiyalardan qaysilari kvadrat funksiya bo'ladi?

1) $y=2x^2+x+3$; 2) $y=5x+1$; 3) $y=x^3+7x-1$; 4) $y=3x^2-1$

A) 1; 4 B) 2; 4 C) 3; 2 D) 1; 3

Yechilishi: Ta'rif. $y=ax^2+bx+c \quad (a\neq 0)$ funksiya kvadrat funksiya deyiladi.

1) $y=2x^2+x+3$ 2) $y=5x+1$?

3) $y=x^3+7x-1$? 4) $y=3x^2-1$

Javob: (A)

3878. Quyidagi ko'rsatilgan funksiyalardan qaysilari kvadrat funksiya bo'ladi?

1) $y=x^2$ 2) $y=5x$ 3) $y=x^3+7x^2-1$

4) $y=3x^2-1$ 5) $y=x^2-1$ 6) $y=x^2+x$

A) 1; 3; 4 B) 2; 4; 5 C) 1; 4; 5; 6 D) 1; 3; 4; 6

3879. Quyidagi ko'rsatilgan funksiyalardan qaysilari kvadrat funksiya bo'ladi?

1) $y=x^2-5x+6$ 2) $y=5$ 3) $y=x^5-1$

4) $y=x^2$ 5) $y=x-1$ 6) $y=-3x^2+\frac{1}{2}x$

A) 1; 3; 4 B) 2; 4; 5 C) 1; 4; 6 D) 1; 3; 6

✓ x ning shunday haqiqiy qiymatlarini topingki, $y=x^2-x-3$ kvadrat funksiya -1 ga teng qiymat qabul qilsin.

A) 2; -1 B) -1; 0,2 C) 1; 2 D) -1; -2

Yechilishi: funksiyani berilgan qiymatga tenglab x ni topamiz:

$y=x^2-x-3 \Rightarrow x^2-x-3=-1$

$x^2-x-2=0$ **Javob: (A)**

$x_1=2 \quad x_2=-1$

3880. x ning shunday haqiqiy qiymatlarini topingki, $y=2x^2-5x+3$ kvadrat funksiya 1 ga teng qiymat qabul qilsin

A) 0,5; 2 B) -2; 0,5 C) 2; -0,5 D) -2; 3

3881. x ning shunday haqiqiy qiymatlarini topingki, $y=-4x^2+3x-1$ kvadrat funksiya -1 ga teng qiymat qabul qilsin

A) 0,75 B) 0 C) $0; -\frac{3}{4}$ D) $0; \frac{3}{4}$

3882. x ning qanday haqiqiy qiymatlarida $y=x^2-x-3$ kvadrat funksiya 3 ga teng qiymat qabul qiladi?

A) 2; 3 B) -2; -3 C) 2; -3 D) -2; 3

✓ $y=2x^2+x-1$ kvadrat funksiya nollarini toping.

A) 2; -1 B) -1; 0,5 C) 1; 2 D) -1; -2

Yechilishi: "funksiya nollarini" deganda funksiyani "0" ga tenglab yechish lozim:

$y=2x^2+x-1 \Rightarrow 2x^2+x-1=0$

$D=1+8=9 \quad x_{12}=\frac{-1\pm 3}{4}$

$x_1=\frac{1}{2} \quad x_2=-1$

Javob: (B)

3883. $y=12x^2-17x+6$ kvadrat funksiya nollarini toping.

A) $\frac{2}{3}; -\frac{3}{4}$ B) $-\frac{2}{3}; -\frac{3}{4}$ C) 2; -3 D) $\frac{2}{3}; \frac{3}{4}$

3884. $y=x^2-x$ kvadrat funksiya nollarini toping.

A) 0 B) 2; 0 C) 0; 1 D) 0; -1

3885. $y=-6x^2+7x-3$ kvadrat funksiya nollarini toping.

A) mavud emas B) 2; 0 C) 0; 1 D) 0; -1

3886. Agar $y=x^2+px+q$ kvadrat funksiyaning 2 va 3 nollari ma'lum bo'lsa, p va q ni toping (ko'rsatma: viyet teoremasi qo'llansin).

A) 5; 6 B) -5; 6 C) 6; 4 D) 5; -6

3887. Agar $y=x^2+px+q$ kvadrat funksiyaning -4 va 1 nollari ma'lum bo'lsa, p va q ni toping.

A) 3; -4 B) -3; 4 C) 3; 4 D) 5; -6

3888. Agar $y=x^2+px+q$ kvadrat funksiyaning -1 va -2 nollari ma'lum bo'lsa, p va q ni toping.

A) 3; 3 B) -3; 2 C) 3; 2 D) 3; -2

✓ $y=x^2-4$ va $y=2x-4$ funksiyalar grafiklarining kesishish nuqtalari koordinatalarini toping.

A) (0; -4), (2; 0) B) (0; 0), (2; 0)

C) (0; 1), (2; 0) D) (0; 4), (2; 0)

Yechilishi: funksiyalar grafiklarining kesishish nuqtalari deyilsa funksiyalarni bir biriga tenglash (sistema) lozim:

1-usul

$y=x^2-4$ va $y=2x-4$

$x^2-4=2x-4$

$x^2-2x=0$

$x(x-2)=0$

$x_1=0 \quad x_2=2 \quad (0;-4)$

$y_1=-4 \quad y_2=0 \quad (2;\ 0)$

2-usul

$y=x^2-4$ va $y=2x-4$

$\begin{cases} y=x^2-4 \\ y=2x-4 \end{cases}$ (-)

$0=x^2-2x$

$x_1=0 \quad x_2=2$

$y_1=-4 \quad y_2=0$

Javob: (A)

3889. $y=x^2+2x-3$ *va* $y=2x+1$ funksiyalar grafiklarining kesishish nuqtalari koordinatalarini toping.

A) $(-2;3),(2;5)$ B) $(2;-3),(2;5)$

C) $(2;3),(2;5)$ D) $(-2;-3),(2;5)$

3890. $y=x^2-2x-5$ *va* $y=2x^2+x+1$ funksiyalar teng qiymat qabul qiladigan nuqtalarnig koordinatalarini toping.

A) (3; 2) B) (2; 0) C) kesishmaydi D) (0; -1)

3891. a ning shunday qiymatini topingki, $y=ax^2$ kvadrat funksiya va $y=5x+1$ to'g'ri chiziqning kesishish nuqtalaridan birining abssissasi $x=1$ bo'lsin.

A) $a=-6$ B) $a=6$ C) $a=-4$ D) $a=7$

3892. k ning shunday qiymatini topingki, $y=-x^2$ kvadrat funksiya va $y=kx-6$ to'g'ri chiziqning kesishish nuqtalaridan birining abssissasi $x=2$ bo'lsin.

A) $k=1$ B) $k=-1$ C) $k=-2$ D) $k=-6$

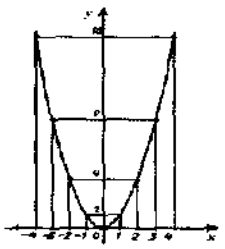
3893. b ning shunday qiymatini topingki, $y=3x^2$ kvadrat funksiya va $y=2x+b$ to'g'ri chiziqning kesishish nuqtalaridan birining abssissasi $x=1$ bo'lsin.

A) $b=1$ B) $b=-1$ C) $b=-2$ D) $b=-6$

✓ $y=x^2$ funksiya grafigini yasang.

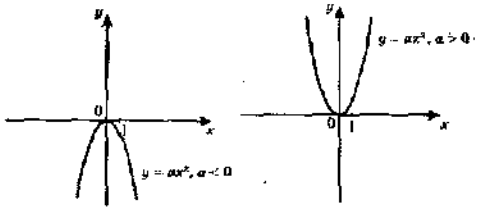
Yechilishi: $y=x^2$ funksiya grafigini yasash uchun uning qiymatlari jadvalini tuzamiz:

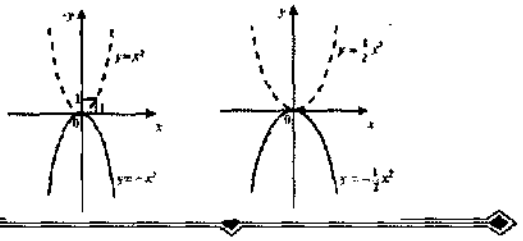
x	-4	-3	-2	-1	0	1	2	3	4
$y=x^2$	16	9	4	1	0	1	4	9	16



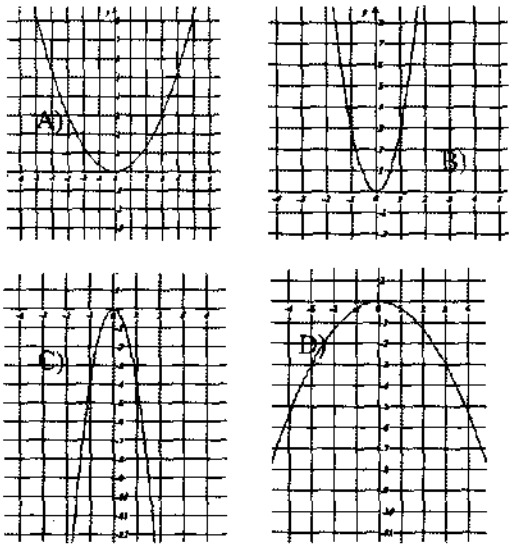
$y=x^2$ funksiyaning grafigi bo'lgan egri chiziq *PARABOLA* deyiladi.

$y=ax^2$ funksiyaning grafigi $a>0$ da parabolaning tarmoqlari yuqoriga, $a<0$ da esa pastga yo'nalgan bo'ladi.

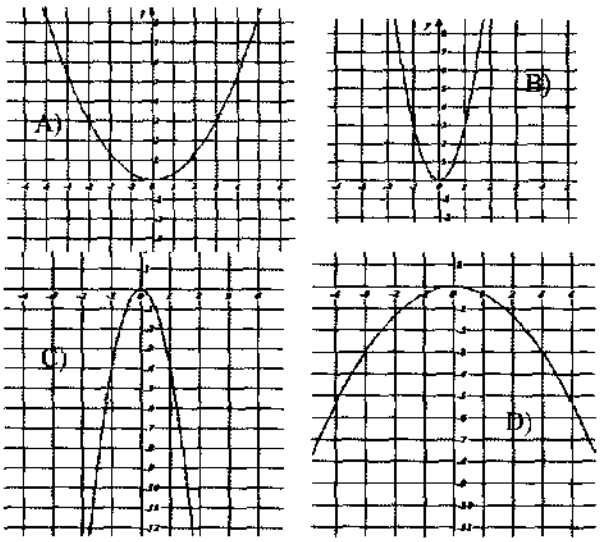




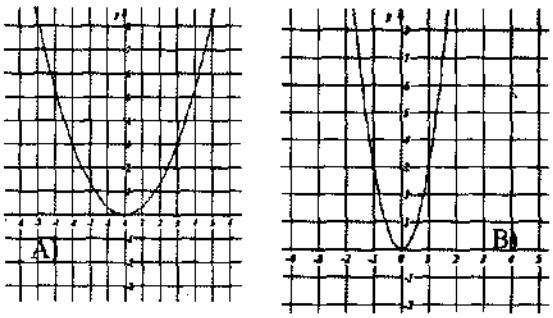
3894. $y=3x^2$ funksiya grafigini yasang.

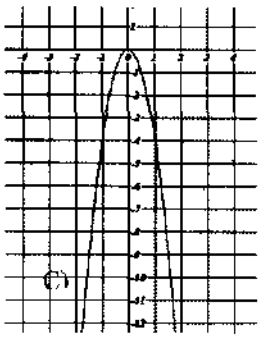


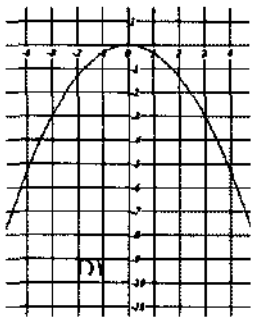
3895. $y=-\frac{1}{3}x^2$ funksiya grafigini yasang.



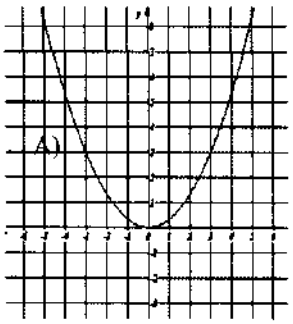
3896. $y=-4x^2$ funksiya grafigini yasang.

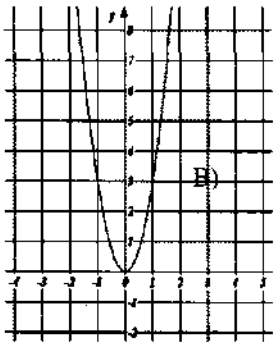


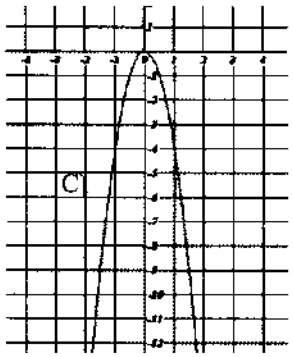


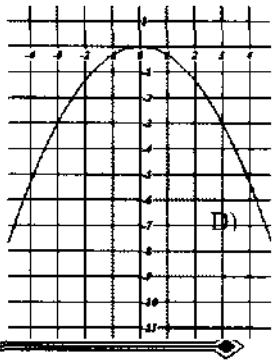


3897. $y=\frac{1}{3}x^2$ funksiya grafigini yasang.









✓ $y=-7(x-3)^2-2$ parabola uchining koordinatalarini toping.

A) (0; –4) B) (–2; 0) C) (2; 0) D) (3; –2)

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari

$y=a(x-x_0)^2+y_0 \Rightarrow (x_0;\ y_0)$ formula orqali topiladi.

$y=-7(x-3)^2-2 \Rightarrow (3;\ -2)$ **Javob: (D)**

3898. $y=(x+4)^2+3$ parabola uchining koordinatalarini toping.

A) $(4;3)$ B) $(2;-3)$ C) $(2;-5)$ D) $(-4;3)$

3899. $y=5(x+2)^2-7$ parabola uchining koordinatalarini toping.

A) (–2;– 7) B) (– 7; 2) C) (2; 7) D) (7; -1)

3900. $y=-4(x-1)^2+5$ parabola uchining koordinatalarini toping.

A) (3; 2) B) (2; 0) C) (1; 5) D) (0; –1)

3901. $y=(x-2)^2+2$ parabola uchining koordinatalarini toping.

A) (3; 2) B) (2; 2) C) (2; –2) D) (2; –1)

✓ $y=-(x+3)^2-4$ parabolaning uchi qaysi choraklarda joylashgan?

A) II B) IV C) III D) I

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari $y=a(x-x_0)^2+y_0 \Rightarrow (x_0;\ y_0)$ formula orqali topiladi. $y=-(x+3)^2-4 \Rightarrow (-3;\ -4)$ bu nuqta III-chorakda bo'ladi.

Javob: (C)

3902. $y=(x+5)^2+7$ parabolaning uchi qaysi choraklarda joylashgan?

A) II B) IV C) III D) I

3903. $y=(x-6)^2+8$ parabolaning uchi qaysi choraklarda joylashgan?

A) II B) IV C) III D) I

3904. $y=(x-1)^2-3$ parabolaning uchi qaysi choraklarda joylashgan?

A) II B) IV C) III D) I

3905. $y=-(x-2)^2$ parabolaning uchi qaysi choraklarda joylashgan?

A) II B) IV C) III D) hech birida

3906. $y=(x-7)^2+21$ parabola uchining koordinatalar yig'indisini toping.

A) 14 B) 28 C) 7 D) 21

3907. $y=x^2+7$ parabola uchining koordinatalar ko'paytmasini toping.

A) 2 B) 0 C) 7 D) 1

✓ b va c ning qanday qiymatlarida M (5; -2) nuqta $y=2x^2+bx+c$ parabolaning uchi bo'la oladi?

A) $b=20;\ c=48$ B) $b=-20;\ c=48$

C) $b=0;\ c=1$ D) $b=-2;\ c=4$

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari $(x_0;\ y_0) \Rightarrow y=a(x-x_0)^2+y_0$ formula orqali topiladi.

$(5;\ -2) \Rightarrow y=2(x-5)^2-2$

$y=2(x^2-10x+25)-2$ | $y=2x^2+bx+c$

$y=2x^2-20x+50-2$ | $b=-20;\ c=48$

$y=2x^2-20x+48$

Javob: (B)

3908. b va c ning qanday qiymatlarida M (-8; -23) nuqta $y=x^2+bx+c$ parabolaning uchi bo'la oladi?

A) $b=16;\ c=41$ B) $b=41;\ c=16$

C) $b=41;\ c=-16$ D) $b=4;\ c=-1$

3909. b va c ning qanday qiymatlarida M (7; -15) nuqta $y=x^2+bx+c$ parabolaning uchi bo'la oladi?

A) $b=14;\ c=34$ B) $b=34;\ c=14$

C) $b=34;\ c=-4$ D) $b=-14;\ c=34$

3910. b va c ning qanday qiymatlarida M (-1; 4) nuqta $y=-3x^2+bx+c$ parabolaning uchi bo'la oladi?

A) $b=-6;\ c=-1$ B) $b=-6;\ c=1$

C) $b=6;\ c=-1$ D) $b=6;\ c=1$

✓ Agar (-1; 6) nuqta orqali o'tishi va uning uchi $(1;\ 2)$ nuqta ekani ma'lum bo'lsa, parabolaning tenglamasini yozing.

A) $y=2x^2-4x+4$ B) $y=-2x^2-4x+4$

C) $y=x^2-4x+4$ D) $=2x^2-4x-4$

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari $(x_0;\ y_0)\Rightarrow y=a(x-x_0)^2+y_0$ formula orqali topiladi. Parabolaning uchi

$(1;\ 2)\Rightarrow y=a(x-1)^2+2$

hamda (-1; 6) nuqta orqali o'tishi ma'lum bo'lsa,

$(-1;\ 6)\Rightarrow 6=a(-1-1)^2+2$

bu ifodadan $a=2$ ni topib funksiyaga qo'yamiz.

$a=2\Rightarrow y=2(x-1)^2+2;$ *yoki* $y=2x^2-4x+4$

Javob: (A)

3911. Agar (1; 3) nuqta orqali o'tishi va uning uchi $(-1;\ 7)$ nuqta ekani ma'lum bo'lsa, parabolaning tenglamasini yozing?

A) $y=-x^2-2x+6$ B) $y=x^2-2x+6$

C) $y=x^2+2x+6$ D) $y=-x^2-2x-6$

3912. Agar (-2; 5) nuqta orqali o'tishi va uning uchi $(-1;\ 2)$ nuqta ekani ma'lum bo'lsa, parabolaning tenglamasini yozing?

A) $y=-3x^2+6x+5$ B) $y=3x^2-6x-5$

C) $y=3x^2+6x+5$ D) $y=3x^2+6x+3$

3913. Agar (3; -2) nuqta orqali o'tishi va uning uchi $(2;\ -1)$ nuqta ekani ma'lum bo'lsa, parabolaning tenglamasini yozing?

A) $y=-3x^2+4x-5$ B) $y=-x^2-6x-5$

C) $y=-x^2+4x-5$ D) $y=-x^2+6x+3$

✓ $x^2-16x-32$ parabola uchining koordinatalari yig'indisini toping.

A) 88 B) 768 C) -768 D) -88

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari $(x_0;\ y_0)\Rightarrow x_0=-\frac{b}{2a};\ y_0=-\frac{b^2-4ac}{4a}$ formula orqali topiladi.

$y=x^2-16x-32\ \Big|\ x_0=-\frac{-16}{2\cdot1}=8;\ y_0=-\frac{(-16)^2-4\cdot1\cdot(-32)}{4\cdot1}=-96$

$(x_0;\ y_0)\Rightarrow\ (8;-96)\Rightarrow 8+(-96)=-88$ **Javob: (D)**

3914. $x^2+14x-54$ parabola uchining koordinatalari yig'indisini toping.

A) -110 B) 110 C) 721 D) -721

3915. $2x^2+4x-64$ parabola uchining koordinatalari ko'paytmasini toping.

A) -67 B) 66 C) 65 D) -66

3916. $x^2-12x-13$ parabola uchining ordinatasini toping.

A) -6 B) 6 C) 43 D) -49

3917. $y=-x^2+2x$ parabola uchining abssissasini toping.

A) -2 B) 0 C) 1 D) -1

3918. $y=-5x^2+4x+1$ parabola uchining ordinatasini abssissasiga nisbatini toping.

A) -2,5 B) 0,5 C) 4,5 D) -4,5

✓ $y=x^2-7x+12$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) (1;12), (3; 0), (4; 0) B) (0;12), (3; 0), (4; 0)

C) (0;12), (0; 3), (4; 0) D) (0;12), (3; 0), (0; 4)

Yechilishi: $y=ax^2+bx+c$ parabola Oy o'qini ($x=0$ *ni qo'yib hisoblang*) $(0;\ c)$ nuqtada kesib o'tadi.

$y=x^2-7x+12$ parabola Oy o'qini

$(x=0\Rightarrow y=0^2-7\cdot0+12=12)$ $(0;\ 12)$ nuqtada kesib o'tadi.

$y=ax^2+bx+c$ parabola Ox o'qini

($y=0$ *ni qo'yib hisoblang*) $(x_1;\ 0),(x_2;\ 0)$ nuqtada kesib o'tadi.

$y=x^2-7x+12$ parabola Ox o'qini

$(y=0\Rightarrow x^2-7x+12=0)$ $(3;\ 0),(4;\ 0)$ nuqtada kesib o'tadi. **Javob: (B)**

3919. $y=6x^2-5x+1$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) (0;1/2), (1/3; 0), (0; 1) B) (1/3; 0), (1/2; 0), (0; 1)
C) (0;−1/2), (1; 0), (0; 1/3) D) (0;1), (1/3; 0), (0; /4)

3920. $-x^2+6x+7$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) (0;1), (−1; 0), (0;−7) B) (0;7), (−1; 0), (7; 0)
C) (0;12), (3; 0), (0; 4) D) (0;−7), (3; 0), (0; 7)

3921. $y=-x^2+2x$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) (2; 0), (0; 0) B) (0;2), (0; 0)
C) (0;12), (3; 0) D) (0;2), (0; 4)

3922. $y=3x^2-7x+12$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) kesishmaydi B) (0; 12), (3; 0)
C) (0; 12) D) (0; 2), (3; 0), (0; 12)

3923. $y=-x^2-x-2$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) kesishmaydi B) (0; 2), (3; 0)
C) (0; 2) D) (0; −2)

3924. $y=-x^2-4x-5$ parabolaning koordinatalar o'qlari bilan kesishish nuqtalarining koordinatalarini toping.

A) (−1; 2) B) (0; 5) C) (1;−2) D) (0; −5)

✓ $y=x^2-4x+3$ funksiyaning grafigini yasang.

Yechilishi: Parabolaning uchi

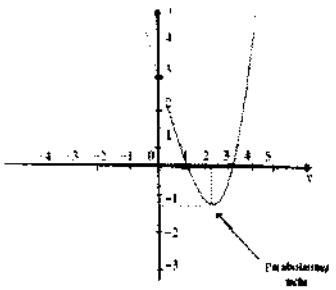
$$y=x^2-4x+3$$

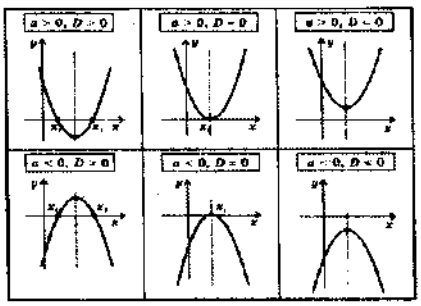
$$x_0=-\frac{-4}{2\cdot 1}=2; \qquad y_0=-\frac{(-4)^2-4\cdot 1\cdot 3}{4\cdot 1}=-1$$

$$(x_0;\ y_0)\Rightarrow\ (2;-1)$$

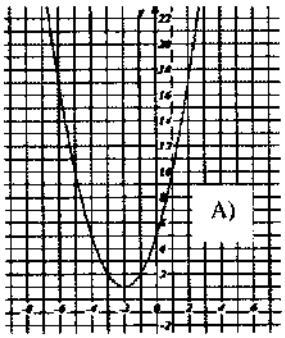
$y=x^2-4x+3$ parabola Oy o'qini $\left(x=0\Rightarrow y=0^2-4\cdot 0+3=3\right)$ (0; 3) nuqtada kesib o'tadi.

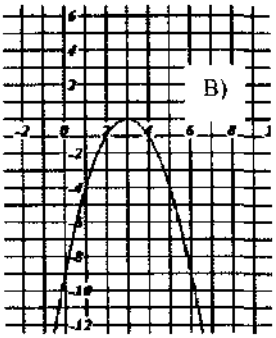
$y=x^2-4x+3$ parabola Ox o'qini $\left(y=0\Rightarrow x^2-4x+3=0\right)$ (1; 0), (3; 0) nuqtada kesib o'tadi.

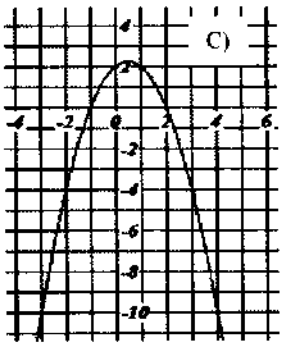


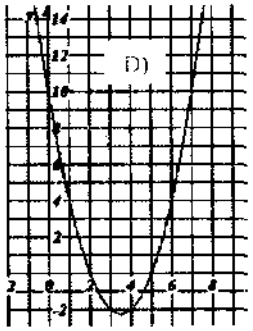


3925. $y=x^2-7x+10$ funksiyaning grafigini yasang.

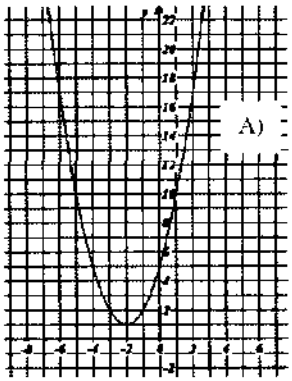


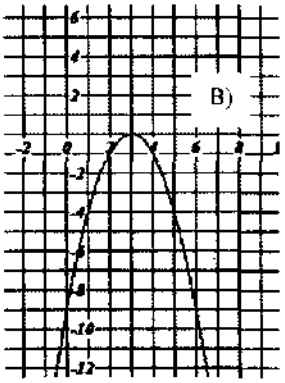


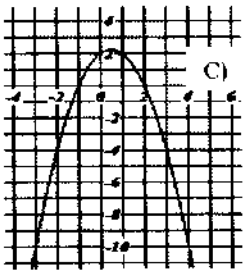


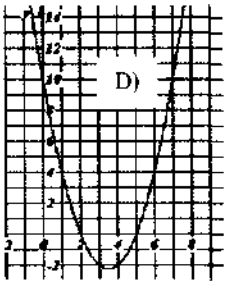


3926. $y=x^2+4x+5$ funksiyaning grafigini yasang.

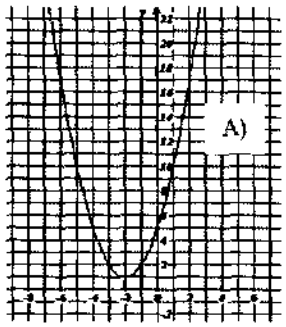


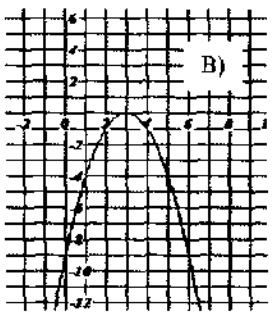


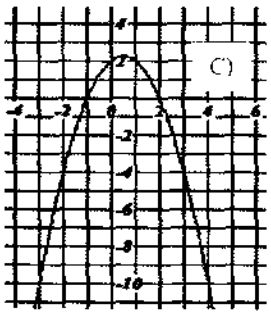


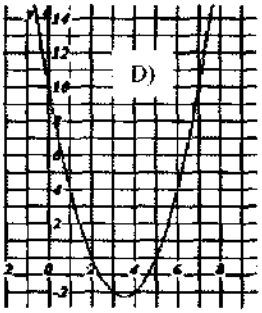


3927. $y=-x^2+x+2$ funksiyaning grafigini yasang.

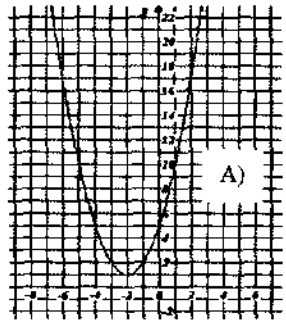


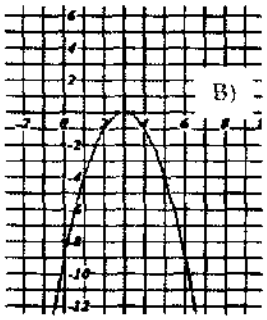


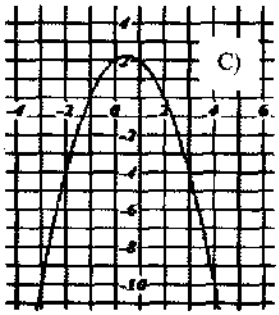


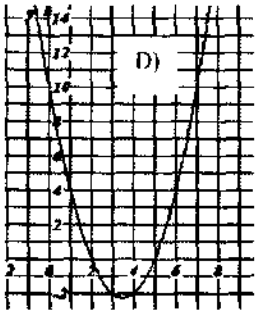


3928. $y=-x^2+6x-9$ funksiyaning grafigini yasang.

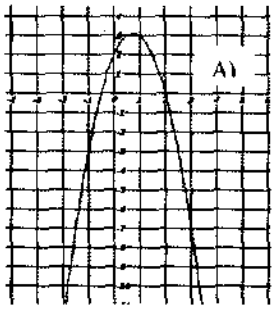


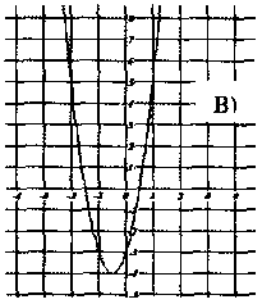


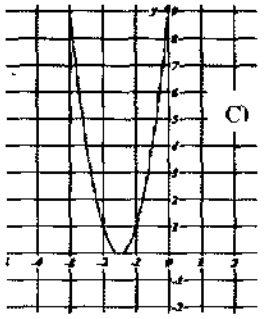


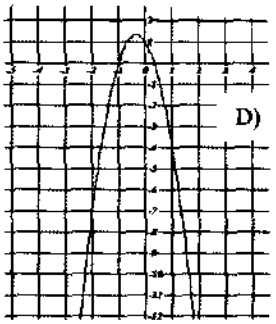


3929. $y=4x^2+4x-3$ funksiyaning grafigini yasang.

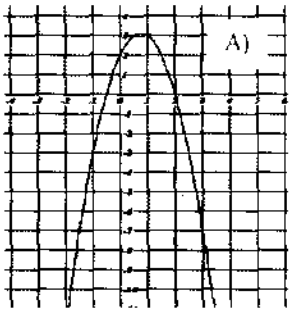


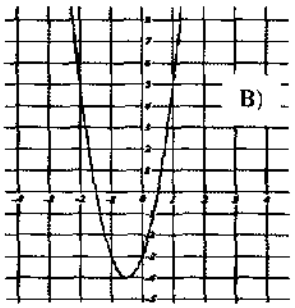


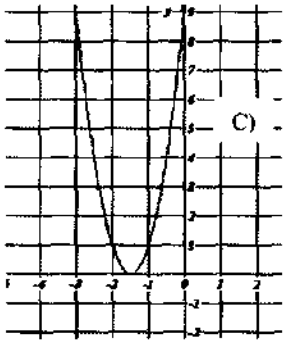


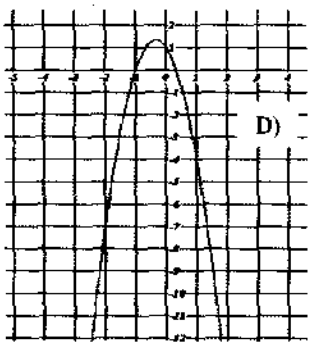


3930. $y=-2x^2+3x+2$ funksiyaning grafigini yasang.

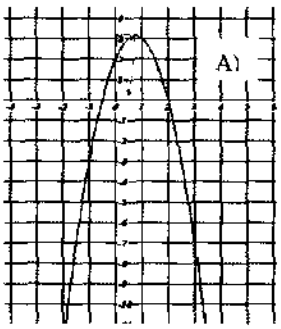


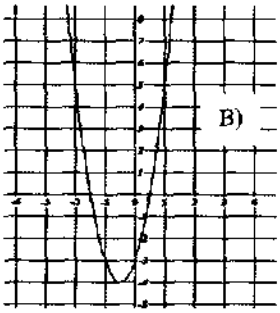


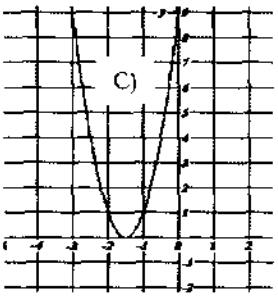


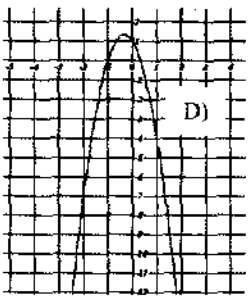


3931. $y=-3x^2-2x+1$ funksiyaning grafigini yasang.

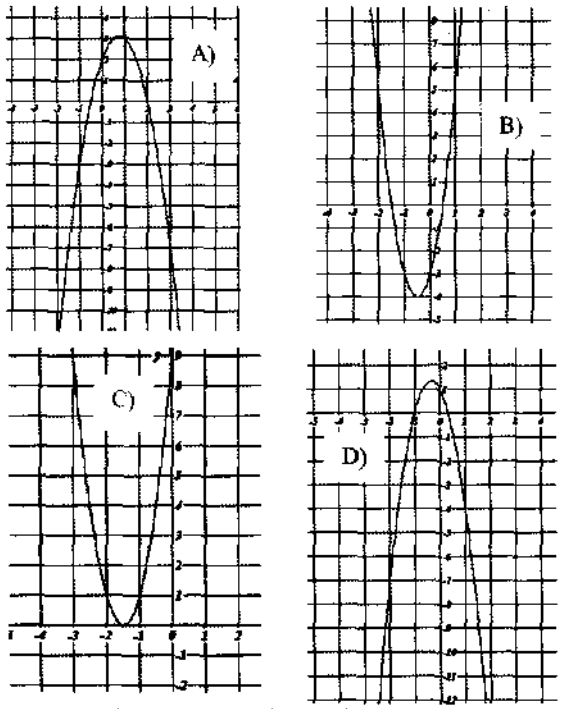








3932. $y=4x^2+12x+9$ funksiyaning grafigini yasang.



3933. funksiyaning grafigi qaysi choraklarda joylashgan ?
A) I, II B) III, IV
C) II,III D) barcha choraklarda

3934. $y=4x^2+2x-1$ funksiyaning $y=-3x^2+8x-8$ grafigi qaysi choraklarda joylashgan ?
A) I, II B) III, IV
C) II,III D) barcha choraklarda

3935. Agar $a<0$ va $b^2-4ac<0$ bo'lsa, $y=ax^2+bx+c$ funksiyaning grafigi qaysi choraklarda joylashgan ?
A) I, II B) III, IV
C) II,III D) barcha choraklarda

3936. Agar $a>0$ va $b^2-4ac<0$ bo'lsa, $y=ax^2+bx+c$ funksiyaning grafigi qaysi choraklarda joylashgan ?
A) I, II B) III, IV
C) II,III D) barcha choraklarda

✓ $y=x^2-4x+3$ funksiyaning simmetriya o'qi tenglamasini toping.
A) $y=2$ B) $x=2$ C) $x=4$ D) $x=-2$

Yechilishi: $y=ax^2+bx+c$ parabolaning simmetriya o'qi $x=4$ tenglamasi: $x_0=-\frac{b}{2\cdot a}$

$y=x^2-4x+3 \Rightarrow x_0=-\frac{-4}{2\cdot 1}=2$ demak, $\Rightarrow x=2$

Javob: (B)

3937. $y=x^2+x-12$ funksiyaning simmetriya o'qi tenglamasini toping.
A) $y=1$ B) $x=0,5$ C) $x=-0,5$ D) $x=-2$

3938. $y=2x^2+6x+2,5$ funksiyaning simmetriya o'qi tenglamasini toping.
A) $y=1$ B) $x=0,5$ C) $x=-0,5$ D) $x=-1,5$

3939. $y=3x^2-8x+5$ funksiyaning simmetriya o'qi tenglamasini toping.
A) $x=1,(3)$ B) $x=0,75$ C) $x=-0,5$ D) $x=-1,5$

3940. $y=-x^2+6x+8$ funksiyaning simmetriya o'qi tenglamasini toping.
A) $y=1$ B) $x=0,5$ C) $x=3$ D) $x=-3$

✓ $y=kx^2-2kx+3$ va $y=2-kx$ funksiyalarning grafiklari k ning nechta butun qiymatlarida kesishmaydi?
A) 1 B) 5 C) 3 D) 2

Yechilishi: kesishadi deyilganda y larni tenglab ishlar edik, kesishmaydi deganda ham y larni tenglab $D<0$ qilsak kesishmaydi:

$y=kx^2-2kx+3 \qquad y=2-kx$

$kx^2-2kx+3=2-kx$

$kx^2-kx+1=0$

$D=k^2-4k<0$

$k^2-4k<0 \qquad (0;4)$

$k(k-4)<0$

$k_1=0 \qquad k_2=4 \qquad 1;2;3 \Rightarrow 3ta$

Javob: (C)

3941. $y=(k-2)x^2-2kx-7$ va $y=kx^2+kx+2$ funksiyalarning grafiklari kesishmaydigan k ning barcha butun qiymatlari yig'indisini toping.
A) $-2\sqrt{2}$ B) $-2\sqrt{2}$ C) 0 D) 2

3942. a ning qanday qiymatlarida $y=(a-6)x^2-2$ va $y=2ax+1$ funksiyalarning grafiklari kesishmaydi?
A) $(-6;3)$ B) $(-2;0)$ C) $(0;1)$ D) $(-3;6)$

3943. $y=4x^2+4x+1$ va $y=2x+1$ funksiyalarning grafiklari kesishadigan x ning barcha butun qiymatlari yig'indisini toping.
A) -0,5 B) 1 C) 0,5 D) 1,5

3944. m ning qanday qiymatlarida $y=mx+2$ va $y=-5x^2$ funksiyalarning grafiklari $x=-1$ bo'lgan nuqtada kesishadi?
A) 3 B) 7 C) -3 D) -7

3945. Agar $f(x)=2-ax^2$ va $y=2b+x$ funksiyalarning qiymatlari $x=-1$ va $x=0$ da teng bo'lsa, a va b ning qiymatlarini toping.
A) $a=1, b=1$ B) $a=-1, b=1$
C) $a=1, b=-1$ D) $a=5, b=-1$

✓ k va l ning qanday qiymatlarida $y=kx+l$ va $y=\frac{k}{x}$ funksiyalarning grafiklari M (−6; −3) nuqtadan o'tadi?

A) −18; 105 B) 18; −111
C) 18; 111 D) 18; 105

Yechilishi: berilgan fumksiyalar M (−6; −3) nuqtadan o'tgani uchun M (x; y) nuqtani qo'yib sistema hosil qilamiz :

$$\begin{cases} y=kx+l \\ y=\frac{k}{x} \end{cases} \Rightarrow \begin{cases} -3=-6k+l \\ -3=\frac{k}{-6} \end{cases} \Leftrightarrow \begin{cases} -3=-6k+l \\ k=18 \end{cases}$$

$-3=-6\cdot 18+l$
$l=105$

Javob: (D)

3946. k ning qanday qiymatida $y=kx^3+2$ funksiyaning grafigi B (−2; −14) nuqtadan o'tadi?

A) 4 B) 2 C) −2 D) −3

3947. $y=ax^2+c$ funksiya grafigi $A(-1;-3)$ va $B(3;0)$ nuqtalardan o'tishi ma'lum bo'lsa, $\frac{c}{a}$ ning qiymati nechiga teng?

A) −9 B) 9 C) −10 D) −8

3948. A(1; 9) nuqta $y=-x^2+ax+4$ parabolaga tegishli. Parabola uchining ordinatasini toping.

A) 13 B) 6 C) 4 D) 2

3949. k ning qanday qiymatida $y=kx^2-2$ funksiyaning grafigi A (−1; 0) nuqtadan o'tadi?

A) 4 B) 2 C) −2 D) −3

3950. k va l ning qanday qiymatlarida $y=kx+l$ va $y=\frac{k}{x}$ funksiyalarning grafiklari M (−2; 1) nuqtadan o'tadi?

A) −2; −3 B) 2; −3 C) 2; 3 D) 2; 5

3951. t ning qanday qiymatlarida $f(x)=3x^2+2tx-(t-1)^2$ funksiya $f(-1)=-2$ shartni qanoatlantiradi ?

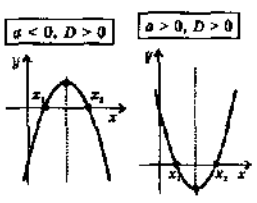
A) ±1 B) −3 C) 2 D) ± 2

✓ a ning qanday qiymatlarida $y=9x^2-12x+35a$ parabola abssissalar o'qi bilan ikkita umumiy nuqtaga ega bo'ladi?

A) $a=\frac{4}{35}$ B) $a<\frac{4}{35}$ C) $a>\frac{4}{35}$ D) $a<\frac{18}{35}$

Yechilishi: $y=ax^2+bx+c$ parabola abssissalar o'qi bilan ikkita umumiy nuqtaga ega bo'lishi uchun D>0 bo'lishi lozim :

$y=9x^2-12x+35a$
$D=12^2-4\cdot 9\cdot 35a>0$
$144-4\cdot 9\cdot 35a>0$
$-4\cdot 9\cdot 35a>-144$
$a<\frac{144}{36\cdot 35}$
$a<\frac{4}{35}$



Javob: (B)

3952. a ning qanday qiymatlarida $y=2x^2-5x+3a$ parabola abssissalar o'qi bilan ikkita umumiy nuqtaga ega bo'ladi?

A) $a<\frac{25}{24}$ B) $a<\frac{24}{25}$ C) $a>\frac{25}{24}$ D) $a=\frac{24}{25}$

3953. a ning qanday qiymatlarida $y=ax^2-3x+4$ parabola abssissalar o'qi bilan ikkita umumiy nuqtaga ega bo'ladi?

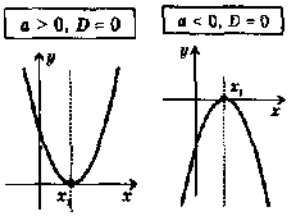
A) $a>\frac{9}{16}$ B) $a<\frac{16}{9}$ C) $a<\frac{9}{16}$ D) $a=\frac{9}{16}$

✓ a ning qanday qiymatlarida $y=x^2-2x+a$ parabola abssissalar o'qiga urinadi?

A) $a=-1$ B) $a>1$ C) $a>-1$ D) $a<-1$

Yechilishi: $y=ax^2+bx+c$ parabola abssissalar o'qiga urinish sharti D=0 bo'lishi lozim:

$y=x^2-2x+a$
$D=2^2-4\cdot 1\cdot a=0$
$4-4\cdot 1\cdot a=0$
$-4\cdot 1\cdot a=-4$
$a=1$



Javob: (A)

3954. a ning qanday qiymatlarida $y=-2x^2-5x+7a$ parabola abssissalar o'qiga urinadi?

A) $a<\frac{25}{56}$ B) $a=\frac{25}{56}$ C) $a>\frac{25}{24}$ D) $a=-\frac{25}{56}$

3955. a ning qanday qiymatlarida $y=-ax^2-4x-3$ parabola abssissalar o'qiga urinadi?

A) $a>\frac{4}{3}$ B) $a<\frac{16}{12}$ C) $a=\frac{4}{3}$ D) $a=-\frac{4}{3}$

3956. a ning qanday qiymatlarida $y=-x^2-6ax+3$ parabola Ox o'qi bilan 1 ta umumiy nuqtaga ega bo'ladi?

A) $a>3$ B) $\varnothing$ C) $a<2\sqrt{3}$ D) $a=2\sqrt{3}$

3957. $y=x^2+bx+4$ parabola b ning nechta butun qiymatlarida Ox o'qi bilan 1 ta umumiy nuqtaga ega bo'ladi?

A) 0 B) 1 C) 2 D) 3

✓ m ning qanday qiymatlarida $y=(m+4)x^2-2(m+2)x+1$ parabola abssissalar o'qidan pastda joylashgan bo'ladi?

A) $(-\frac{1}{4};1)$ B) $\varnothing$
C) $(-\infty;-4)\cup(-4;+\infty)$ D) $(-\infty;+\infty)$

Yechilishi: $y=ax^2+bx+c$ parabola abssissalar o'qidan pastda joylashish sharti $a<0$, D<0 bo'lishi lozim:

$y=(m+4)x^2-2(m+2)x+1$

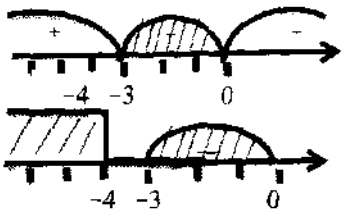
$$\begin{cases} a<0 \\ D<0 \end{cases} \Rightarrow \begin{cases} (m+4)<0 \\ 4(m+2)^2-4(m+4)<0 \;:4 \end{cases}$$

$$\begin{cases} m+4<0 \\ m^2+4m+4-m-4<0 \end{cases} \Rightarrow \begin{cases} m<-4 \\ m^2+3m<0 \end{cases}$$

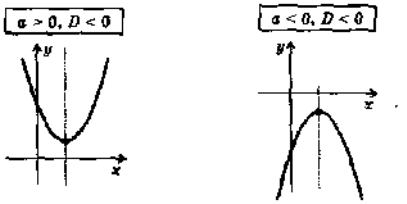
$m^2+3m<0$

$m(m+3)<0$

$m_1=0 \quad m_2=-3$



Javob: (B)



3958. m ning qanday qiymatlarida $y=(m+9)x^2-2(m+3)x+1$ parabola abssissalar o'qidan yuqorida joylashgan bo'ladi?

A) (0; 5) B) Ø C) (−5; 0) D) $(-\infty;+\infty)$

3959. m ning qanday qiymatlarida $y=-(m-8)x^2-2(m-2)x+1$ parabola abssissalar o'qidan pastda joylashgan bo'ladi?

A) (−1; 4) B) Ø C) (−5; 0) D) (−4; 1)

3960. m ning qanday qiymatlarida $y=(m+2)x^2-2(m+1)x+2$ parabola abssissalar o'qidan pastda joylashgan bo'ladi?

A) $(-\infty;+\infty)$ B) Ø C) $(\sqrt{3};2)$ D) $(-\sqrt{3};\sqrt{3})$

3961. m ning qanday qiymatlarida $y=(m+1)x^2-2(m-2)x+4$ parabola abssissalar o'qidan yuqorida joylashgan bo'ladi?

A) (0; 2) B) (−1; 8) C) (0; 8) D) Ø

✓ a ning nechta butun qiymatlarida $y=(x+4a)^2+a^2+10a+21$ parabola uchining abssissasi musbat, ordinatasi manfiy bo'ladi?

A) 1 B) 0 C) 3 D) 2

Yechilishi: $y=ax^2+bx+c$ parabolaning uchini koordinatalari $(x_0;\ y_0) \Rightarrow y=a(x-x_0)^2+y_0$ formula orqali topiladi.

$y=a(x-x_0)^2+y_0$

$\Downarrow$

$y=(x+4a)^2+a^2+10a+21$

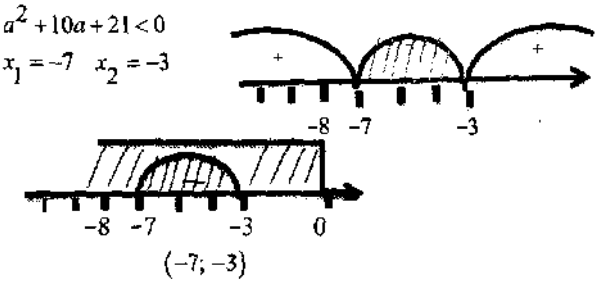
$x_0=-4a \quad y_0=a^2+10a+21$

parabola uchining abssissasi musbat, ordinatasi manfiy

$$\begin{cases} x_0>0 \\ y_0<0 \end{cases} \Rightarrow \begin{cases} -4a>0 \\ a^2+10a+21<0 \end{cases} \Rightarrow a<0$$

$a^2+10a+21<0$

$x_1=-7 \quad x_2=-3$



$(-7;-3)$

Javob: (C) $-6;-5;-4 \Rightarrow 3\ ta$

3962. a ning qanday qiymatlarida $y=(x-2a)^2+a^2-9a+14$ parabola uchining abssissasi musbat, ordinatasi manfiy bo'ladi?

A) (2;7) B) Ø C) (−7; 0) D) (−2;−7)

3963. a ning qanday qiymatlarida $y=(x+3a)^2+a^2-5a+6$ parabola uchining abssissasi manfiy, ordinatasi musbat bo'ladi?

A) (2;3) B) $(0;2)\cup(3;+\infty)$ C) (−2; 0) D) (−2;−3)

3964. a ning qanday qiymatlarida $y=(x-a)^2+a^2+8a+12$ parabola uchining abssissasi manfiy, ordinatasi manfiy bo'ladi?

A) (2;6) B) $(-8;-6)\cup(-2;+\infty)$ C) (−6;−2) D) (−2;−6)

✓ A (1; 1), B (0; 3) va C (2; 3) nuqtalardan o'tuvchi parabola qaysi funksiyaning grafigi hisoblanadi?

A) $y=2x^2-4x+3$ B) $y=2x^2+2x+3$

C) $y=2x^2-3x+2$ D) $y=2x^2-2x-3$

Yechilishi: A (1; 1), B (0; 3) va C (2; 3) nuqtalarni $y=ax^2+bx+c$ ga qo'yib sistemadan a,b,c larni topamiz:

$$\begin{cases} \text{A}(1;1), \\ \text{B}(0;3) \\ \text{C}(2;3) \end{cases} \Rightarrow \begin{cases} 1=a\cdot1^2+b\cdot1+c \\ 3=a\cdot0^2+b\cdot0+c \\ 3=a\cdot2^2+b\cdot2+c \end{cases} \Rightarrow \begin{cases} a+b+3=1 \\ c=3 \\ 4a+2b+3=3 \end{cases}$$

$$\begin{cases} a+b=-2\ (\cdot(-2)) \\ 4a+2b=0 \end{cases} \Rightarrow + \begin{cases} -2a-2b=4 \\ 4a+2b=0 \end{cases}$$

$2a=4$

$a=2 \quad b=-4$

$y=ax^2+bx+c$

$\Downarrow$

$y=2x^2-4x+3$

Javob: (A)

3965. A (0; 0), B (2; 0) va C (3; 3) nuqtalardan o'tuvchi parabola qaysi funksiyaning grafigi hisoblanadi?

A) $y=x^2-2x+2$ B) $y=x^2-2x$

C) $y=x^2+2x$ D) $y=2x^2+1x$

3966. A (1; 0), B (2; 0) va C (0; 1/2) nuqtalardan o'tuvchi parabola qaysi funksiyaning grafigi hisoblanadi?

A) $y=\frac{1}{2}x^2-\frac{3}{4}x+\frac{1}{2}$ B) $y=\frac{1}{4}x^2-\frac{3}{4}x+\frac{1}{2}$

C) $y=x^2-\frac{3}{2}x+\frac{1}{2}$ D) $y=x^2-3x+2$

3967. A (−1; 0), B (3; 0) va C (0; −1) nuqtalardan o'tuvchi parabola qaysi funksiyaning grafigi hisoblanadi?

A) $y=-x^2+2x+3$ B) $y=-\frac{x^2}{3}+2x+1$

C) $y=-\frac{x^2}{3}+\frac{2}{3}x+1$ D) $y=\frac{x^2}{3}-\frac{2}{3}x-1$

FUNKSIYANING ANIQLANISH SOHASI

✓ $y=2x^2-4x+3$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;1)$ B) $(2;+\infty)$

C) $(-\infty;0)\cup(0;+\infty)$ D) $(-\infty;+\infty)$

Yechilishi:

funksiyaning aniqlanish sohasi $D(y)$ kabi belgilanadi,

funksiya ma'noga ega bo'ladigan x ning barcha qiymatlar to'plami funksiyaning aniqlanish sohasi deyiladi.

funksiyada ildiz qatnashmasa, maxrajda noma'lum qatnashmasa, ya'ni:

$y=ax^2+bx+c,\ y=kx+b,\ y=ax^3+bx^2+c,\ \dots,\ y=f(x)$ ko'rinishda bo'lsa, funksiyaning aniqlanish sohasi: $D(y)=(-\infty;+\infty)$

demak, $y=2x^2-4x+3$ $D(y)=(-\infty;+\infty)$ **Javob: (D)**

3968. $y=4x^2-5x+1$ funksiyaning aniqlanish sohasini toping.

A) $(0;+\infty)$ B) istalgan son

C) $(-\infty;1)$ D) $(-\infty;-1)\cup(-1;+\infty)$

3969. $y=-x+3$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;1)$ B) $(0;+\infty)$ C) $(-\infty;+\infty)$ D) $\varnothing$

3970. $y=x^2+3$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;1)$ B) $(0;+\infty)$ C) $(-\infty;1)$ D) $x\in R$

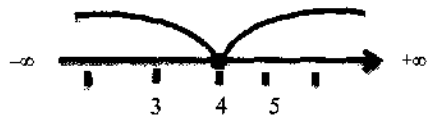
✓ $y=\frac{3x-7}{x-4}$ funksiyaning aniqlanish sohasini toping.

A) $x\neq -4$ B) $x=3$ C) $x\neq 4$ D) $x=4$

Yechilishi:

funksiyada maxrajda noma'lum qatnashsa, "0" ga teng emas ya'ni: $y=\frac{1}{f(x)}\ \Rightarrow\ D(y):\ f(x)\neq 0$

demak, $y=\frac{3x-7}{x-4}$ $D(y):\begin{cases}x-4\neq 0\\ x\neq 4\end{cases}$



$y=\frac{3x-7}{x-4}$ $D(y):\begin{cases}x-4\neq 0\\ x\neq 4\end{cases}$ $yoki$ $D(y):(-\infty;4)\cup(4;+\infty)$ surati ishlanmaydi, faqqat mahrajga e'tibor bering.

Javob: (C)

3971. $y=\frac{x-2}{5x+35}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-7]\cup[-7;+\infty)$ B) $\varnothing$

C) $(-\infty;5)$ D) $(-\infty;-7)\cup(-7;+\infty)$

3972. $y=\frac{x}{4x+19}$ funksiyaning aniqlanish sohasini toping.

A) $x\neq -\frac{19}{4}$ B) $x\neq \frac{19}{4}$ C) $x=-\frac{19}{4}$ D)$\varnothing$

3973. $y=(\sqrt{3}x+3)^{-1}+8$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;\sqrt{3})$ B) $(\sqrt{3};+\infty)$

C) $(-\infty;-\sqrt{3})\cup(-\sqrt{3};+\infty)$ D) $x\in R$

✓ $y=\frac{x-5}{14x-11}+\frac{166x}{x+21}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-21)\cup\left(-21;\frac{11}{14}\right)\cup\left(\frac{11}{14};+\infty\right)$

B) $(-\infty;-21)\cup\left(\frac{11}{14};+\infty\right)$

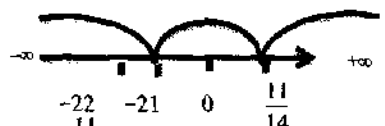
C) $(-\infty;-21)$ D) $\left(-21;\frac{11}{14}\right)\cup\left(\frac{11}{14};+\infty\right)$

Yechilishi:

funksiyada maxrajda noma'lum qatnashsa, "0" ga teng emas ya'ni: $y=\frac{1}{f(x)}\ \Rightarrow\ D(y):\ f(x)\neq 0$ demak,

$y=\frac{x-5}{14x-11}+\frac{166x}{x+21}$ $D(y):\begin{cases}14x-11\neq 0\\ x+21\neq 0\end{cases}\Leftrightarrow\begin{cases}x\neq\frac{11}{14}\\ x\neq -21\end{cases}$

surati ishlanmaydi, faqqat mahrajga e'tibor bering.



$D(y):\ x\neq\frac{11}{14}\ va\ x\neq -21$

$yoki$ $D(y):(-\infty;-21)\cup\left(-21;\frac{11}{14}\right)\cup\left(\frac{11}{14};+\infty\right)$

Javob: (C)

3974. $y=\frac{3}{5-x^2}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-\sqrt{5})\cup(\sqrt{5};+\infty)$

B) $(-\infty;-\sqrt{5})\cup(-\sqrt{5};\sqrt{5})\cup(\sqrt{5};+\infty)$

C) $(-\infty;\sqrt{5})\cup(\sqrt{5};+\infty)$

D) $(-\infty;-5)\cup(-5;5)\cup(5;+\infty)$

3975. $y=\frac{1}{x+41}-\frac{7}{1+4x}+\frac{1-x}{x-9}$ funksiyaning aniqlanish sohasini toping.

A) $x\neq -41;\ x\neq -0,25$ B) $x\neq -41;\ x\neq -0,25;\ x\neq -9$

C) $x\neq -41;\ x\neq 0,25;\ x\neq 9$ D) $x\neq -41;\ x\neq -0,25;\ x\neq 9$

3976. $y=\frac{1}{x^2-1}-\frac{7}{x}+6$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-1)\cup(-1;0)\cup(0;1)\cup(1;+\infty)$

B) $(-\infty;-1)\cup(-1;1)\cup(1;+\infty)$

C) $(-\infty;-1)\cup(0;1)\cup(1;+\infty)$

D) $(-\infty;-1)\cup(-1;0)\cup(0;+\infty)$

3977. $y=\frac{2x}{x^2-2x-3}$ funksiyaning aniqlanish sohasini toping.

A) $x\neq -3,\ x\neq 1$ B) $x\neq -1$ C) $x\neq 3$ D) $x\neq 3, x\neq -1$

3978. $y=\frac{17(x-4)}{4-x^{\frac{1}{3}}}$ funksiyaning aniqlanish sohasini toping.

A) $(-64;64)$ B) $(64;+\infty)$

C) $(-\infty;64)\cup(64;+\infty)$ D) $(-\infty;-64)\cup(-64;+\infty)$

3979. $y=\frac{1}{x^2+1}$ funksiyaning aniqlanish sohasini toping.

A) $\varnothing$ B) $x\neq -1$ C) $x\neq 1$ D) $x\in R$

✓ $y=\sqrt{x^2-4}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-2)$ B) $(-\infty;-2]\cup[2;+\infty)$

C) $(-\infty;-2)\cup[2;+\infty)$ D) $(-2;2)$

Yechilishi:

funksiyada juft ildiz qatnashsa, "≥ 0" qilamiz ya'ni:

$y=\sqrt[2n]{f(x)} \Rightarrow D(y)\colon f(x)\geq 0$ demak,

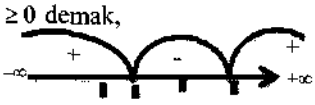
$y=\sqrt{x^2-4}$ $D(y)\colon x^2-4\geq 0$

$x^2-4\geq 0$

$x^2-4=0$

$x^2=4$

$x_{12}=\pm 2$



$D(y)\colon (-\infty;-2]\cup[2;+\infty)$

yoki

$x\leq -2,\ x\geq 2$

Javob: (B)

3980. $f(x)=\sqrt{x-1}$ funksiyaning aniqlanish sohasini toping.

A) $[1;+\infty)$ B) $(-\infty;1)\cup(1;+\infty)$ C) $(-\infty;1)$ D) $[-1;1]$

3981. $y=\sqrt{121-x^2}$ funksiyaning aniqlanish sohasini toping.

A) $[-11;11]$ B) $[11;+\infty)$

C) $(-\infty;-11]\cup[11;+\infty)$ D) $[-11;+\infty)$

3982. $y=\sqrt{-x^2+3x-2}$ funksiyaning aniqlanish sohasini toping.

A) $1<x\leq 2$ B) $x\leq -1,\ x\geq 2$

C) $x\geq 2,\ x\leq 1$ D) $1\leq x\leq 2$

3983. $g(x)=\sqrt[4]{(x-1)(x-2)(x-3)}$ funksiyaning aniqlanish sohasini toping.

A) $[1;3]\cup[3;+\infty)$ B) $[1;2]\cup[3;+\infty)$

C) $[1;2]\cup(3;+\infty)$ D) $(-\infty;1)\cup(1;2)$

3984. $\varphi(x)=\sqrt[8]{(x+4)(49-x^2)}$ funksiyaning aniqlanish sohasini toping.

A) $-7\leq x\leq -4,\ x\geq 7$ B) $-7\leq x,\ x\geq -4$

C) $x\leq -7,\ x\geq 7$ D) $x\leq -7,\ -4\leq x\leq 7$

✓ $y=\sqrt[4]{-x}+\sqrt{x+2}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-2)$ B) $(-\infty;-2]\cup[0;+\infty)$

C) $(-\infty;-2)\cup[2;+\infty)$ D) $[-2;0]$

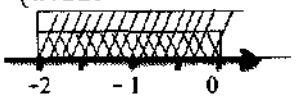
Yechilishi:

funksiyada juft ildiz qatnashsa, "≥ 0" qilamiz ya'ni:

$y=\sqrt[2n]{f(x)} \Rightarrow D(y)\colon f(x)\geq 0$

demak, $y=\sqrt[4]{-x}+\sqrt{x+2}$ $D(y)\colon \begin{cases}-x\geq 0\\ x+2\geq 0\end{cases}$

$\begin{cases}-x\geq 0\\ x+2\geq 0\end{cases}\Leftrightarrow\begin{cases}x\leq 0\\ x\geq -2\end{cases}$



$D(y)\colon [-2;0]$

Javob: (D)

3985. $f(x)=\sqrt[6]{x}+\sqrt{x+1}$ funksiyaning aniqlanish sohasini toping.

A) $x\geq 0$ B) $x\geq -1$ C) $x\leq 0$ D) $-1\leq x\leq 0$

3986. $y=\sqrt[8]{x+2}-\sqrt{81-x^2}$ funksiyaning aniqlanish sohasini toping.

A) $[-9;9]$ B) $[9;+\infty)$ C) $[-2;9]$ D) $[-9;+\infty)$

3987. $y=\sqrt[8]{x^2-2}-\sqrt{-x^2+8x-7}$ funksiyaning aniqlanish sohasini toping.

A) $-\sqrt{2}\leq x\leq -7,\ \sqrt{2}\leq x\leq 7$ B) $x\leq 7$

C) $\sqrt{2}\leq x\leq 7$ D) $\sqrt{2}\leq x,\ x\geq 7$

✓ $y=\sqrt[3]{3x^2-2x+5}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;+\infty)$ B) $(-\infty;-2]\cup[0;+\infty)$

C) $(-\infty;-2)\cup[2;+\infty)$ D) $[-2;0]$

Yechilishi: funksiyada toq ildiz qatnashsa ya'ni:

$y=\sqrt[2n+1]{f(x)} \Rightarrow D(y)\colon (-\infty;+\infty)$

demak, $y=\sqrt[3]{3x^2-2x+5}$ $D(y)\colon (-\infty;+\infty)$

Javob: (A)

3988. $f(x)=\sqrt[5]{x-1}$ funksiyaning aniqlanish sohasini toping.

A) $x\in R$ B) $x\neq 1$

C) $x\neq -1$ D) $-1\le x\le 1$

3989. $y=\sqrt[7]{x^2-5x-1}$ funksiyaning aniqlanish sohasini toping.

A) $[-9;9]$ B) $[9;+\infty)$ C) $(-\infty;+\infty)$ D) $[-9;+\infty)$

3990. $y=\sqrt[3]{x^6-2}$ funksiyaning aniqlanish sohasini toping.

A) $-\sqrt{2}\le x\le -7,\ \sqrt{2}\le x\le 7$ B) $x\le 7$

C) istalgan son D) $\sqrt{2}\le x,\ x\ge 7$

✓ $y=\sqrt[4]{\dfrac{3x+2}{4x-5}}$ funksiyaning aniqlanish sohasini toping.

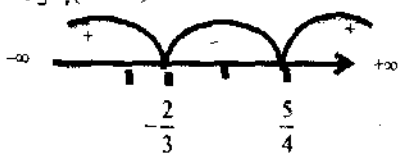
A) $x\le -\dfrac{2}{3},\ x\ge \dfrac{5}{4}$ B) $-\dfrac{2}{3}\le x\le \dfrac{5}{4}$

C) $x\le -\dfrac{2}{3},\ x>\dfrac{5}{4}$ D) $x\le -\dfrac{2}{3}$

Yechilishi: funksiyada juft ildiz qatnashsa, "≥ 0" qilamiz ya'ni: $y=\sqrt[2n]{f(x)} \Rightarrow D(y)\colon f(x)\ge 0$

demak, $y=\sqrt[4]{\dfrac{3x+2}{4x-5}}$ $D(y)\colon \dfrac{3x+2}{4x-5}\ge 0$ **Javob: (C)**

$D(y)\colon \left(-\infty;-\dfrac{2}{3}\right]\cup\left(\dfrac{5}{4};+\infty\right)$



3991. $f(x)=\sqrt{\dfrac{x-2}{x+3}}$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty;-3]\cup[2;+\infty)$ B) $(-3;2]$

C) $[-3;2]$ D) $(-\infty;-3)\cup[2;+\infty)$

3992. $y=\sqrt[8]{\dfrac{4x+8}{3-x}}$ funksiyaning aniqlanish sohasini toping.

A) $[-2;3)$ B) $[-2;+\infty)$

C) $[-2;3]$ D) $(-\infty;-2]\cup(3;+\infty)$

3993. $y=\sqrt{\dfrac{1}{x+7}}$ funksiyaning aniqlanish sohasini toping.

A) $x\ge -7$ B) $x>-7$ C) $x\le -7$ D) $x\neq -7$

3994. $y=\sqrt{\dfrac{x^2-4}{x+1}}$ funksiyaning aniqlanish sohasini toping.

A) $[-2;-1)\cup[2;+\infty)$ B) $[-2;2]$

C) $(-\infty;-2]\cup[2;+\infty)$ D) $(-2;-1)$

3995. $y=\sqrt{\dfrac{-x^2+13x-22}{x-2}}$ funksiyaning aniqlanish sohasini toping.

A) $x<2,\ 2\le x\le 11$ B) $2<x\le 11$

C) $x<2,\ 2<x\le 11$ D) $x<2$

✓ $y=\dfrac{1}{x-1}+\sqrt[4]{x^2-1}+\dfrac{1}{\sqrt{25-x^2}}$ funksiyaning aniqlanish sohasida nechta butun son bor?

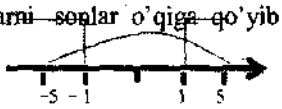
A) 4 B) 9 C) 8 D) 10

Yechilishi: demak,

$$y=\frac{1}{x-1}+\sqrt[4]{x^2-1}+\frac{1}{\sqrt{25-x^2}} \quad D(y)\colon \begin{cases} x-1\neq 0 \Rightarrow x\neq 1 \\ x^2-1\ge 0 \\ 25-x^2>0 \end{cases}$$

$x^2-1\ge 0$ ni intervalga qo'yib $(-\infty;1]\cup[1;+\infty)$ ga ega bo'lamiz.

$25-x^2>0$ ni intervalga qo'yib $(-5;5)$ ga ega bo'lamiz. endi ularni sonlar o'qiga qo'yib umumiy javobni olamiz



Javob: (C)

$[-5;-1]\cup[1;5]$

$\times,-4,-3,-2,-1,0,\times,2,3,4,\times$ $x\neq 1$

8 *ta* $D(y)\colon [-5;-1]\cup(1;5]$

3996. $y=\dfrac{1}{x^2-4}+\dfrac{1}{\sqrt[4]{9-x^2}}$ funksiyaning aniqlanish sohasida nechta butun son bor?

A) 4 B) 5 C) 3 D) 2

3997. $y=\dfrac{1}{x^2-9}+\sqrt{x-3}+\dfrac{1}{\sqrt{16-x^2}}$ funksiyaning aniqlanish sohasida nechta butun son bor?

A) 0 B) 3 C) 2 D) 1

3998. $y=\dfrac{1}{x-4}+\sqrt[4]{x^2-16}+\dfrac{1}{\sqrt{49-x^2}}$ funksiyaning aniqlanish sohasidagi butun sonlar yig'indisini toping.

A) 4 B) -9 C) 0 D) -4

✓ $y=\sqrt[4]{|x|-4}+\frac{\sqrt{x+13}}{\sqrt{10-2x}}$ funksiyaning aniqlanish sohasida nechta butun son bor?

A) 11 B) 9 C) 8 D) 10

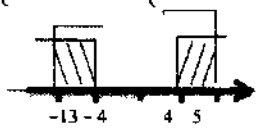
Yechilishi: demak,

$$y=\sqrt[4]{|x|-4}+\frac{\sqrt{x+13}}{\sqrt{10-2x}} \quad D(y):\begin{cases}|x|-4\ge 0\\ x+13\ge 0\\ 10-2x>0\end{cases}\Rightarrow\begin{cases}|x|\ge 4\\ x\ge -13\\ x<5\end{cases}$$

$|x|\ge 4$

$x\ge 4 \quad x\le -4$

$\begin{cases}x\ge 4,\ x\le -4\\ x\ge -13\\ x<5\end{cases}$



Javob: (A)

$-13,-12,-11,-10,-9,$
$-8,-7,-6,-5-4,\ 4\quad 11$ *ta* $\qquad [-13;-4]\cup[4;5)$

3999. $y=\sqrt[6]{(x-1)^2-16}$ funksiyaning aniqlanish sohasiga kirmaydigan nechta butun son bor?

A) 8 B) 5 C) 7 D) 9

4000. $y=\frac{\sqrt{x-2}+\sqrt[4]{x^2-25}}{\sqrt[4]{x-18}}$ funksiyaning aniqlanish sohasini toping.

A) $[5;+\infty)$ B) $[5;18)\cup(18;+\infty)$

C) $(18;+\infty)$ D) $\varnothing$

4001. $f(x)=\frac{\sqrt[6]{x+12}+\sqrt{x^2-36}}{\sqrt{x-18}-\sqrt{x}}$ funksiyaning aniqlanish sohasiga tegishli eng kichik butun sonni toping.

A) 0 B) 19 C) 18 D) 6

4002. $g(x)=\frac{\sqrt{x+2}+\sqrt[8]{x+5}}{\sqrt{x+18}-\sqrt{5-x}}$ funksiyaning aniqlanish sohasidagi butun sonlar yig'indisini toping.

A) 12 B) −9 C) 14 D) −4

4003. $\varphi(x)=\frac{\sqrt{|x|-8}+\sqrt[8]{|x|-11}}{x^2-81}$ funksiyaning aniqlanish sohasidagi butun musbat sonlar yig'indisini toping.

A) 38 B) 19 C) 18 D) 29

JUFT va TOQ FUNKSIYALAR

✓ Quyidagi funksiyalardan qaysi biri juft?

A) $y=x^9-x$ B) $y=x^2-x$

C) $y=x^2-\frac{1}{x^4}+3$ D) $y=x^3+1$

Yechilishi:

Agar $y(x)$ funksiyaga $y(-x)=y(x)$ bo'lsa, juft funksiyadir.

Agar $y(x)$ funksiyaga $y(-x)=-y(x)$ bo'lsa, toq funksiyadir.

ya'ni $-x$ ni qo'yganda berilishi o'zgarmasa:

$$y=x^2-\frac{1}{x^4}+3\Rightarrow y(-x)=(-x)^2-\frac{1}{(-x)^4}+3=x^2-\frac{1}{x^4}+3$$

demak, $y(-x)=y(x)$ Toq funksiyaga bir misol:

$$y=x^9-x \quad\Rightarrow y(-x)=(-x)^9-(-x)=-\left(x^9-x\right)$$

demak, $y(-x)=-y(x)$ $y(-x)=-y(x)$

juft ham, toq ham emas funksiyaga bir misol:

$$y=x^3+1 \quad\Rightarrow y(-x)=(-x)^3+1=-x^3+1=-(x^3-1)$$

demak, $y(-x)\ne y(x)$ $y(-x)\ne -y(x)$

Javob: (C)

4004. Quyidagi funksiyalardan qaysi biri juft?

A) $g(x)=\frac{5x^3}{(x-3)^2}$ B) $g(x)=\frac{x(x-2)(x-4)}{x^2-6x+8}$

C) $g(x)=\frac{9x^2}{x^2-25}$ D) $g(x)=\frac{x^4-2x^2}{3x}$

4005. Quyidagi funksiyalardan qaysi biri toq?

A) $f(x)=\frac{5x^3}{(x-3)^2}$ B) $f(x)=\frac{x(x-2)(x-4)}{x^2-6x+8}$

C) $f(x)=\frac{9x^2}{x^2-25}$ D) $f(x)=\frac{x^4-2x^2}{3x}$

4006. Quyidagi funksiyalardan qaysi biri juft?

A) $y=\frac{(x-8)^2}{3}$ B) $y=2x|x|+5$

C) $y=|x-3|+5x^2$ D) $y=\frac{x^4+x^2+1}{5}$

4007. Quyidagi funksiyalardan qaysi biri toq?

A) $y=\sqrt[3]{x}$ B) $y=2|x|+2018$

C) $y=|x-3|+x^3$ D) $y=x^4+x^2+1$

4008. Quyidagi funksiyalardan qaysi biri juft ham, toq ham emas?

A) $y=(x^6+x^8+1)|x|$ B) $y=2|x|+x^3$

C) $y=x^{-21}$ D) $y=\frac{1}{x^4+x^2+1}$

✓ Quyidagi tasdiqlardan qaysi biri to'g'ri?

1) Juft funksiyaning grafigi Oy o'qiga nisbatan simmetrik.
2) Toq funksiyaning grafigi Oy o'qiga nisbatan simmetrik.
3) Ikkita juft funksiya yig'indisi juft bo'ladi.
4) *Juft* · *Juft* = *Juft*;

A) 1; 2 B) 2; 3 C) 2; 3; 4 D) 1; 4

Yechilishi: Juft va toq funksiyalarga nisbatan quyidagi xossalarni eslab qoling:

➢ Toq funksiyaning grafigi koordinatalar boshiga nisbatan simmetrik.

➢ Juft funksiyaning grafigi Oy o'qiga nisbatan simmetrik.

a) $Juft\pm Juft=Juft$; *b)* $Toq\pm Toq=Toq$;

v) $Juft\pm Toq=$ *Juft ham, toq ham emas*;

g) $J\cdot J=J;\ \ J:J=J;\ \ J\cdot T=T;\ \ J:T=T.$

d) $Juft+Son=Juft,\ Toq+Son=$ *Juft ham, toq ham emas.*

Javob: (C)

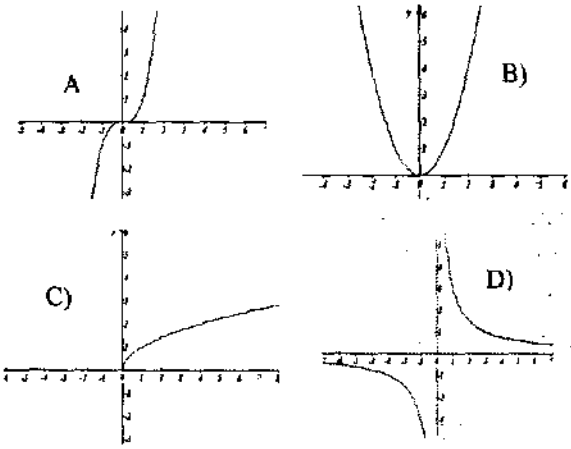
4009. Quyidagi tasdiqlardan qaysi biri to'g'ri ?
1) Ikkita juft funksiyani nisbati juft funksiya bo'ladi.
2) Toq funksiyaning grafigi koordinatalar boshiga nisbatan simmetrik.
3) Ikkita juft funksiya ayirmasi toq bo'ladi.
4) *Juft + Son = Toq*

A) 1; 2 B) 2; 3 C) 2; 3; 4 D) 1; 4

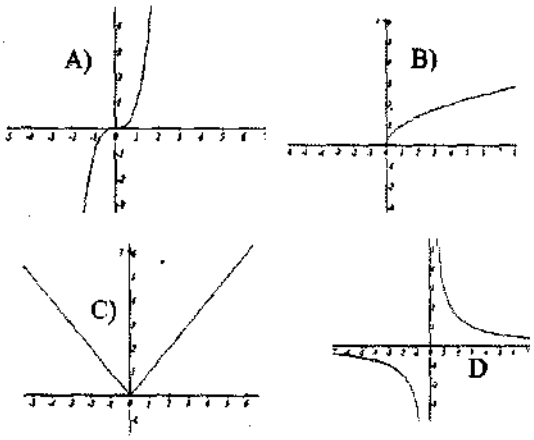
4010. Quyidagi tasdiqlardan qaysi biri to'g'ri ?
1) Ikkita toq funksiyaning ayirmasi juft funksiya bo'ladi.
2) Toq funksiyaning grafigi koordinatalar boshiga nisbatan simmetrik.
3) ikkita juft funksiya ayirmasi toq bo'ladi.
4) *Juft ± Toq = Juft ham, toq ham emas;*

A) 1; 2 B) 2; 3 C) 2; 4 D) 1; 4

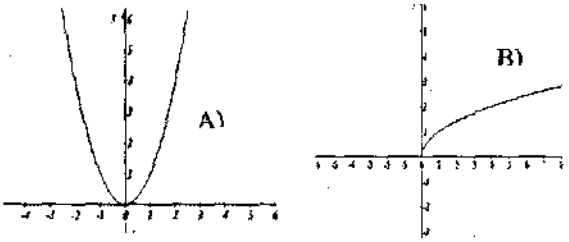
4011. Quyidagi funksiyalardan qaysi biri juft ?

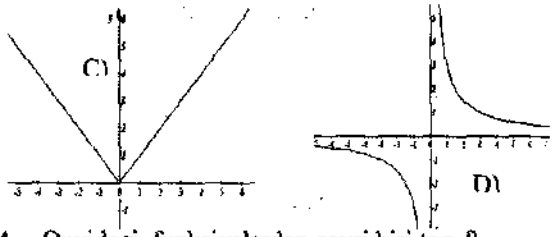


4012. Quyidagi funksiyalardan qaysi biri juft ?

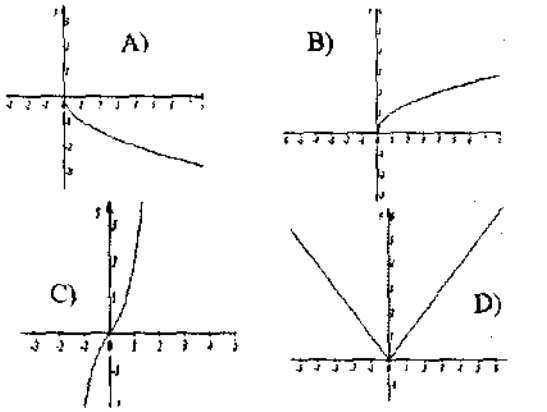


4013. Quyidagi funksiyalardan qaysi biri toq ?





4014. Quyidagi funksiyalardan qaysi biri toq ?



TESKARI FUNKSIYALAR

✓ $y=-2x+5$ funksiyaga teskari funksiyani toping.

A) $y=2x+\frac{5-x}{2}$ B) $y=\frac{5-x}{2}$

C) $y=2x+3$ D) $y=\frac{5+x}{2}$

Yechilishi: teskari funksiyani topishda, avval "x" ni yakkalanadi :

$y=-2x+5$

$2x=5-y$ ushbu $x=\frac{5-y}{2}$ funksiyadagi x va y

$x=\frac{5-y}{2}$

lar o'rni almashtiriladi, $y=\frac{5-x}{2}$ ushbu funksiya qidirilayotgan teskari funksiyadir.

Javob: (B) javoblarda bazan $y=-\frac{x}{2}+\frac{5}{2}$ bo'lishi mumkin.

4015. $y=-3x+1$ funksiyaga teskari funksiyani toping.

A) $y=\frac{x-1}{3}$ B) $y=-\frac{x-1}{3}$

C) $y=-\frac{x-1}{2}$ D) $y=\frac{x+1}{2}$

4016. $y=-5x+4$ funksiyaga teskari funksiyani toping.

A) $y=-\frac{y}{5}+4$ B) $y=\frac{4+x}{5}$

C) $y=\frac{5-x}{4}$ D) $y=-\frac{x}{5}+\frac{4}{5}$

4017. $y=\frac{1}{4}x-7$ funksiyaga teskari funksiyani toping.

A) $y=4x+28$ B) $y=4x-28$

C) $y=28x+4$ D) $y=4x+2$

4018. $y=\frac{1}{3}x-\frac{2}{3}$ funksiyaga teskari funksiyani toping.

A) $y=2x+3$ B) $y=2x-3$

C) $y=3x+2$ D) $y=2x-3$

4019. $y=\frac{3x-2}{2}$ funksiyaga teskari funksiyani toping.

A) $y=\frac{2x+2}{3}$ B) $y=\frac{3x+2}{3}$

C) $y=\frac{2x+3}{3}$ D) $y=\frac{2x-2}{3}$

✓ $y=\frac{x+1}{2-3x}$ funksiyaga teskari funksiyani toping.

A) $y=\frac{2x+1}{1-3x}$ B) $y=\frac{5-x}{2}$

C) $y=\frac{2x-1}{1+3x}$ D) $y=\frac{5+x}{2}$

Yechilishi:

$y=\frac{x+1}{2-3x}$

$2y-3xy=x+1$

$2y-1=x+3xy$ demak, $y=\frac{2x-1}{1+3x}$

$2y-1=(1+3y)x$

$x=\frac{2y-1}{1+3y}$

Javob: (C) javoblarda bazan $\frac{2x-1}{1+3x}$ bo'lishi mumkin.

4020. $y=\frac{x-5}{2-3x}$ funksiyaga teskari funksiyani toping.

A) $\frac{2x+1}{3x+1}$ B) $\frac{2x+5}{3x+1}$ C) $\frac{2x+1}{3x+5}$ D) $\frac{2x+3}{3x+2}$

4021. $y=\frac{6x+2}{x}$ funksiyaga teskari funksiyani toping.

A) $y=-\frac{2}{6-x}$ B) $y=\frac{2}{6-x}$

C) $y=-\frac{6}{2-x}$ D) $y=\frac{2}{6+x}$

✓ $y=\frac{3}{x+1}-2$ funksiyaga teskari funksiyani toping.

A) $y=\frac{3}{x+2}-1$ B) $y=\frac{x+2}{3}$

C) $y=2x+3$ D) $y=\frac{3}{x+2}$

Yechilishi: "x" ni yakkalashni osonroq yo'lida bajaring, keyin esa x *va* y lar o'rni almashtiriladi:

$y=\frac{3}{x+1}-2 \Rightarrow y+2=\frac{3}{x+1} \Rightarrow x+1=\frac{3}{y+2} \Rightarrow x=\frac{3}{y+2}-1$

demak, $y=\frac{3}{x+2}-1$ **Javob: (A)**

4022. $y=\frac{2}{x+7}$ funksiyaga teskari funksiyani toping.

A) $\frac{2}{x}+7$ B) $\frac{2}{x}-7$ C) $\frac{1}{x}-7$ D) $\frac{2}{x}$

4023. $y=\frac{2}{x-1}-6$ funksiyaga teskari funksiyani toping.

A) $y=\frac{2}{x+6}-1$ B) $y=\frac{2}{x+6}+1$

C) $y=\frac{2}{x+6}$ D) $y=\frac{2}{x+1}+6$

4024. $y=\frac{3}{2-x}-1$ funksiyaga teskari funksiyani toping.

A) $y=2+\frac{3}{x+1}$ B) $y=\frac{3}{x+1}$

C) $y=-2+\frac{3}{x+1}$ D) $y=2-\frac{3}{x+1}$

✓ $y=x^3-1$ funksiyaga teskari funksiyani toping.

A) $y=\sqrt[3]{x+1}$ B) $y=\sqrt[3]{x-1}$

C) $y=\sqrt{x+1}$ D) $y=-\sqrt[3]{x+1}$

Yechilishi: "x" ni yakkalashni osonroq yo'lida bajaring, keyin esa x *va* y lar o'rni almashtiriladi:

$y=x^3-1$

$y+1=x^3$ demak, $y=\sqrt[3]{x+1}$ **Javob: (A)**

$x=\sqrt[3]{y+1}$

4025. $y=x^7-3$ funksiyaga teskari funksiyani toping.

A) $y=\sqrt[3]{x+3}$ B) $y=\sqrt[3]{x-3}$

C) $y=\sqrt[7]{x+3}$ D) $y=\sqrt[7]{x-3}$

4026. $y=(x-1)^5$ funksiyaga teskari funksiyani toping.

A) $y=\sqrt[5]{x}+1$ B) $y=\sqrt[5]{x+1}$

C) $y=\sqrt[5]{x}-1$ D) $y=\sqrt[5]{x}+5$

✓ $y=x^2+6x+10$ funksiyaga teskari funksiyani toping $(x>-3)$.

A) $y=\sqrt[3]{x+1}$ B) $y=-3+\sqrt{x-1}$

C) $y=\sqrt{x+1}$ D) $y=-\sqrt[3]{x+1}$

Yechilishi:

$y=x^2+6x+10$

$y=\underline{x^2+6x+9}-9+10$

$y=(x+3)^2+1$ demak, $y=-3+\sqrt{x-1}$

$(x+3)^2=y-1$

$x+3=\pm\sqrt{y-1}\ \ (x>-3)$

$x=-3+\sqrt{y-1}$

teskari funksiyani topishda $(x>-3)$, ga e'tibor qarating. Uni "±" dan qaysi birini olishda qo'llash lozim. **Javob: (B)**

4027. $y=x^2-8$ $(x\ge 0)$ funksiyaga teskari funksiyani toping.

A) $y=\sqrt{x+8}$ B) $y=\sqrt[3]{x+8}$

C) $y=-\sqrt{x+8}$ D) $y=\pm\sqrt{x+8}$

4028. $y=2x^2-\frac{1}{2}$ funksiyaga teskari funksiyani toping$(x\le 0)$.

A) $-\sqrt{2x+1}\cdot 4^{-1}$ B) $-\sqrt{2x+1}\cdot 2^{-1}$

C) $\pm\sqrt{2x+1}\cdot 2^{-1}$ D) $\sqrt{2x+1}\cdot 4^{-1}$

4029. $y=x^2+10x+3$ funksiyaga teskari funksiyani toping$(x\le -5)$.

A) $5-\sqrt{x+22}$ B) $-5+\sqrt{x+22}$

C) $5+\sqrt{x+25}$ D) $-5-\sqrt{x+22}$

4030. $y=2x^2-6x+5$ funksiyaga teskari funksiyani toping$(x<1,5)$.

A) $\sqrt{2x-1}\cdot 2^{-1}+1,5$ B) $\sqrt[5]{x-0,5}\cdot 2^{-1}+1,5$

C) $\sqrt[5]{2x-1}+1,5$ D) $\sqrt[5]{x-0,5}\cdot 2^{-1}-1,5$

4031. $(y-3)^2+(x-4)^2=5$ $(x>4)$ funksiyaga teskari funksiyani toping.

A) $\sqrt{(x-3)^2+4}+5$ B) $\sqrt{(x+3)^2+5}+4$

C) $4+\sqrt{5-(x-3)^2}$ D) $-\sqrt{(x-3)^2+5}+4$

✓ Qaysi nuqta $y=x^3+5x-2$ funksiyaga teskari funksiyaning grafigiga tegishli ?

A) (−2; 1) B) (0; −2) C) (4; 1) D) (−8; 1)

Yechilishi: Javoblarda keltirilgan nuqtalarning koordinatalarini o'rinlarini almashtirib berilgan funksiyaga qo'yib tekshiramiz :

A)(−2;1) *teskarisi* $(y;x)$ $-2=1^3+5\cdot 1-2 \Rightarrow -2\ne 4$

B)(0;−2) *teskarisi* $(y;x)$ $0=(-2)^3+5\cdot(-2)-2 \Rightarrow 0\ne -20$

C)(4; 1) *teskarisi* $(y;x)$ $4=1^3+5\cdot 1-2 \Rightarrow 4=4$ *tegishli*

Javob: (C)

4032. Qaysi nuqta $y=x^5+3x-1$ funksiyaga teskari funksiyaning grafigiga tegishli ?

A) (−3; 1) B) (3; −1) C) (37; 2) D) (25; −2)

4033. Qaysi nuqta $y=2x^3+3x+11$ funksiyaga teskari funksiyaning grafigiga tegishli ?

A) (2; −5) B) (6; −1) C) (7; 2) D) (−2; 5)

4034. Qaysi nuqta $y=x^9+3x$ funksiyaga teskari funksiyaning grafigiga tegishli ?

A) (0; −3) B) (−1; 4) C) (4; 1) D) (−2; 15)

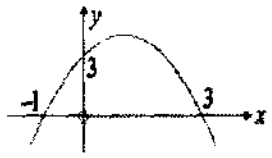
✓ Quyidagi funksiyalarni qayi biri ushbu funksiyani grafigi.

1) $y=-x^2-2x+3$

2) $y=-x^2+2x+3$

3) $y=-x^2-2x-3$

4) $y=x^2+2x+3$



A) 1 B) 2 C) 3 D) 4

Yechilishi: Parabola tarmoqlari pastga Qaragan, u abssissalar o'qi bilan -1 va 3 Nuqtalarda kesishadi. Shuninh uchun :

$(-1;0), (3;0)$ *va* $(0;3)$ *nuqtalarni qo'yamiz*

$y=-x^2+2x+3$

$(-1;0)\Rightarrow \boxed{-(-1)^2+2\cdot(-1)+3=0}$

$(3;0)\Rightarrow \boxed{-3^2+2\cdot 3+3=0}$

$(0;3)\Rightarrow \boxed{0^2+2\cdot 0+3=3}$

Javob: (B)

Izoh: funksiya grafigiga qarab berilgan nuqtalarni aniqlang va har bir nuqtani funksiyalarga qo'yib tegishli yoki tegishli emasligini aniqlab topiladi.

4035. $y=ax^2+bx+c$ funksiya uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?

1) $a>0$ parabola tarmoqlari yuqoriga yo'nalgan .

2) $a<0$ parabola tarmoqlari pastga yo'nalgan .

3) $D<0$ parabola tarmoqlari yuqoriga yo'nalgan .

4) $D>0$ parabola tarmoqlari pastga yo'nalgan

A) 1; 2 B) 2; 3 C) 2; 3; 4 D) 1; 4

4036. $y=ax^2+bx+c$ funksiya uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?

1) $D<0$ da parabola Ox o'qini ikkita nuqtada kesib o'tadi .

2) $D>0$ da parabola Ox o'qini ikkita nuqtada kesib o'tadi.

3) $D=0$ da parabola Ox o'qiga bitta nuqtada urinadi.

4) $D<0$ da parabola Ox o'qi bilan umuman kesishmaydi.

A) 1; 2 B) 2; 3 C) 2; 3; 4 D) 1; 4

4037. $y=ax^2+bx+c$ funksiya uchun quyidagi tasdiqlardan qaysi biri to'g'ri ?

1) parabolaning simmetriya o'qi $x_0=-\frac{b}{2a}$.

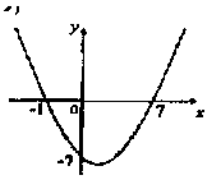
2) parabolaning simmetriya o'qi $x_1=-\frac{b^2-4ac}{4a}$.

3) $x=0$ da parabola Oy o'qi bilan kesishish nuqtalari topiladi.

4) $x=0$ da parabola Ox o'qi bilan kesishish nuqtalari topiladi.

A) 1; 2 B) 2; 3 C) 2; 3; 4 D) 1; 3

4038. Quyidagi funksiyalarni qayi biri ushbu funksiyani grafigi.



1) $y=-x^2-2x-7$
2) $y=x^2+6x-7$
3) $y=x^2-6x-7$
4) $y=x^2+2x+7$

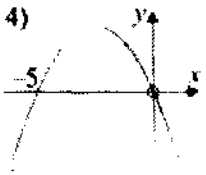
A) 1 B) 2 C) 3 D) 4

4039. Quyidagi funksiyalarni qayi biri ushbu funksiyani grafigi.

1) $y=2x^2-8x-8$
2) $y=2x^2-8x+8$
3) $y=x^2+8x+8$
4) $y=x^2+2x+3$

A) 1 B) 2 C) 3 D) 4

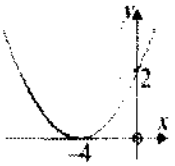
4040. Quyidagi funksiyalarni qayi biri ushbu funksiyani grafigi.



1) $y=-x^2-5x$
2) $y=\dfrac{x^2+5x}{4}$
3) $y=-x^2+5x$
4) $y=\dfrac{x^2+8x+16}{8}$

A) 1 B) 2 C) 3 D) 4

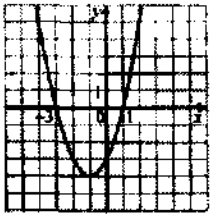
4041. Rasmda qanday funksiyaning grafigi tasvirlangan?.



1) $y=-x^2-2x+3$
2) $y=\dfrac{x^2+8x+16}{4}$
3) $y=-x^2+8x-3$
4) $y=\dfrac{x^2+8x+16}{8}$

A) 1 B) 2 C) 3 D) 4

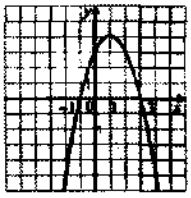
4042. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=-x^2-2x+3$
2) $y=x^2+2x-3$
3) $y=-x^2-2x-3$
4) $y=x^2+2x+3$

A) 1 B) 2 C) 3 D) 4

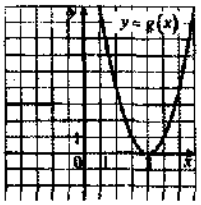
4043. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=-x^2-2x+3$
2) $y=-x^2+2x+3$
3) $y=-x^2-2x-3$
4) $y=x^2+2x+3$

A) 1 B) 2 C) 3 D) 4

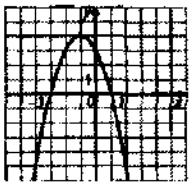
4044. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=(x-3)^2$
2) $y=x^2-3$
3) $y=(x+3)^2$
4) $y=x^2+3$

A) 1 B) 2 C) 3 D) 4

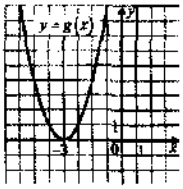
4045. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=x^2-2x+3$
2) $y=-x^2+2x+3$
3) $y=-x^2-2x+3$
4) $y=x^2+2x-3$

A) 1 B) 2 C) 3 D) 4

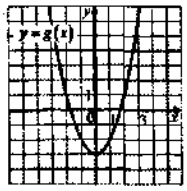
4046. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=(x-3)^2$
2) $y=x^2-3$
3) $y=(x+3)^2$
4) $y=x^2+3$

A) 1 B) 2 C) 3 D) 4

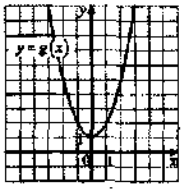
4047. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=(x-3)^2$
2) $y=x^2-3$
3) $y=(x+3)^2$
4) $y=x^2+3$

A) 1 B) 2 C) 3 D) 4

4048. Rasmda qanday funksiyaning grafigi tasvirlangan?



1) $y=(x-1)^2$
2) $y=x^2-1$
3) $y=(x+1)^2$
4) $y=x^2+1$

A) 1 B) 2 C) 3 D) 4

PROGRESSIYALAR

ARIFMETIK PROGRESSIYA

✓ 7; 9; 11;.... $a_1=?$ $d=?$

A) $a_1=7$ $d=2$ B) $a_1=2$ $d=7$

C) $a_1=7$ $d=-2$ D) $a_1=-7$ $d=2$

Yechimi:

a_1; a_2; a_3;... $d=a_2-a_1$;

7; 9; 11;... $d=9-7=2$

Demak, $a_1=7$ $d=2$ **Javob: (A)**

IZOH: 7; 9; 11;.. *da* $a_1=7$ $d=2$ birinchi hadi 7; ayirmasi 2 ham deyiladi, ya'ni d ni ayirmadir.

4049. 5; 10; 15;.... $a_1=?$ $d=?$

A) $a_1=10$; $d=2$ B) $a_1=5$; $d=5$

C) $a_1=5$; $d=10$ D) $a_1=5$; $d=15$

4050. $-12; -9; -6;....$ $a_1=?$ $d=?$

A) $a_1=-12$; $d=-2$ B) $a_1=-12$; $d=-3$

C) $a_1=-12$; $d=3$ D) $a_1=5$; $d=15$

4051. Agar 1; 6; 11;... bo'lsa, arifmetik progressiyaning birinchi hadi va ayirmasini toping.

A) 5; 1 B) 1; 6 C) 1; 5 D) 11; 5

4052. Agar $-4; -6; -8;...$ bo'lsa, arifmetik progressiyaning ayirmasini va birinchi hadini toping.

A) 4; -2 B) -2; -4 C) 2; -4 D) -4; -2

4053. Agar $-22; -19; -16...$ bo'lsa, arifmetik progressiyaning ayirmasini va birinchi hadi toping.

A) 3; -22 B) -22; 3 C) 22; -4 D) -22; -3

4054. Agar $1; -4; -9;...$ bo'lsa, arifmetik progressiyaning birinchi hadi va ayirmasini toping.

A) -5; 1 B) 1; -6 C) 1; -5 D) 11; 5

4055. Agar $x+2$; $3x+6$; $5x+10;...$ bo'lsa, arifmetik progressiyaning birinchi hadi va ayirmasini toping.

A) $2x+2$; $x+4$; B) $x+2$; $2x+4$;

C) $2x+4$; $x+2$; D) $x+2$; $x+4$;

Agar $a_1=2$ *va* $d=3$ bo'lsa, arifmetik progressiyaning dastlabki to'rtta hadini toping.

1) 2; 5; 9; 12;... 2) 2; 5; 8; 11;...

3) 5; 8; 11; 14;... 4) 3; 2; 5; 8;...

A) 3 B) 4 C) 2 D) 1; 2

Yechimi:

a_1 $a_1=2$

$a_2=a_1+d$; $a_2=5$;

$a_3=a_2+d=a_1+2d$; $a_3=8$;

$a_4=a_3+d=a_1+3d$; $a_4=11$;

Demak:

1) 2; 5; 9; 12;... 2) 2; 5; 8; 11;...

3) 5; 8; 11; 14;... 4) 3; 2; 5; 8;... **J: (C)**

4056. Agar $a_1=8$ *va* $d=5$ bo'lsa, arifmetik progressiyaning dastlabki to'rtta hadini toping.

1) 5; 13; 21; 29;... 2) 8; 5; 8; 11;...

3) 8; 13; 18; 23;... 4) 8; 2; 5; 8;...

A) 1 B) 3 C) 4 D) 2

4057. Agar $a_1=-6$ *va* $d=4$ bo'lsa, arifmetik progressiyaning dastlabki to'rtta hadini toping.

1) $-2; -5; -9; -12;...$ 2) $-6; -10; -14; -18;...$

3) $-6; -8; -12; -16;...$ 4) $-6; -2; 2; 6;...$

A) 3 B) 2 C) 1 D) 4

4058. Agar $a_1=-2$ *va* $d=-3$ bo'lsa, arifmetik progressiyaning dastlabki to'rtta hadini toping.

1) $-2; -5; -9; -12;...$ 2) $-2; -5; -8; -11;...$

3) $-6; -8; -11; -14;...$ 4) $-2; 0; 3; 6;...$

A) 3 B) 4 C) 1 D) 2

4059. Agar $a_1=m$ *va* $d=m-n$ bo'lsa, arifmetik progressiyaning dastlabki uchta hadini toping.

1) m; $2m-n$; $m-n;...$ 2) m; $2m-n$; $3m-2n;...$

3) m; $2m-2n$; $3m+3n;...$ 3) m; $m-n$; $3m-n;...$

A) 3 B) 4 C) 2 D) 1

4060. Agar $a_1=12x$ *va* $d=-10x+1$ bo'lsa, arifmetik progressiyaning dastlabki uchta hadini toping.

1) $12x$; $-10x+1$; $-20x+2;...$ 2) $12x$; $2x-1$; $-8x;...$

3) $12x$; $2x+1$; $-8x+2;...$ 4) $12x$; $2x+1$; $8x-2;...$

A) 3 B) 4 C) 2 D) 1

✓ Arifmetik progressiyada $a_1=2$ *va* $d=3$ bo'lsa, a_{15} ni toping.

A) 48 B) 44 C) 24 D) 12

Yechimi:

Formula: $a_n=a_1+(n-1)d$

misol: $a_{15}=2+(15-1)\cdot 3$, $a_{15}=44$ **Javob: (B)**

Izoh: a_{15} ni o'n beshinchi hadi deyiladi.

4061. Arifmetik progressiyada $a_1=3$ *va* $d=4$ bo'lsa, a_{20} ni toping.

A) 73 B) 83 C) 79 D) 76

4062. Arifmetik progressiyada $a_1=-3$ *va* $d=-2$ bo'lsa, a_{18} ni toping.

A) -40 B) -37 C) 34 D) 37

4063. Arifmetik progressiyada $a_1=-2$ *va* $d=-4$ bo'lsa, o'n birinchi hadini toping.

A) 39 B) -42 C) 29 D) 42

4064. Arifmetik progressiyada $a_1=-6$ *va* $d=4$ bo'lsa, yuzinchi hadini toping.
A) 390 B) 480 C) 382 D) 380

4065. Ushbu $a_1;\ a_2;\ 16;\ 12;\ 8;\ldots$ arifmetik progressiyaning dastlabki ikkita hadi hadini toping.
A) 20; 24 B) 24; 20 C) 8; 12 D) 18; 14

4066. Ushbu $a_1;\ a_2;\ 7;\ 10;\ 13;\ldots$ arifmetik progressiyaning dastlabki ikkita hadi hadini toping.
A) 1; 4 B) 4; 1 C) 5; 1 D) 1; 6

4067. Arifmetik progressiyada $9;\ 13;\ 17;\ldots$ bo'lsa, o'ttiz uchinchi hadini toping.
A) 128 B) 147 C) 137 D) 287

4068. Arifmetik progressiyada $-16;\ -10;\ -4;\ \ldots$ bo'lsa, a_{101} ni toping.
A) 594 B) 484 C) 584 D) 284

4069. Arifmetik progressiyada $4;\ 9;\ 14;$ bo'lsa, sakkizinchi hadi to'rtinchi hadidan nechiga ortiq?
A) 20 B) 35 C) 39 D) 19

4070. Arifmetik progressiyada $-18;-24;-30;\ldots$bo'lsa, o'n birinchi hadi sakkizinchi hadidan nechiga ortiq?
A) -18 B) 28 C) -17 D) 4

4071. Agar $y+1;\ 2y+4;\ 3y+7;\ \ldots$ bo'lsa, $a_{42}-a_{39}-3d$ ni toping.
A) 8 B) 25 C) 7 D) 0

✓ Agar $a_5=19$ *va* $a_{27}=107$ bo'lsa, a_1 *va* d ni toping.
A) 8; 4 B) 3; 5 C) 3; 4 D) 4; 3

Yechimi:

Formula: $a_n=a_1+(n-1)d$ | *misol:* $\begin{cases}a_5=a_1+4d=19\\ a_{27}=a_1+26d=107\end{cases}$

$$\begin{cases}a_1+4d=19\\ a_1+26d=107\end{cases}\Rightarrow -\begin{cases}a_1+4d=19\\ a_1+26d=107\end{cases}$$

$$-22d=-88$$

$$d=4$$

Javob: (C)

$a_1+4d=19\Rightarrow a_1+4\cdot d=19\Rightarrow a_1=3$

4072. Arifmetik progressiyada $a_{11}=26$ *va* $a_{41}=44$ bo'lsa, a_1 *va* d ni toping.
A) 40; 0,8 B) 20; 0,8 C) 20; 0,6 D) 0,6; 20

4073. Arifmetik progressiyada $a_{21}=-10$ *va* $a_{22}=-5,5$ bo'lsa, d *va* a_1 ni toping.
A) 0,(2); 100 B) 8,5; -100
C) 4,5; -100 D) -100; 4,5

4074. Arifmetik progressiyada $a_{20}=0$ *va* $a_{66}=-92$ bo'lsa, a_1 *va* d ni toping.
A) -38; 2 B) 38; -2 C) 38; 2 D) -2; 38

4075. Arifmetik progressiyada $a_8=0,5$ *va* $a_{10}=-2,5$ bo'lsa, ayirmasini toping.
A) -1,5 B) 1,5 C) -2 D) 11

4076. Arifmetik progressiyada $a_9=12$ *va* $d=2,5$ bo'lsa, birinchi hadini toping.
A) 8 B) -16 C) -8 D) 15

4077. Arifmetik progressiyada $a_7=-4$ *va* $d=1,5$ bo'lsa, a_1 ni toping.
A) 16 B) 13 C) -13 D) -5

4078. Arifmetik progressiyada $a_{14}=2x+33$ *va* $d=2$ bo'lsa, a_1 ni toping.
A) $3x+7$ B) $2x-7$
C) $2x+14$ D) $2x+7$

4079. Arifmetik progressiyada $a_{11}=7m+1$ *va* $d=-m$ bo'lsa, birinchi hadini toping.
A) $2m-3$ B) $17m+1$
C) $17m-1$ D) $2m+1$

4080. Arifmetik progressiyada birinchi hadi 7 o'n oltinchi hadi 67 ga teng bo'lsa, uning ayirmasini toping.
A) 4 B) 9 C) 8 D) 6

4081. Arifmetik progressiyada birinchi hadi -4 to'qqizinchi hadi 0 ga teng bo'lsa, uning ayirmasini toping.
A) 0,5 B) 0,75 C) 0,25 D) 0,8

4082. Arifmetik progressiyada $a_2=9$ *va* $a_{26}=105$ bo'lsa. shu progressiya birinchi hadi va ayirmasining o'rta proporsional qiymatini toping.
A) 20 B) 4,5 C) 25 D) $2\sqrt{5}$

4083. Arifmetik progressiyada $a_1=3$ *va* $d=2$ bo'lsa, $a_1-a_2+a_3-a_4+\ldots+a_{25}-a_{26}+a_{27}$ ning qiymatini toping.
A) 30 B) 31 C) 29 D) 28

✓ Agar $a_2=12$ *va* $a_5=3$ bo'lsa, a_{10} ni toping.
A) 15 B) -15 C) 4 D) -12

Yechimi:

Formula: $a_n=a_1+(n-1)d$ | *misol:* $\begin{cases}a_2=a_1+d=12\\ a_5=a_1+4d=3\end{cases}$

$$\begin{cases}a_1+d=12\\ a_1+4d=3\end{cases}\Rightarrow -\begin{cases}a_1+d=12\\ a_1+4d=3\end{cases}$$

$$-3d=9$$

$$d=-3$$

$a_1+4d=3\Rightarrow a_1+4\cdot(-3)=3\Rightarrow a_1=15$

$a_{10}=a_1+9d=15+9\cdot(-3)=-12$

Javob: (D)

4084. Arifmetik progressiyada $a_{15}-a_{14}=6$ bo'lsa, $a_{2016}-a_{2018}$ ni toping.

A) 48 B) 12 C) -12 D) -18

4085. Arifmetik progressiyada $\begin{cases} a_5+a_{11}=42 \\ a_4+a_{10}=38 \end{cases}$ bo'lsa, a_3 ni toping.

A) 13 B) 7 C) 11 D) 5

4086. Arifmetik progressiyada $\begin{cases} a_2+a_5-a_3=10 \\ a_1+a_6=17 \end{cases}$ bo'lsa, a_{22} ni toping.

A) 82 B) 64 C) 63 D) 32

4087. Birinchi hadi 4 ga, o'n birinchi hadi 8 ga teng bo'lgan arifmetik progressiyaning oltinchi hadini toping.

A) 6 B) 4 C) 8 D) 7

4088. Ikkinchi hadi 5 ga, sakkizinchi hadi 12 ga teng bo'lgan arifmetik progressiyaning beshinchi hadini toping.

A) 7,5 B) 12,5 C) 10 D) 8,5

4089. $4;\ 4\frac{1}{3};\ 4\frac{2}{3};\ldots$ bo'lsa, Arifmetik progressiyada o'n oltinchi hadini toping.

A) 9 B) 15 C) 6 D) 12

4090. $1;\ 1+\sqrt{3};\ 1+2\sqrt{3};\ldots$ bo'lsa, Arifmetik progressiyada yigirma beshinchi hadini toping.

A) $25\sqrt{3}$ B) $1+24\sqrt{3}$ C) $25+24\sqrt{3}$ D) 25

4091. $\sqrt{2};\ \sqrt{2}-3;\ \sqrt{2}-6;\ldots$ bo'lsa, arifmetik progressiyada o'ttiz uchinchi hadini toping.

A) $96\sqrt{2}$ B) $\sqrt{2}-96$ C) $96-\sqrt{2}$ D) $-95\sqrt{2}$

4092. Kinoteatrning birinchi qatorida 21 ta o'rin bor. Har bir keyingi qatorda o'rinlar soni oldingi qatordagidan 2 tadan ko'p, 40 - qatorda nechta o'rin bor?

A) 80 B) 42 C) 99 D) 100

✓ Agar $a_n=3-4n$ bo'lsa, a_{15} ni toping.

A) 47 B) -54 C) 57 D) -57

Yechimi:

$a_{\boxed{n}}=3-4\boxed{n}$

$a_{\boxed{15}}=3-4\boxed{15}=-57$

Javob: (D)

4093. Agar $a_n=-5+2n$ bo'lsa, a_{21} ni toping.

A) 35 B) 45 C) 37 D) 40

4094. Agar $a_n=3(1+n)$ bo'lsa, o'n beshinchi va yigirma to'rtinchi hadini yig'indisini toping.

A) 134 B) 123 C) 152 D) 132

4095. Agar $a_n=2(3-n)$ bo'lsa, yuzinchi hadi va ellik ikkinchi hadlarini ayirmasini toping.

A) -96 B) 98 C) -82 D) 96

✓ Agar 1; 6; 11; 16;... bo'lsa, a_n ni toping.

A) $a_n=-4+5n$ B) $a_n=5-4n$

C) $a_n=4+5n$ D) $a_n=-4-5n$

Yechimi:

1; 6; 11; 16;...

$a_1=1 \quad a_2=6 \quad d=6-1=5$

Formula: $a_n=a_1+(n-1)d$

misol:

$a_n=1+(n-1)\cdot 5$

$a_n=1+5n-5$

$a_n=-4+5n$

Javob: (A)

Izoh: a_n ning "n"chi hadi formulasi yoki umumiy hadini topish formulasi deyiladi.

4096. Agar 25; 21; 17; 13;... bo'lsa, a_n ni toping.

A) $a_n=-29+5n$ B) $a_n=29+4n$

C) $a_n=4+5n$ D) $a_n=29-4n$

4097. Agar $-4;\ -6;\ -8;\ -10;\ldots$ bo'lsa, umumiy hadini toping.

A) $a_n=-4+5n$ B) $a_n=2-4n$

C) $a_n=2-2n$ D) $a_n=-2-2n$

4098. Agar 1; -4; -9; -14;... bo'lsa, $n-$ hadi formulasini toping.

A) $a_n=-4+5n$ B) $a_n=5-4n$

C) $a_n=6+5n$ D) $a_n=6-5n$

4099. Agar $a_3=13$ va $a_6=22$ bo'lsa, umumiy hadini toping.

A) $a_n=-4+3n$ B) $a_n=4+3n$

C) $a_n=2-2n$ D) $a_n=-2-3n$

4100. Agar $a_2=-7$ va $a_7=18$ bo'lsa, $n-$ hadi formulasini toping.

A) $a_n=-17+5n$ B) $a_n=5-4n$

C) $a_n=17+5n$ D) $a_n=6-5n$

✓ 3; 5; 7; 9;... arifmetik progressiyada 99 soni nechanchi hadi bo'ladi?

A) 45 B) 86 C) 49 D) 36

Yechimi:

3; 5; 7; 9;...

$a_1=3 \quad d=2 \quad a_n=99$

Formula: $a_n=a_1+(n-1)d$

misol:

$99=3+(n-1)2$

$-2n=-2-99+3$

$n=49$

Javob: (C)

Izoh: Agar "n" kasr yoki manfiy chiqsa u son bu ketma-ketlikning hadi bo'lmaydi.

4101. 44; 38; 32; ...arifmetik progressiyada -22 soni nechanchi hadi bo'ladi?
A) 14 B) 6 C) 12 D) 18

4102. $-18; -15; -12;$ ...arifmetik progressiyada 12 soni nechanchi hadi bo'ladi?
A) 11 B) 21 C) 12 D) 18

4103. $1; -5;$ ...arifmetik progressiyada -59 soni nechanchi hadi bo'ladi?
A) 11 B) 21 C) 12 D) 16

4104. 88 quyidagi keltirilgan arifmetik progressiyalarning qaysi birining hadi bo'la oladi?
1) 8; 14; 19;... 2) 8; 12; 16;...
3) 2; 9; 16;... 4) 10; 16; 22;...
A) 1; 3 B) 2; 3 C) 2; 4 D) 2; 3; 4

4105. -46 quyidagi keltirilgan arifmetik progressiyalarning qaysi birining hadi bo'la oladi?
1) 5; 2; -1;... 2) 1; -5; -11;...
3) 2; -1; -4;... 4) 5; -1; -7;...
A) 1; 3 B) 1; 3 C) 2; 4 D) 1; 3; 4

4106. Arifmetik progressiyaning Ikkinchi hadi -7 ga, beshinchi va sakkizinchi hadlarining ayirmasi -6 ga teng. Shu progressiyaning nechanchi hadi 9 ga teng bo'ladi?
A) 7 B) 12 C) 13 D) 10

✓ Arifmetik progressiyada $a_1 = 1,\ a_5 = 5 + x$ va $a_{15} = 10 + 3x$ bo'lsa, a_{37} ni toping.
A) -55 B) -53 C) 54 D) -52

Yechimi: bizga $a_{37} = a_1 + 36d$ ni topishda d yo'q shuning uchun:

Formula: $a_n = a_1 + (n-1)d$

misol: $\begin{cases} a_5 = a_1 + 4d \\ a_{15} = a_1 + 14d \end{cases} \Leftrightarrow \begin{cases} 1 + 4d = 5 + x \cdot (3) \\ 1 + 14d = 10 + 3x \end{cases}$

$$-\begin{cases} 3 + 12d = 15 + 3x \\ 1 + 14d = 10 + 3x \end{cases}$$

$$2 - 2d = 5$$

$$d = -\frac{3}{2} = -1,5$$

$$a_{37} = a_1 + 36d$$

$$a_{37} = 1 + 36 \cdot (-1,5) = -53$$

J: (B)

Izoh: sistamani yechishda x lar yo'qotib d ni topamiz.

4107. Arifmetik progressiyada $a_1 = -14,\ a_{11} = 6 + 3x$ va $a_{21} = 6 + 8x$ bo'lsa, a_{28} ni toping.
A) 148 B) 124 C) 121 D) 118

4108. Arifmetik progressiyada $a_1 = 12,\ a_{10} = 6 + 5x$ va $a_{20} = -4 + 10x$ bo'lsa, a_{44} ni toping.
A) -160 B) 170 C) -180 D) -150

4109. Arifmetik progressiyada $a_1 = 3,\ a_3 = 6 + x$ va $a_8 = 1 + x$ bo'lsa, a_{34} ni toping.
A) -30 B) 30 C) -34 D) -53

✓ Arifmetik progressiyada $a_1 = -10,\ d = 0,5$ bo'lsa, n ning qanday qiymatlarida $a_n < 2$ tengsizlik bajariladi?
A) $(-\infty; 10)$ B) $(-\infty; 25)$ C) $(-\infty; 15)$ D) $(-\infty; 35)$

Yechimi:

$$a_n = a_1 + (n-1)d$$

$$a_n = -10 + (n-1) \cdot 0,5$$

J: (B)

$$a_n < 2$$

$$-10 + (n-1) \cdot 0,5 < 2$$

$$n < 25 \quad (-\infty; 25)$$

4110. Arifmetik progressiyada $a_1 = -5\ \ d = 1,5$ bo'lsa, n ning qanday qiymatlarida $a_n \le 4$ tengsizlik bajariladi?
A) $(-\infty; 7)$ B) $(-\infty; 5)$ C) $(-\infty; 15)$ D) $(-\infty; 7)$

4111. Arifmetik progressiyada $a_1 = 6\ \ d = -2$ bo'lsa, n ning qanday qiymatlarida $a_n \ge 5$ tengsizlik bajariladi?
A) $\left(-\infty; \frac{3}{2}\right)$ B) $(-\infty; 1,5)$ C) $(-\infty; 15)$ D) $\left(-\infty; \frac{8}{15}\right)$

4112. Arifmetik progressiyaning barcha hadlari natural sonlardan iborat. Agar $a_1 = 3,\ 20 < a_3 < 22$ bo'lsa, progressiyaning ayirmasini toping.
A) 7 B) 10 C) 8 D) 9

4113. n ning qanday qiymatlarida 15; 13; 11;... arifmetik progressiyaning hadlari manfiy bo'ladi?
A) $n \le 9$ B) $n \ge 9$ C) $n \ge -9$ D) $n \ge 18$

4114. $-\frac{1}{4}; -\frac{1}{5};$... arifmetik progressiyaning nechta hadlari manfiy bo'ladi?
A) 10 B) 5 C) 6 D) 7

4115. 7; 10; 13;... arifmetik progressiyaning nechta hadining har birining qiymati 100 sonidan katta, 200 sonidan kichik bo'ladi?
A) 35 B) 33 C) 34 D) 32

4116. Arifmetik progressiyaning birinchi hadi 6 ga, oxirgi hadi esa 39 ga teng. Agar progressiyaning ayirmasi butun sondan iborat bo'lib, u 2 dan katta va 6 dan kichik bo'lsa, oxirgi haddan oldingi hadlar sonini aniqlang.
A) 12 B) 9 C) 11 D) 10

✓ Quyidagi tasdiqlardan qaysi biri arifmetik progressiyadagi $a_8 + a_{25}$ ga teng bo'ladi?
1) $a_{11} + a_{22}$ 2) $a_5 + a_{25}$ 3) $a_{30} + a_8$ 4) $a_3 + a_{30}$
5) $a_{16} + a_{12}$ 6) $a_{21} + a_{12}$
A) 1; 3 B) 1; 6 C) 1; 4 D) 1; 4; 6

Yechimi: **J: (D)**

$$\underbrace{a_8 + a_{25}}_{8+25=33} = \underbrace{a_k + a_l}_{k+l=33}$$

formula:

$a_n + a_m = a_k + a_l$
$m+n=k+l$

1) $a_{11}+a_{22}$ 2) a_5+a_{25} 3) $a_{30}+a_8$
4) a_3+a_{30} 5) $a_{16}+a_{12}$ 6) $a_{21}+a_{12}$

4117. Quyidagi tasdiqlardan qaysi biri arifmetik progressiyadagi $a_{19}+a_{24}$ ga teng bo'ladi?

1) $a_{17}+a_{26}$ 2) $a_{40}+a_3$ 3) $a_{18}+a_{25}$ 4) a_3+a_{30}
5) $a_{33}+a_{12}$ 6) $a_{22}+a_{17}$

A) 1; 3; 6 B) 1; 2; 3 C) 1; 2; 4 D) 1; 2; 6

4118. Quyidagi tasdiqlardan qaysi biri arifmetik progressiyadagi $a_{2n-7}+a_{25-n}$ ga teng bo'ladi?

1) a_n+a_{16} 2) $a_{40}+a_n$ 3) $a_{18}+a_n$ 4) $a_{n+4}+a_{14}$
5) $a_{33}+a_n$ 6) $a_{2n+2}+a_{17}$

A) 3; 6 B) 1; 2; 3 C) 3; 4 D) 2; 5

4119. Arifmetik progressiyada $a_8+a_7=30$ bo'lsa, $a_{10}+a_5$ ni aniqlang.

A) 60 B) 15 C) 20 D) 30

4120. Arifmetik progressiyada $a_{10}+a_{30}=120$ bo'lsa, a_{20} ni toping.

A) 240 B) 60 C) 120 D) 30

4121. Arifmetik progressiyaning dastlabki 6 ta hadlari $7;\ a_2;\ a_3;\ a_4;\ a_5;\ 22$ bo'lsa, $a_2+a_3+a_4+a_5$ ni toping.

A) 60 B) 65 C) 82 D) 58

4122. Ikkinchi, to'rtinchi va oltinchi hadlarining yig'indisi -18 ga teng, arifmetik progressiyaning to'rtinchi hadini toping.

A) 6 B) -6 C) -9 **D) -5**

4123. Birinchi hadi 1 ga, o'n birinchi hadi 13 ga teng bo'lgan arifmetik progressiyaning oltinchi hadini toping.

A) 4 B) 8 C) 7 D) 6

4124. Ikkinchi hadi 5 ga sakkizinchi hadi 15 ga teng bo'lgan arifmetik progressiyaning beshinchi hadini toping.

A) 10 B) 9 C) 7,5 D) 5/2

4125. $0,(328);\ x\ va\ 0,(671)$ sonlari arifmetik progressiyani tashkil qiladi, x ning qiymatini toping.

A) 0,(523) B) 0,(45) C) 0,(532) D) 1/2

4126. m ning $\sqrt{m-1};\ \sqrt{5m-1};\ \sqrt{12m+1};$ lar ko'rsatilgan tartibda arifmetik progressiyani tashkil qiladigan qiymatlari yig'indisini toping.

A) 15 B) 8 C) $\varnothing$ D) 12

4127. Arifmetik progressiyaning birinchi va to'rtinchi hadi yig'indisi 26 ga teng, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progresiyaning uchinchi va beshinchi hadi yig'indisini toping.

A) 21 B) 22 C) 20 D) 24

✓ -7 va 8 sonlari orasiga to'rtta son shunday qo'yilganki, natijada u sonlar berilgan sonlar bilan birgalikda arifmetik progressiyani hosil qilgan. qo'yilgan sonlarni toping.

A) -3; 0; 3; 6 B) -2; 1; 4; 7
C) -5; -2; 1; 4 D) -4; -1; 2; 5

Yechimi:

$-7;\ a_2;\ a_3;\ a_4;\ a_5;\ 8 \Rightarrow a_1=-7;\ a_6=8$

Formula: $a_n=a_1+(n-1)\cdot d$

misol: $a_1=-7$, $a_6=a_1+5d=8$ $\Rightarrow$

$$\begin{cases} a_1=-7 \\ a_1+5d=8 \end{cases}$$
$$-5d=-15$$
$$d=3$$

$-7;\ a_2;\ a_3;\ a_4;\ a_5;\ 8$

$\Downarrow$

$-7;\ a_1+d;\ a_1+2d;\ a_1+3d;\ a_1+4d;\ 8$

$-7;\ -4;\ -1;\ 2;\ 5;\ 8$

J: (D)

4128. -6 va 9 sonlari orasiga to'rtta son shunday qo'yilganki, natijada u sonlar berilgan sonlar bilan birgalikda arifmetik progressiyani hosil qilgan. qo'yilgan sonlarni toping.

A) -1; 2; 5; 8 B) -3; 0; 3; 6
C) -2; 1; 4; 7 D) -4; -1; 2; 5

4129. -20 va -10 sonlari orasiga to'rtta son shunday qo'yilganki, natijada u sonlar berilgan sonlar bilan birgalikda arifmetik progressiyani hosil qilgan. qo'yilgan sonlarni toping.

A) -17; -15; -13; -11 B) -19; -17; -15; -13
C) -16; -14; -12; -10 D) -18; -16; -14; -12

4130. -10 va 0 sonlari orasiga to'rtta son shunday qo'yilganki, natijada u sonlar berilgan sonlar bilan birgalikda arifmetik progressiyani hosil qilgan. qo'yilgan sonlarni toping.

A) -7; -5; -3; -1 B) -8; -6; -4; -2
C) -9; -7; -5; -3 D) -6; -4; -2; -0

ARIFMETIK PROGRESSIYA DASTLABKI n TA HADINING YIG'INDISI

✓ $1+2+3+\ldots+98+99+100$ arifmetik progressiyani hisoblang.

A) 5050 B) 4050 C) 4090 D) 3060

Yechimi:

$1+2+3+\ldots+98+99+100$

$a_1=1\ \ a_n=100,\ n=100$

Formula: $S_n=\frac{a_1+a_n}{2}\cdot n$ *misol*: $S_n=\frac{1+100}{2}\cdot 100$

$S_n=5050$

J: (A)

4131. Arifmetik progressiyada $a_1=1$ $a_n=20$, $n=50$ ga teng bo'lsa, uning dastlabki n ta hadining yig'indisini toping.
A) 425 B) 525 C) 335 D) 425

4132. Arifmetik progressiyada $a_1=2$ $a_n=-40$ *va* $n=20$ *ga teng* bo'lsa, uning dastlabki n ta hadining yig'indisini toping.
A) 210 B) -370 C) 380 D) -380

4133. Arifmetik progressiyada $a_1=2,5$ $a_{50}=33,5$ ga teng bo'lsa, uning dastlabki 50 ta hadining yig'indisini toping.
A) 900 B) 875 C) 200 D) 620

4134. Arifmetik progressiyada $a_1=c$ $a_n=9c+8b$ ga teng bo'lsa, uning dastlabki to'qqizta hadining yig'indisini toping.
A) $45c+36b$ B) $40c+36b$
C) $20c+36b$ D) $5c+4b$

4135. $2+3+\ldots+98$ arifmetik progressiyani hisoblang.
A) 2400 B) 3400 C) 3850 D) 4850

4136. 3 dan 99 gacha bo'lgan barcha natural sonlar yig'indisini toping (99 ham yig'indiga kiradi).
A) 4900 B) 3407 C) 5497 D) 4947

✓ 9; 13; 17;... arifmetik progressiyani dastlabki 11 ta hadining yig'indisini toping.
A) 505 B) 405 C) 409 D) 319

Yechimi:

9; 13; 17;...

$a_1=9$ $d=4$, $n=11$

Formula: *misol*:

$$S_n=\frac{2\cdot a_1+(n-1)\cdot d}{2}\cdot n \qquad S_n=\frac{2\cdot 9+(11-1)\cdot 4}{2}\cdot 11$$

$$S_n=319$$

Javob: (D)

4137. Arifmetik progressiyada $a_1=-5$, $d=0,5$ ga teng bo'lsa, uning dastlabki o'n ikkita hadining yig'indisini toping.
A) -27 B) 27,5 C) 33,5 D) -22,5

4138. Arifmetik progressiyada $a_1=\frac{1}{2}$, $d=-3$ ga teng bo'lsa, uning dastlabki o'n oltita hadining yig'indisini toping.
A) -352 B) 352 C) 338 D) -328

4139. $-16;\ -10;\ -4;\ldots$ arifmetik progressiyani dastlabki 12 ta hadining yig'indisini toping.
A) 206 B) 280 C) 204 D) 240

4140. $\frac{1}{3};\ 1;\ 1\frac{2}{3};\ldots$ arifmetik progressiyani dastlabki yigirma uchta hadining yig'indisini toping.
A) 175 B) 529 C) $\frac{529}{3}$ D) $175\frac{1}{3}$

4141. Ushbu $-\sqrt{8};\ -\sqrt{2};\ \ldots$ arifmetik progressiyaning dastlabki 8 ta hadi yig'indisini toping.
A) $44\sqrt{2}$ B) $-12\sqrt{2}$ C) $12\sqrt{2}$ D) 12

4142. Arifmetik progressiyada $a_2=10$, $a_5=22$ ga teng bo'lsa, uning dastlabki sakkizta hadining yig'indisini toping.
A) 162 B) 160 C) 170 D) 156

4143. Arifmetik progressiyada $a_{13}=28$, $a_{20}=35$ ga teng bo'lsa, uning dastlabki yigirmata hadining yig'indisini toping.
A) 462 B) 510 C) 570 D) 450

4144. S_n arifmetik progressiyaning dastlabki n ta hadi yig'indisi bo'lsa, $S_5-3S_4+3S_3-S_2$ ning qiymatini toping.
A) 0 B) $3a_1$ C) $-2a_1$ D) $2a_1$

✓ $a_1=1$ $S_n=-40$, $n=20$ arifmetik progressiyaning yigirmanchi hadini toping.
A) 5 B) -5 C) 4 D) -6

Yechimi:

$a_1=1$ $S_n=-40$, $n=20$

Formula: *misol*:

$$S_n=\frac{a_1+a_n}{2}\cdot n \qquad -40=\frac{1+a_{20}}{2}\cdot 20$$

$$a_{20}=-5$$

Javob: (B)

4145. $a_1=1,5$ $S_n=-7,5$, $n=30$ arifmetik progressiyaning o'ttizinchi hadini toping.
A) 2 B) -2 C) 3 D) -1

4146. $a_1=10$ $S_{14}=1050$, arifmetik progressiyaning o'n to'rttinchi hadini toping.
A) -40 B) -140 C) 120 D) 140

4147. $a_1=1$ $S_n=-40$, $n=20$ arifmetik progressiyaning ayirmasini toping.
A) $-\frac{6}{19}$ B) $-\frac{4}{19}$ C) 2,3 D) 6,5

4148. $a_1=a$, $d=a-2$, $S_{20}=-80$ arifmetik progressiyadan a ni toping.
A) $\frac{10}{7}$ B) $-\frac{10}{7}$ C) 0,7 D) 1,5

4149. $m;\ 2m+2;\ 3m+4;$ ketma-ketlikning dastlabki o'nta hadi yig'indisi 255 ga teng. m ni toping.
A) 3 B) 4 C) 2 D) 5

4150. $y;\ 3y+5;\ 5y+10;$ ketma-ketlikning dastlabki sakkizta hadi yig'indisi 396 ga teng. y ni toping.
A) 2 B) 3 C) 8 D) 4

✓ $90+80+70+\ldots+(-60)$ ni hisoblang.
A) 250 B) 425 C) 240 D) 310

Yechimi:

$90+80+70+\ldots+(-60)$

$a_1=90 \quad d=-10, \quad a_n=-60$

Formula: *misol*:

$a_n=a_1+(n-1)\cdot d \;\Big|\; -60=90-(n-1)\cdot 10$

$n=16$

Formula: *misol*:

$S_n=\frac{a_1+a_n}{2}\cdot n \;\Big|\; S_n=\frac{90+(-60)}{2}\cdot 16$

$S_n=240$ **J: (C)**

4151. $3+6+9+\ldots+273$ ni hisoblang.
A) 12558 B) 12575 C) 13558 D) 21245

4152. $1+8+15+\ldots+141$ ni hisoblang.
A) 1491 B) 2151 C) 1538 D) 3191

4153. $1600+1592+1584+\ldots+(-400)$ ni hisoblang.
A) 120600 B) 20800 C) 150600 D) 150640

4154. 1 dan 50 gacha bo'lgan barcha toq sonlarni yig'indisining kvadrat ildizini hisoblang.
A) 35 B) 45 C) 40 D) 25

4155. G'o'la shaklida to'sinlar ustma-ust taxlangan. Birinchi taxlamda 10 ta, ikkinchisida 9 ta, va x.k., oxirgi tahlamda 1 ta to'sin bor. Taxlamda nechta to'sin bor?
A) 55 B) 57 C) 53 D) 54

4156. Quvurlar ustma-ust taxlangan. Birinchi taxlamda 11 ta, ikkinchisida 10 ta, va x.k.., oxirgi tahlamda 1 ta quvur bor. Taxlamda nechta quvur bor.
A) 64 B) 68 C) 65 D) 66

4157. Dastlabki 80 ta natural sonlarning o'rta arifmetigini toping.
A) 41,5 B) 40,5 C) 50 D) 50,5

4158. Dastlabki mingta natural sonlarning o'rta arifmetigini toping.
A) 502,5 B) 500,5 C) 500 D) 501,5

4159. 4, 7, 10, ...100 sonlarning o'rta arifmetigini toping.
A) 52 B) 45 C) 50 D) 55

4160. $1+4+7+\ldots+n=117$ tenglamani yeching.
A) 15 B) 29 C) 25 D) 32

4161. $1+7+13+\ldots+n=280$ tenglamani yeching.
A) $44\sqrt{2}$ B) $-12\sqrt{2}$ C) 55 D) 12

4162. $2+4+6+\ldots+2n=56$ tenglamani yeching.
A) 6 B) 7 C) 5 D) 4

4163. $(n+1)+(n+4)+(n+7)+\ldots+(n+28)=155$ tenglamani yeching.
A) 2 B) 1 C) 3 D) -1

✓ 150 dan katta bo'lmagan 7 ga karrali barcha natural sonlarning yig'indisini toping.
A) 1617 B) 1716 C) 2415 D) 1648

Yechimi:

$7+14+21+\ldots+147$

$a_1=7 \quad d=7, \quad a_n=147$

Formula: *misol*:

$a_n=a_1+(n-1)\cdot d \;\Big|\Rightarrow\; 147=7+(n-1)\cdot 7$

$n=21$

Formula: *misol*:

$S_n=\frac{a_1+a_n}{2}\cdot n \;\Big|\Rightarrow\; S_n=\frac{7+147}{2}\cdot 21$

$S_n=1617$ **Javob: (A)**

4164. 150 dan katta bo'lmagan 4 ga karrali barcha natural sonlarning yig'indisini toping.
A) 2812 B) 2612 C) 1358 D) 2125

4165. 100 dan katta bo'lmagan 3 ga karrali barcha natural sonlarning yig'indisini toping.
A) 2010 B) 1683 C) 1080 D) 1483

4166. 7 ga karrali barcha uch xonali sonlarning yig'indisini toping.
A) 70336 B) 76056 C) 70056 D) 72236

4167. 7 ga bo'lganda, qoldig'i 2 ga teng bo'ladigan barcha ikki xonali sonlarning yig'indisini toping.
A) 640 B) 647 C) 654 D) 650

4168. O'zidan oldinggi barcha natural sonlar yig'indisining $\frac{1}{10}$ qismiga teng bo'lgan natural sonni toping.
A) 25 B) 10 C) 20 D) 21

4169. O'zidan oldinggi toq natural sonlar yig'indisining $\frac{1}{8}$ qismiga teng bo'lgan natural sonni toping.
A) 32 B) 16 C) 64 D) 24

4170. O'zidan oldinggi barcha toq natural sonlar yig'indisining $\frac{1}{6}$ qismiga teng bo'lgan natural sonni toping.
A) 36 B) 36 C) 48 D) 24

4171. $100^2-99^2+98^2-97^2+\ldots+2^2-1$ ni hisoblang.
A) 5100 B) 5050 C) 5000 D) 10100

4172. $100^2-97^2+96^2-93^2+\ldots+4^2-1$ ni hisoblang.
A) 6775 B) 7575 C) 6675 D) 5055

4173. $\frac{a+2a+3a+\ldots+na}{n^2-2n-3}-\frac{3a}{2(n-3)}$ ni soddalashtiring.
A) $\frac{a}{n}$ B) $\frac{na}{2}$ C) $\frac{a}{2}$ D) $\frac{n}{a}$

4174. $\frac{a+2a+3a+\ldots+na}{n^2-2n-3}-\left(\sqrt{ab}-\frac{ab}{a+\sqrt{ab}}\right):\frac{2\left(\sqrt{ab}-b\right)}{a-b}$ ni soddalashtiring

A) $\frac{2a}{3(n+1)}$ B) $\frac{a}{n-3}$ C) $\frac{3a}{2(n-3)}$ D) $n-a$

✓ Arifmetik progressiyada $a_3+a_9=8$, S_{11} ni toping.

A) 16 B) 46 C) 44 D) 48

Yechimi:

Formula: $S_n=\frac{a_1+a_n}{2}\cdot n \Rightarrow S_n=\frac{a_1+a_{11}}{2}\cdot 11$

$a_n+a_m=a_k+a_l,\ m+n=k+l \Rightarrow a_1+a_{11}=a_3+a_9$

Formula: $S_n=\frac{a_1+a_n}{2}\cdot n \Rightarrow S_n=\frac{8}{2}\cdot 11=44$ *misol*:

J: (C)

4175. Arifmetik progressiyada $a_4+a_6=10$, S_9 ni toping.

A) 45 B) 32 C) 40 D) 35

4176. Arifmetik progressiyada $a_2+a_{19}=40$ Shu progressiyaning dastlabki 20 ta hadi yig'indisini toping.

A) 380 B) 400 C) 420 D) 300

4177. Arifmetik progressiyaning uchinchi va beshinchi hadlari yig'indisi 12 ga teng, dastlabki 7 ta hadi yig'indisini toping.

A) 42 B) 36 C) 18 D) 48

4178. Ikkinchi va o'n toqqizinchi hadlarining yig'indisi 12 ga teng bo'lgan, arifmetik progressiyaning dastlabki yigirmata hadning yig'indisini toping.

A) 130 B) 115 C) 120 D) 125

4179. Arifmetik progressiya 26 haddan iborat. Agar $a_6=-0,25$ *va* $a_{21}=-1,25$ bo'lsa, uning hadlari yig'indisini toping.

A) -8,5 B) -10,75 C) -9,75 D) -19,5

4180. Arifmetik progressiyaning dastlabki n ta hadi yig'indisi 120 ga teng. Agar $x_3+x_{n-2}=30$ bo'lsa, yig'indida nechta had qatnashgan?

A) 8 B) 12 C) 10 D) 6

GEOMETRIK PROGRESSIYA

✓ 3; 12; 48;... $b_1=?$ $q=?$

A) $b_1=3$ $q=4$ B) $b_1=4$ $q=3$

C) $b_1=4$ $q=5$ D) $b_1=3$ $q=3$

Yechimi:

b_1; b_2; b_3;... $q=\frac{b_2}{b_1}$; $q=\frac{12}{3}=4$ Demak,

3; 12; 48;... $b_1=3$ $q=4$

Javob: (A)

IZOH: 3; 12; 48;...*da* $b_1=3$ $q=4$ birinchi hadi 3; mahraji 4 deyiladi, ya'ni q maxrajdir.

4181. 2; 8; 32; 128;... $b_1=?$ $q=?$

A) $b_1=3$ $q=4$ B) $b_1=2$ $q=4$

C) $b_1=4$ $q=2$ D) $b_1=2$ $q=8$

4182. 2; $\frac{4}{3}$; $\frac{8}{9}$; $\frac{16}{27}$;... $b_1=?$ $q=?$

A) $b_1=\frac{2}{3}$ $q=2$ B) $b_1=3$ $q=4$

C) $b_1=2$ $q=\frac{2}{3}$ D) $b_1=2$ $q=\frac{4}{3}$

4183. Agar $-\frac{1}{12}$; 1; -12; 144;... bo'lsa, geometrik progressiyaning birinchi hadini va maxrajini toping.

A) 12; - 1 B) 1; 12 C) $-\frac{1}{12}$; -12 D) 12; $-\frac{1}{12}$

4184. Agar -7; -7; -7;...bo'lsa, geometrik progressiyaning maxrajini va birinchi hadini toping.

A) 7; -1 B) 1; -7 C) 2; -7 D) -7; 1

4185. Agar $-0,002\sqrt{10}$; $-0,02$; $-0,02\sqrt{10}$;... bo'lsa, geometrik progressiyaning maxrajini va birinchi hadini toping.

A) $\sqrt{10}$; $-0,002\sqrt{10}$ B) $-\sqrt{10}$; $0,002\sqrt{10}$

C) $0,002\sqrt{10}$; $-\sqrt{10}$; D) $-0,002\sqrt{10}$; $-\sqrt{10}$;

4186. Agar $\sqrt{5}$; -1; $\frac{1}{\sqrt{5}}$;... bo'lsa, geometrik progressiyaning birinchi hadi va maxrajini toping.

A) $-\frac{1}{\sqrt{5}}$; $\sqrt{5}$ B) $\frac{1}{\sqrt{5}}$; $-\sqrt{5}$

C) $\sqrt{5}$; $-\frac{1}{\sqrt{5}}$ D) $-\sqrt{5}$; $\frac{1}{\sqrt{5}}$

4187. Agar $\frac{1}{x}$; x; x^3;... bo'lsa, geometrik progressiyaning birinchi hadi va maxrajini toping.

A) $\frac{1}{x}$; x B) $\frac{1}{x}$; x^2 C) $\frac{1}{x^2}$; x D) x^2; $\frac{1}{x}$

✓ Agar $b_1=2$ *va* $q=3$ bo'lsa, geometrik progressiyaning dastlabki to'rtta hadini toping.

1) 2; 6; 9; 12;... 2) 2; 5; 8; 11;...

3) 2; 6; 18; 54;... 4) 2; 6; 18; 8;...

A) 3 B) 4 C) 2 D) 1; 2

Yechimi: Formula $b_n = b_1 \cdot q^{n-1}$

b_1 $b_2 = b_1 \cdot q$; $b_3 = b_1 \cdot q^2$; $b_4 = b_1 \cdot q^3$;

$b_1 = 2$; $b_2 = 6$; $b_3 = 18$; $b_4 = 58$;

Demak,

1) 2; 6; 9; 12;... 2) 2; 5; 8; 11;...

3) 2; 6; 18; 54;... 4) 2; 6; 18; 8;...

Javob: (A)

4188. Agar $b_1 = 8$ *va* $q = 2$ bo'lsa, geometrik progressiyaning dastlabki uchta hadini toping.

1) 8; 16; 1;... 2) -10; 20; -40;...

3) 8; 16; 32; 64;... 4) -50; 10; 2;...

A) 1 B) 3 C) 4 D) 2

4189. Agar $b_1 = 10$ *va* $q = -2$ bo'lsa, geometrik progressiyaning dastlabki uchta hadini toping.

1) 8; 16; 1;... 2) -10; 20; -40;...

3) 8; 16; 32; 64;... 4) -20; 20; -40;...

A) 3 B) 4 C) 1 D) 2

4190. Agar $b_1 = 4$ *va* $q = \frac{1}{2}$ bo'lsa, geometrik progressiyaning dastlabki uchta hadini toping.

1) 4; 2; 1;... 2) -10; 20; -40;...

3) 4; 2; 8; 64;... 4) -50; 10; 2;...

A) 3 B) 4 C) 2 D) 1

4191. Agar $b_1 = -3$ *va* $q = -4$ bo'lsa, geometrik progressiyaning dastlabki uchta hadini toping.

1) 8; 16; 1;... 2) -10; 20; -40;...

3) -3; 12; -48;... 4) -50; 10; 2;...

A) 2 B) 4 C) 3 D) 1

4192. Agar $b_1 = -3$ *va* $q = -\sqrt{3}$ bo'lsa, geometrik progressiyaning dastlabki uchta hadini toping.

1) -3; $3\sqrt{3}$; $-9\sqrt{3}$;... 2) -10; 20; -40;...

3) -3; $3\sqrt{3}$; -9;... 4) -50; 10; 2;...

A) 2 B) 4 C) 3 D) 1

✓ Geometrik progressiyada $b_1 = 2$ *va* $q = 3$ bo'lsa, b_4 ni toping.

A) 48 B) 54 C) 24 D) 12

Yechimi:

Formula: *misol:*

$b_n = b_1 \cdot q^{n-1}$, $b_4 = b_1 \cdot q^3$ $\Rightarrow$ $b_4 = 2 \cdot 3^{4-1} = 2 \cdot 27 = 54$ **J: (B)**

Izoh: b_4 ni to'rtinchi hadi deyiladi.

4193. Geometrik progressiyada $b_1 = 3$ *va* $q = 10$ bo'lsa, b_4 ni toping.

A) 300 B) 1000 C) 3000 D) 30

4194. Geometrik progressiyada $b_1 = -3$ *va* $q = \frac{1}{2}$ bo'lsa, b_7 ni toping.

A) $-3/32$ B) $-3/64$ C) 34/64 D) 3/64

4195. Geometrik progressiyada $b_1 = 1$ *va* $q = -2$ bo'lsa, beshinchi hadini toping.

A) 32 B) 16 C) 8 D) -16

4196. Geometrik progressiyada $b_1 = -6$ *va* $q = -\frac{1}{3}$ bo'lsa, oltinchi hadini toping.

A) 2/81 B) 4/81 C) 81 D) 1/81

4197. Ushbu b_1; b_2; 3; 6; 12;... geometrik progressiya-ning dastlabki ikkita hadi hadini toping.

A) 1,5 ; 0,5 B) 0,75; 1,5

C) 0,5; 0,25 D) 1,08; 1,05

4198. Ushbu b_1; b_2; $\frac{16}{3}$; $-\frac{64}{9}$; $\frac{256}{27}$;... geometrik progressiyaning dastlabki ikkita hadi hadini toping.

A) 3; -4 B) 4; 1 C) 5; -4 D) 1; -6

4199. Geometrik progressiyada $-\frac{1}{8}$; $\frac{1}{4}$; $-\frac{1}{2}$;... bo'lsa, b_{13} ni toping.

A) 1024 B) 512 C) -512 D) -256

4200. Geometrik progressiyada 64; 32; 16;.. bo'lsa, oltinchi hadi to'qqizinchi hadidan nechiga ortiq?

A) 1,75 B) 1 C) 3/4 D) 1/4

✓ Agar $b_n = 3 \cdot 2^n$ bo'lsa, $b_2 + b_4$ ni toping.

A) 48 B) 50 C) 12 D) 60

Yechimi:

$b_{\boxed{n}} = 3 \cdot 2^{\boxed{n}}$ $\Rightarrow$ $b_{\boxed{2}} = 3 \cdot 2^{\boxed{2}} = 3 \cdot 4 = 12$

$b_{\boxed{4}} = 3 \cdot 2^{\boxed{4}} = 3 \cdot 16 = 48$ $b_2 + b_4 = 12 + 48 = 60$

Javob: (D)

4201. Agar $b_n = 5^{n-3}$ bo'lsa, b_7 ni toping.

A) 125 B) 25 C) 625 D) 5

4202. Agar $b_n = \left(\frac{1}{3}\right)^{4-n}$ bo'lsa, beshinchi va to'rtinchi hadini yig'indisini toping.

A) 9 B) 4 C) 6 D) 5

4203. Agar $b_n = -2\frac{1}{2^{n-1}}$ bo'lsa, uchinchi hadi to'rtinchi hadlarini ayirmasini toping.

A) $-1/4$ B) 1/4 C) $-1/8$ D) $-1/2$

4204. Agar $b_n = c \cdot b^{n-5}$ $(c > 0)$ sonlar ketma-ketligining umumiy hadi bo'lib, $b_2 \cdot b_8 = 36$ bo'lsa, c ni toping.

A) -6 B) 6 C) 4 D) 5

4205. Agar $c_n = a \cdot k^{n-6}$ $(a<0)$ sonlar ketma-ketligining umumiy hadi bo'lib, $c_3 \cdot c_9 = 16$ bo'lsa, a ni toping.

A) 9 B) -4 C) 4 D) 5

✓ Agar 4; 12; 36; 108;... bo'lsa, b_n ni toping.

A) $-4+5n$ B) $4 \cdot 3^{n-1}$ C) $4 \cdot 2^{n-1}$ D) $3 \cdot 4^{n-1}$

Yechimi:

4; 12; 36; 108;...

Formula: $b_n = b_1 \cdot q^{n-1}$ *misol*: $b_n = 4 \cdot 3^{n-1}$

$b_1 = 4 \quad b_2 = 12 \quad q = \frac{12}{4} = 3$

Javob: (B)

Izoh: b_n ni "n" chi hadi formulasi yoki umumiy hadini topish formulasi deyiladi.

4206. Agar 3; 1; $\frac{1}{3}$;... bo'lsa, b_n ni toping.

A) $3 \cdot \frac{1}{3^{1-n}}$ B) $\frac{1}{3} \cdot 3^{1-n}$ C) $3 \cdot 3^{n-1}$ D) $3 \cdot 3^{1-n}$

4207. Agar 4; -1; $\frac{1}{4}$;... bo'lsa, umumiy hadini toping.

A) $b_n = 4 \cdot \left(-\frac{1}{4}\right)^{1-n}$ B) $b_n = \frac{1}{4} \cdot 4^{1-n}$

C) $b_n = -4 \cdot \left(\frac{1}{4}\right)^{n-1}$ D) $b_n = 4 \cdot \left(-\frac{1}{4}\right)^{n-1}$

4208. Agar 3; -4; $\frac{16}{3}$;... bo'lsa, $n-$ hadi formulasini toping.

A) $b_n = 3 \cdot \left(-\frac{4}{3}\right)^{1-n}$ B) $b_n = -3 \cdot \left(\frac{4}{3}\right)^{n-1}$

C) $b_n = 3 \cdot \left(\frac{4}{3}\right)^{n-1}$ D) $b_n = 3 \cdot \left(-\frac{4}{3}\right)^{n-1}$

✓ 6;12;24;... geometrik progressiyada 192 soni nechanchi hadi bo'ladi ?

A) 5 B) 7 C) D) 8

Yechimi:

6; 12; 24;... $b_1 = 6 \quad q = 2 \quad b_n = 192$

Formula: $b_n = b_1 \cdot q^{n-1}$ *misol*: $192 = 6 \cdot 2^{n-1}$

$192 = 6 \cdot 2^{n-1}$

$\frac{192}{6} = 2^{n-1}$

$32 = 2^{n-1}$

$\Rightarrow \begin{vmatrix} 2^5 = 2^{n-1} \\ 5 = n-1 \\ n = 6 \end{vmatrix}$

Javob: (C)

Izoh: Agar "n" kasr yoki manfiy chiqsa u son bu ketma-ketlikning hadi bo'lmaydi.

4209. 4; 12; 36;... geometrik progressiyada 324 soni nechanchi hadi bo'ladi ?

A) 4 B) 6 C) 5 D) 8

4210. 625; 125; 25;... geometrik progressiyada 1/25 soni nechanchi hadi bo'ladi ?

A) 7 B) 8 C) 6 D) 9

4211. -1; 2; -4;... - geometrik progressiyada 128 soni nechanchi hadi bo'ladi ?

A) 8 B) 10 C) 7 D) 9

4212. 162 quyidagi keltirilgan geometrik progressiyalarning qaysi birining hadi bo'la oladi?

1) 2; 12; 72;... 2) 2; 4; 32;...

3) 2; 6; 18; ... 4) 10; 6; 22;...

A) 1 B) 2 C) 3 D) 4

✓ Agar musbat hadli geometrik progressiyada : $b_8 = \frac{1}{9}$ *va* $b_6 = \frac{1}{81}$ bo'lsa, b_1 *va* q ni toping.

A) 9; 4 B) 3; 9 C) $\frac{1}{2^9}$; 3 D) $\frac{1}{3^9}$; 3

Yechimi:

Formula: $b_n = b_1 \cdot q^{n-1}$ *misol*: $b_6 = b_1 \cdot q^7 = \frac{1}{9}$, $b_5 = b_1 \cdot q^5 = \frac{1}{81}$

$\begin{cases} b_1 \cdot q^7 = \frac{1}{9} \\ b_1 \cdot q^5 = \frac{1}{81} \end{cases} \quad \begin{cases} \underline{b_1 \cdot q^7 = \frac{1}{9}} \\ b_1 \cdot q^5 = \frac{1}{81} \end{cases}$

$q^2 = 9$

$q = \pm 3$

musbat hadli geometrik progressiyada $\Rightarrow q = 3$

$b_1 \cdot q^5 = \frac{1}{81} \Rightarrow b_1 \cdot 3^5 = \frac{1}{81}$

$b_1 = \frac{1}{3^5 \cdot 81} \Rightarrow b_1 = \frac{1}{3^9}$ **J: (D)**

4213. Agar musbat hadli geometrik progressiyada $b_4 = 9$ *va* $b_6 = 64$ bo'lsa, b_1 *va* q ni toping.

A) 40; 0,8 B) $\frac{8}{3}$; $\frac{243}{512}$

C) $\frac{243}{512}$; $\frac{8}{3}$ D) 0,6; 20

4214. Agar manfiy hadli geometrik progressiyada $b_6 = -9$ *va* $b_8 = -3$ bo'lsa, q *va* b_1 ni toping.

A) $-\frac{1}{\sqrt{3}}$; $-81\sqrt{3}$ B) $-81\sqrt{3}$; $-\frac{1}{\sqrt{3}}$

C) $\frac{1}{\sqrt{3}}$; $-81\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$; 81

4215. Agar manfiy hadli geometrik progressiyada $b_4 = -9$ *va* $b_6 = -4$ bo'lsa, b_1 *va* q ni toping.

A) $\frac{243}{8}$; $\frac{2}{3}$ B) $-\frac{243}{8}$; $\frac{2}{3}$ C) $-\frac{2}{3}$; $-\frac{243}{8}$ D) -2; 38

4216. Geometrik progressiyaning dastlabki 6 ta hadi 2; b_2; b_3; b_4; b_5 *va* 486 bo'lsa, $b_2+b_3+b_4+b_5$ ni toping.

A) 240 B) 250 C) 200 D) 230

4217. Geometrik progressiyada progressiyaning dastlabki 6 ta hadi 7; b_2; b_3; b_4; b_5 *va* 224 bo'lsa, $b_2 - b_3 - b_4 + b_5$ ni toping.

A) 96 B) 42 C) 48 D) 40

4218. Geometrik progressiyada progressiyaning dastlabki 6 ta hadi 4; b_2; b_3; b_4; b_5 *va* 972 bo'lsa, $b_2 + b_3 - b_4 + b_5$ ni toping.

A) 324 B) 264 C) 348 D) 254

4219. Geometrik progressiyada $b_1 + b_5 = 51$ *va* $b_2 - b_6 = 102$ bo'lsa, shu progressiya birinchi hadi va maxrajini o'rta proporsional qiymatini toping.

A) 6 B) $3\sqrt{6}$ C) $\sqrt{3}$ D) $\sqrt{6}$

4220. Geometrik progressiyada $b_4 - b_2 = 24$ *va* $b_2 + b_3 = 6$ bo'lsa, b_2 ning qiymatini toping.

A) 0,4 B) 2,2 C) 1 D) 1,2

4221. 4 va 64 sonlari orasiga uchta musbat son shunday qo'yilganki, natijada u sonlar bilan birgalikda geometrik progressiya hosil qilingan. Qo'yilgan sonlarning yig'indisini toping.

A) 60 B) 53 C) 56 D) 48

4222. 2 va 162 sonlari orasiga uchta musbat son shunday qo'yilganki, n atijada u sonlar bilan birgalikda geometrik progressiya hosil qilingan. Qo'yilgan sonlarning yig'indisini toping.

A) 82 B) 75 C) 78 D) 72

4223. 1/3 va 27 sonlari orasiga uchta musbat son shunday qo'yilganki, natijada u sonlar bilan birgalikda geometrik progressiya hosil qilingan. Qo'yilgan sonlarning yig'indisini toping.

A) 10 B) 17 C) 12 D) 13

4224. Olti haddan iborat Geometrik progressiyaning dastlabki uchta hadining yig'indisi 168 ga, keying uchtasiniki esa 21 ga teng. Shu progressiyaning birinchi hadini toping.

A) 96 B) 0,5 C) 86 D) 126

4225. Geometrik progressiyaning maxraji 0,5 ga teng bo'lsa, $b_1(b_2)^{-1} b_3(b_4)^{-1} \ldots b_{13}(b_{14})^{-1}$ ning qiymatini toping.

A) 64 B) 32 C) 128 D) 512

4226. Geometrik progressiya hadlari uchun $b_1 b_3 \ldots b_{13} = b_2 b_4 \ldots b_{14} / 128$ tenglik o'rinli bo'lsa, q ning qiymatini toping.

A) 1 B) 3 C) 2 D) 5

✓ Quyidagi tasdiqlardan qaysi biri geometrik progressiyadagi $b_8 \cdot b_{25}$ ga teng bo'ladi ?

1) $b_{11} \cdot b_{22}$ 2) $b_5 \cdot b_{25}$ 3) $b_{30} \cdot b_8$ 4) $b_3 \cdot b_{30}$
5) $b_{16} \cdot b_{12}$ 6) $b_{21} \cdot b_{12}$

A) 1; 3 B) 1; 6 C) 1; 4 D) 1; 4; 6

Yechimi: Geometrik progressiya tashkil etish $b_2^2 = b_1 \cdot b_3$ shartiga ko'ra:

$b_8 \cdot b_{25} = b_k \cdot b_l$

$8+25=33 \quad k+l=33$

Formula: *misol*:

$b_n \cdot b_m = b_k \cdot b_l$ | 1) $b_{11} \cdot b_{22}$ 2) $b_5 \cdot b_{25}$ 3) $b_{30} \cdot b_8$ **J: (D**

$n+m=k+l$ | 4) $b_3 \cdot b_{30}$ 5) $b_{16} \cdot b_{12}$ 6) $b_{21} \cdot b_{12}$

4227. Quyidagi tasdiqlardan qaysi biri Geometrik progressiyadagi $b_{19} \cdot b_{24}$ ga teng bo'ladi ?

1) $b_{17} \cdot b_{26}$ 2) $b_{40} \cdot b_3$ 3) $b_{18} \cdot b_{25}$ 4) $b_3 \cdot b_{30}$
5) $b_{33} \cdot b_{12}$ 6) $b_{22} \cdot b_{17}$

A) 1; 3; 6 B) 1; 2; 3 C) 1; 2; 4 D) 1; 2; 6

4228. Quyidagi tasdiqlardan qaysi biri Geometrik progressiyadagi $b_{2n-6} \cdot b_{24-n}$ ga teng bo'ladi?

1) $b_n \cdot b_{16}$ 2) $b_{40} \cdot b_n$ 3) $b_{20} \cdot b_{n-2}$ 4) $b_{n+4} \cdot b_{14}$
5) $b_{33} \cdot b_{n-15}$ 6) $b_{2n+2} \cdot b_{17}$

A) 3; 6 B) 1; 2; 3 C) 3; 4 D) 3; 4; 5

4229. Geometrik progressiyada $b_8 \cdot b_7 = 32$ bo'lsa, $b_{10} \cdot b_5$ ni aniqlang.

A) 60 B) 16 C) 20 D) 32

4230. Musbat hadli geometrik progressiyada $b_{10} \cdot b_{30} = 576$ bo'lsa, b_{20} ni toping.

A) 26 B) 24 C) 12 D) 34

4231. Uchinchi va yettinchi hadi ko'paytmasi 144 ga teng bo'lgan Geometrik progressiyaning beshinchi hadini toping.

A) ±12 B) 12 C) 8 D) −12

4232. Agar geometrik progressiyaning to'rtinchi hadi 5 ga. oltinchi hadi 20 ga teng bo'lsa, beshinchi hadini toping.

A) 60 B) −10 C) 10 D) ±10

4233. Agar geometrik progressiyaning to'rtinchi hadi 3 ga, sakkizinchi hadi 16 ga teng bo'lsa, oltinchi hadini toping.

A) 4 B) 8 C) $4\sqrt{3}$ D) $2\sqrt{3}$

4234. Musbat hadli Geometrik progressiyada $b_2 \cdot b_3 \cdot b_4 = 216$ bo'lsa, uning uchinchi hadini toping.

A) ±6 B) 12 C) 6 D) 18

4235. Geometrik progressiyada $b_3 \cdot b_4 \cdot b_5 = 64$ bo'lsa. uning to'rtinchi hadini toping.

A) 4 B) 10 C) ±4 D) 8

4236. Geometrik progressiyada $b_1 + b_9 = 5$ *va* $b_1^2 + b_9^2 = 17$ bo'lsa, $b_4 \cdot b_6$ ni toping.

A) 4 B) 3 C) −4 D) 2

4237. Quyidagi keltirilgan ketma – ketliklardan qaysilari geometrik progressiyani tashkil etadi?

1) $a_n = 2x^n$ 2) $c_n = ax^n + 11$

3) $b_n = \frac{\sqrt{3}}{2}\left(\frac{3}{5}\right)^n$ 4) $b_n = 3 \cdot 2^n + 5$

A) 1; 3 B) 1; 3 C) 2; 4 D) 1; 3; 4

4238. Quyidagi keltirilgan ketma - ketliklardan qaysilari geometrik progressiyani tashkil etadi?

1) $a_n = -3x^n + 2$ 2) $c_n = \dfrac{(-1)^n}{2^n}$

3) $a_n = \dfrac{2}{3}\cdot 2^n$ 4) $b_n = \left(-\dfrac{1}{3}\right)^n$

A) 1; 3 B) 1; 3 C) 2; 4 D) 2; 3; 4

✓ Yig'indisi 35 ga teng bo'lgan uchta son o'suvchi geometrik progressiyaning dastlabki uchta hadlaridir. Agar shu sonlardan mos ravishda 2; 2 va 7 sonlarni ayrilsa, hosil bo'lgan sonlar arifmetik progressiyaning ketma- ket hadlari bo'ladi. Arifmetik progressiyaning dastlabki 10 ta hadini yig'indisini toping.

A) 355 B) 255 C) 300 D) 552

Yechimi:

Yig'indisi 35 ga teng bo'lgan uchta son o'suvchi geometrik progressiyaning dastlabki uchta hadlaridir.

$$\Downarrow$$

$$\begin{cases} b_1 + b_2 + b_3 = 35 \\ b_1 + b_1\cdot q + b_1\cdot q^2 = 35 \end{cases}$$

Agar shu sonlardan mos ravishda 2; 2 va 7 sonlarni ayirilsa, hosil bo'lgan sonlar arifmetik progressiyaning ketma – ket hadlari bo'ladi.

$$\Downarrow$$

$$\overset{a_1}{b_1 - 2};\quad \overbrace{b_1\cdot q - 2}^{a_2};\quad \overbrace{b_1\cdot q^2 - 7}^{a_3};$$

Arifmetik progressiyani tashkil etish sharti:

$$2\cdot a_2 = a_1 + a_3 \qquad \begin{cases} 2\cdot(b_1\cdot q - 2) = b_1 - 2 + b_1\cdot q^2 - 7 \\ b_1 + b_1\cdot q + b_1\cdot q^2 = 35 \end{cases}$$

$$\Downarrow$$

$$\begin{cases} b_1(2q - q^2 - 1) = -5 \\ b_1(1 + q + q^2) = 35 \end{cases} \Rightarrow \frac{2q - q^2 - 1}{1 + q + q^2} = -\frac{5}{35}$$

$$\frac{2q - q^2 - 1}{1 + q + q^2} = -\frac{1}{7}$$

Tenglamani yechib $q_1 = \dfrac{1}{2}$ $q_2 = 2$ ga ega bo'lamiz :

o'suvchi geometrik progressiyaning dastlabki uchta hadlardir

$q_1 \neq \dfrac{1}{2}$ $q_2 = 2$

$$b_1(2q - q^2 - 1) = -5$$

$$b_1(2\cdot 2 - 2^2 - 1) = -5 \Rightarrow b_1 = 5$$

$$\Downarrow$$

$$\overset{a_1}{b_1 - 2};\quad \overbrace{b_1\cdot q - 2}^{a_2};\quad \overbrace{b_1\cdot q^2 - 7}^{a_3};$$

$$a_1 = 3 \quad a_2 = 8 \quad a_3 = 13$$

$$d = 5$$

Arifmetik progressiyaning dastlabki 10 ta hadining yig'indisini toping.

$$\Downarrow$$

Formula: *misol:*

$$S_n = \frac{2\cdot a_1 + (n-1)\cdot d}{2}\cdot n \qquad S_{10} = \frac{2\cdot 3 + 9\cdot 5}{2}\cdot 10 = 255$$

Javob: (B)

Izoh: geometrik progressiyani tashkil etish sharti: $b_2^2 = b_1\cdot b_3$

4239. Agar 1; $\sqrt{y}$; $3\sqrt{y} + 4$ sonlari geometrik Progressiyaning ketma - ket hadlari bo'lsa, y ni toping.

A) 4 B) 25 C) 16 D) 49

4240. x ning qanday qiymatlarida $0,(16)$; x; $0,(25)$ sonlar ishoralari almashinuvchi geometrik progressiyaning ketma - ket hadlari bo'ladi?

A) $-0,(20)$ B) $0,(20)$ C) $-0,(2)$ D) $\pm 0,(20)$

4241. Yig'indisi 15 ga teng bo'lgan uchta son arifmetik progressiyaning dastlabki uchta hadlaridir. Agar shu sonlardan mos ravishda 1; 3 va 9 sonlarni qoshilsa, hosil bo'lgan sonlar o'suvchi geometrik progressiyaning dastlabki ketma-ket hadlari bo'ladi. Geometrik progressiyaning dastlabki 6 ta hadini yig'indisini toping.

A) 256 B) 248 C) 252 D) 250

4242. Agar geometrik progressiyaning dastlabki 4 ta hadiga mos ravishda 1; 1; 4 va 13 sonlarini qoshsak, ular arifmetik progressiyani tashkil etadi. Geometrik Progressiyaning maxrajini toping.

A) 3 B) -2 C) 4 D) 2

GEOMETRIK PROGRESSIYA DASTLABKI n TA HADINING YIG'INDISI

✓ $1 + 3 + 3^2 + 3^3 + 3^4 + 3^5$ geometrik progressiyani hisoblang.

A) 364 B) 454 C) 490 D) 360

Yechimi:

$$1 + 3 + 3^2 + 3^3 + 3^4 + 3^5 \Rightarrow b_1 = 1;\ b_2 = 3;\ q = 3;\ n = 6$$

Formula: *misol:*

$$S_n = \frac{b_1(q^n - 1)}{q - 1} \qquad S_6 = \frac{1\cdot(3^6 - 1)}{3 - 1} = 364$$

Javob: (A)

4243. Geometrik progressiyada $b_1=1,\ \ q=2$ *va* $n=6$ ga teng bo'lsa, uning dastlabki n ta hadining yig'indisini toping.
A) 73 B) 63 C) 85 D) 65

4244. Geometrik progressiyada $b_1=2,\ \ q=\frac{1}{2}$ *va* $n=5$ ga teng bo'lsa, uning dastlabki n ta hadining yig'indisini toping.
A) 8/31 B) 3/ 8 C) 21/8 D) 31/ 8

4245. Geometrik progressiyada $b_1=1,\ \ q=-\frac{1}{3}$ ga teng bo'lsa, uning dastlabki 4 ta hadining yig'indisini toping.
A) 20/27 B) 27/40 C) 40/27 D) 37/27

4246. Geometrik progressiyada $b_1=-5,\ \ q=-\frac{2}{3}$ ga teng bo'lsa, uning dastlabki beshta hadining yig'indisini toping.
A) $\frac{275}{81}$ B) $\frac{295}{27}$ C) $\frac{252}{27}$ D) $\frac{275}{27}$

4247. 6; 2; $\frac{2}{3}$;... geometrik progressiya dastlabki beshta hadning yig'indisini toping hisoblang.
A) 81 B) 3 C) $\frac{252}{27}$ D) $\frac{242}{27}$

✓ $b_1=7\ \ S_n=847,\ q=3$ bo'lsa, geometrik progressiyaning n ni toping.
A) 7 B) 5 C) 4 D) 6
Yechimi:
$b_1=7\ \ S_n=847,\ q=3$

Formula: $S_n=\frac{b_1(q^n-1)}{q-1}$ *misol*: $847=\frac{7\cdot(3^n-1)}{3-1}\Rightarrow\begin{vmatrix}\frac{847\cdot 2}{7}=3^n-1\\ 243=3^n\\ n=5\end{vmatrix}$ **J: (B)**

4248. $b_1=-3\ \ S_n=-93,\ q=2$ geometrik progressiyadan n ni toping.
A) 6 B) 5 C) 3 D) 4

4249. $q=\frac{1}{2}\ \ S_6=252$ geometrik progressiyaning birinchi hadini toping.
A) 64 B) -128 C) 252 D) 128

4250. $b_1=8\ \ S_n=4088,\ q=2$ geometrik progressiyaning n *va* b_3 ni toping.
A) 9 ; 32 B) $\frac{1}{9}$; 32 C) 32; 9 D) 32

✓ $5+15+45+\ldots+1215$ ni hisoblang.
A) 1250 B) 1425 C) 1820 D) 1720
Yechimi:
$5+15+45+\ldots+1215$
$b_1=5\ \ q=3,\ \ b_n=1215$
$S_n=\frac{b_1(q^n-1)}{q-1}=\frac{b_1\cdot q^n-b_1}{q-1}=\frac{b_n\cdot q-b_1}{q-1}$
$S_n=\frac{b_n\cdot q-b_1}{q-1}=\frac{1215\cdot 3-5}{3-1}=1820$ **Javob: (C)**

4251. $1+2+4+\ldots+128$ ni hisoblang.
A) 255 B) 575 C) 355 D) 245

4252. $1+3+9+\ldots+243$ ni hisoblang.
A) 364 B) 264 C) 434 D) 341

4253. $-5+15-45+\ldots-405$ ni hisoblang.
A) 305 B) –200 C) –305 D) 500

4254. $b_1=2,\ \ b_n=1458,\ \ S_n=2186$ geometrik progressiyadan n *va* q ni toping.
A) 7 ; 3 B) 3 ; 6 C) 6; 7 D) 6; 3

4255. $b_1=1,\ \ b_n=2401,\ \ S_n=2801$ geometrik progressiyadan q *va* n ni toping.
A) 7; 5 B) 6 ; 5 C) 5; 7 D) 8; 5

4256. Geometrik progrogressiyaning maxraji 3 ga, dastlabki to'rta hadlari yig'indisi 80 ga teng Uning to'rtinchi hadini toping.
A) 27 B) 64 C) 40 D) 54

4257. Geometrik progressiyaning ikkinchi hadi 2 ga, beshinchi hadi 16 ga teng. Shu progr essiyaning dastlabki oltita hadi yig'indisini toping
A) 63 B) 65 C) 64 D) 54

4258. Geometrik progrogressiyaning maxraji –2 ga, dastlabki beshta hadining yig'indisi 5,5 ga teng. Progressiyaning beshinchi hadini toping.
A) 4 B) 6 C) –8 D) 8

4259. Geometrik progressiyada $b_1=1,\ \ q=\sqrt{2}$ bo'lsa, $b_1+b_3+b_5+\ldots+b_{15}$ ni toping.
A) 255 B) 253 C) 256 D) 254

4260. Arifmetik progressiyaning hadlari $a_1,\ a_2,\ldots a_n$ ayirmasi esa $d\neq -1,\ 0,\ 1$ bo'lsa, geometrik progressiyada bo'lsa,
$(a_2-a_1)+(a_3-a_2)^2+\ldots(a_{n+1}-a_n)^n$ ni toping.
A) $\frac{d(d^n-1)}{d-1}$ B) $\frac{d^n-1}{d-1}$ C) $\frac{d(d^n+1)}{d+1}$ D) $\frac{d^n}{d-1}$

4261. O'suvchi geometrik progressiyaning dastlabki to'rtta hadi yig'indisi 15 ga, undan keying to'rttasiniki esa 240 ga teng. Shu progressiyaning dastlabki oltita hadi yig'indisini topi ng.
A) 48 B) 63 C) 114 D) 127

CHEKSIZ KAMAYUVCHI GEOMETRIK PROGRESSIYA

✓ n – hadining formulasi quyidagicha berilgan geometrik progressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la oladi?
1) $b_n=\frac{3}{5^n}$ 2) $b_n=3\cdot(-2)^n$ 3) $b_n=5\cdot\left(\frac{1}{2}\right)^{n-1}$
A) 3 B) 1; 3 C) 1 D) 1; 2

Yechimi:
cheksiz kamayuvchi geometrik progressiya bo'lishi uchun:

$$|q|<1$$

1) $b_n=\frac{3}{5^n}$ $b_1=\frac{3}{5}$ $b_2=\frac{3}{25}\Rightarrow q=\frac{b_2}{b_1}=\frac{1}{5}$ *cheksiz kamayuvchi*

2) $b_n=3\cdot(-2)^n$ $b_1=-6$ $b_2=12\Rightarrow q=\frac{b_2}{b_1}=-2$

cheksiz kamayuvchi emas

3) $b_n=5\cdot\left(\frac{1}{2}\right)^{n-1}$ $b_1=5$ $b_2=\frac{5}{2}\Rightarrow q=\frac{b_2}{b_1}=\frac{1}{2}$

cheksiz kamayuvchi

Izoh: Demak, cheksiz kamayuvchi geometrik progressiyaning maxraji: $|q|<1$

4262. n – hadining formulasi quyidagicha berilgan geometrik progressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la oladi?

1) $b_n=-3\cdot 4$ 2) $b_n=2\cdot\left(-\frac{1}{3}\right)^n$ 3) $b_n=\frac{1}{4^{n-1}}$

A) 2 ; 3 B) 2 C) 3 D) 1; 2

4263. n – hadining formulasi quyidagicha berilgan geometrik pr ogressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la oladi?

1) $b_n=\left(\frac{1}{4}\right)^{n-1}$ 2) $b_n=5^n\cdot\left(\frac{1}{5}\right)$ 3) $b_n=2\cdot 3^{n-1}$

A) 1 B) 2; 3 C) 3 D) 1; 2

4264. Quyidagi berilgan geometrik progressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la oladi?

1) $1,\ \frac{1}{2},\ \frac{1}{4},\ldots$ 2) $\frac{1}{3},\ \frac{1}{9},\ \frac{1}{27},\ldots$

3) $-9,\ -27,\ -81,\ldots$ 4) $-81,\ -27,\ -9,\ldots$

A) 1; 2; 3 B) 1; 3; 4 C) barchasi D) 1; 2 ; 4

4265. Quyidagi berilgan geometrik progressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la oladi?

1) $6,\ 1,\ \frac{1}{6},\ldots$ 2) $\frac{8}{3},\ \frac{8}{9},\ \frac{8}{27},\ldots$

3) $-1,\ 5,\ -25,\ldots$ 4) $-\frac{1}{7},\ -1,\ -7,\ldots$

A) 1; 2; 3 B) 1; 2; 4 C) barchasi D) 1; 2

4266. Quyidagi berilgan geometrik progressiyalardan qayisilari cheksiz kamayuvchi geometrik progressiya bo'la olmaydi?

1) $b_7=12,\ b_{11}=\frac{3}{4}$ 2) $b_7=-30,\ b_6=15$

3) $b_5=9,\ b_6=\frac{1}{27}$ 4) $b_2=14,\ b_4=686$

A) 2; 4 B) 1; 2; 4 C) barchasi D) 1; 2; 3

✔ $3+\frac{1}{2}+\frac{1}{12}+\ldots$ ni hisoblang.

A) 5/18 B) 16/5 C) 4 D) 18/5

Yechimi: $b_1=3,\ q=\frac{1}{6}$

Formula: $S=\frac{b_1}{1-q}$ *misol*: $S=\frac{3}{1-\frac{1}{6}}=\frac{18}{5}=3\frac{3}{5}$ **Javob: (D)**

4267. Geometrik progressiyada $b_1=\frac{1}{8},\ q=\frac{1}{2}$ ga teng bo'lsa, uning yig'indisini toping.

A) 8 B) 1/ 8 C) 4 D) 0,25

4268. Geometrik progressiyada $q=-\frac{1}{3},\ b_1=9$ ga teng bo'lsa, uning yig'indisini toping.

A) 27/4 B) 27/40 C) 20/27 D) 37/27

4269. Geometrik progressiyada $b_5=\frac{1}{81},\ q=\frac{1}{3}$ ga teng bo'lsa, uning yig'indisini toping.

A) 1,5 B) 2 C) 2,5 D) 5

4270. Geometrik progressiyada $q=-\frac{1}{2},\ b_4=-\frac{1}{8}$ ga teng bo'lsa, uning yig'indisini toping.

A) 0,(8) B) 0,(3) C) 3,(2) D) 0,(6)

4271. $-7;\ -1;\ -\frac{1}{7};\ldots$ geometrik progressiya yig'indisini toping.

A) $\frac{47}{6}$ B) 49 C) $8\frac{1}{6}$ D) $-8\frac{1}{6}$

4272. $\sqrt{5},\ -1,\ \frac{1}{\sqrt{5}}$ geometrik progressiya yig'indisini toping.

A) 4,5 B) $\frac{6\sqrt{5}+5}{.5}$ C) $\frac{\sqrt{5}-1}{\sqrt{5}}$ D) $\frac{5}{\sqrt{5}+1}$

4273. $\frac{1}{2}-\frac{1}{6}+\frac{1}{18}-\frac{1}{54}+\ldots$ ni hisoblang.

A) $\frac{3}{4}$ B) $\frac{3}{8}$ C) $\frac{5}{8}$ D) $-\frac{3}{8}$

4274. $\frac{1}{2}\cdot\frac{1}{3}+\frac{1}{4}\cdot\frac{1}{9}+\frac{1}{8}\cdot\frac{1}{27}+\ldots$ ni hisoblang.

A) $\frac{3}{5}$ B) $\frac{1}{5}$ C) $\frac{5}{6}$ D) $-\frac{3}{5}$

4275. $\sqrt{\frac{3}{2}}+\sqrt{\frac{2}{3}}+\frac{2}{3}\sqrt{\frac{2}{3}}+\ldots$ ni hisoblang.

A) $\frac{\sqrt{6}}{2}$ B) $\frac{3\sqrt{6}}{2}$ C) $\frac{2\sqrt{6}}{3}$ D) $\frac{2\sqrt{3}}{3}$

4276. $\sqrt[3]{3\sqrt[3]{3\sqrt[3]{3\sqrt[3]{3}}}}\ldots$ ni hisoblang.

A) $\sqrt[6]{3}$ B) $\sqrt[3]{3}$ C) $\sqrt{3}$ D) 1

4277. $\sqrt{2018\sqrt{2018\sqrt{2018\sqrt{2018\ldots}}}}$ ni hisoblang.

A) 2018 B) $\frac{1}{2018}$ C) 2017 D) $\sqrt{2018}$

✓ Geometrik progressiyada $S_k - S_{k-1} = 64$ $S_{k+1} - S_k = 128$ bo'lsa, uning maxrajini toping.

A) 5 B) 1/5 C) 2 D) 1/2

Yechimi:

Formula: *misol*:

$$\underline{S_n - S_{n-1} = b_n} \Rightarrow \left| \begin{array}{l} S_k - S_{k-1} = 64 = b_k \\ S_{k+1} - S_k = 128 = b_{k+1} \end{array} \right.$$

$$q = \frac{b_2}{b_1} = \frac{b_4}{b_3} = \ldots = \frac{b_{k+1}}{b_k} = \frac{128}{64} = 2 \qquad \textbf{J: (C)}$$

Izoh: Agar arifmetik progressiya deganda:

$d = a_2 - a_1 = a_3 - a_2 = \ldots = a_{k+1} - a_k = 128 - 64 = 64$

4278. Arifmetik progressiyada $S_k - S_{k-1} = 24$ $S_{k+1} - S_k = 20$ bo'lsa, uning ayirmasini toping.

A) –8 B) 1/4 C) 4 D) – 4

4279. Geometrik progressiyada $S_k - S_{k-1} = \sqrt{15}$, $S_{k+1} - S_k = \sqrt{3}$ bo'lsa, uning maxrajini toping.

A) $\frac{\sqrt{5}}{5}$ B) $\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{3}$ D) $\frac{1}{2\sqrt{2}}$

4280. Arifmetik progressiyada $S_k - S_{k-1} = 2\frac{4}{5}$, $S_{k+1} - S_k = -5\frac{1}{5}$ bo'lsa, uning ayirmasini toping.

A) 8 B) 1/4 C) 4 D) –8

4281. Geometrik progressiyada $S_6 - S_5 = -128$, $q = -2$ ga teng bo'lsa, b_8 ning qiymatini toping.

A) –512 B) 512 C) 1024 D) –256

4282. Arifmetik progressiyada $S_6 - S_5 = -128$, $d = -2$ ga teng bo'lsa, a_8 ning qiymatini toping.

A) –132 B) 132 C) –138 D) –118

KO'RSATKICHLI TENGLAMALAR

✓ $27^{3-\frac{1}{3}y} - 81 = 0$ tenglamani yeching.

A) 5 B) 4 C) 3 D) 2

Yechimi:

formula: *misol*:

$$a^{f(x)} = a^{\varphi(x)} \Leftrightarrow f(x) = \varphi(x) \quad (a > 0,\ a \neq 1)$$

$$\left| \begin{array}{l} 27^{3-\frac{1}{3}y} - 81 = 0 \\ 27^{3-\frac{1}{3}y} = 81 \\ 3^{9-y} = 3^4 \\ 9 - y = 4 \\ y = 5 \end{array} \right.$$

Javob: (A)

IZOH: Asoslarini bir xil qilib, tashlab yuboramiz va darajalarini tenglab yechamiz.

4283. $3^{2-y} = 27$ tenglamani yeching.

A) 3 B) –1 C) 1 D) –2

4284. $9^{0,5x-1} - 3 = 0$ tenglamani yeching.

A) 3 B) 2 C) 4 D) 6

4285. $\left(\frac{1}{9}\right)^{2x-5} = 3^{5x-8}$ tenglamani yeching.

A) 4 B) 2 C) 3 D) 1

4286. $3^{4x-1} = \left(\frac{1}{9}\right)^{x-4}$ tenglamani yeching.

A) 2,4 B) 1,5 C) 3,4 D) 1,6

4287. $\left(\frac{5}{3}\right)^{x} = \left(\frac{3}{5}\right)^{x-2}$ tenglamani yeching.

A) 2 B) 3 C) 4 D) 1

4288. $8^{x} \cdot 4^{x+13} = \frac{1}{16}$ tenglamani yeching.

A) –6 B) 5 C) 4 D) 1

4289. $\frac{25^{x-2}}{\sqrt{5}} = \left(\frac{1}{5}\right)^{x-7,5}$ tenglamani yeching.

A) 6 B) 5 C) 4 D) 3

4290. $\left(\frac{1}{\sqrt{3}}\right)^{2x+1} = \left(3\sqrt{3}\right)^{x}$ tenglamani yeching.

A) $\frac{1}{5}$ B) $-\frac{1}{2}$ C) $\frac{1}{3}$ D) $-\frac{1}{5}$

4291. $\left(\sqrt[3]{2}\right)^{x-1} = \left(\frac{2}{\sqrt[3]{2}}\right)^{2x}$ tenglamani yeching.

A) $-\frac{1}{5}$ B) $\frac{1}{3}$ C) $-\frac{1}{3}$ D) $-\frac{1}{4}$

4292. $9^{3x+4} \cdot \sqrt{3} = \frac{27^{x+1}}{\sqrt{3}}$ tenglamani yeching.

A) –2 B) 2 C) 3 D) 4

4293. $\frac{8}{\left(\sqrt{2}\right)^{x}} = 4^{3x-2} \cdot \sqrt{2}$ tenglamani yeching.

A) 4 B) 3 C) 1 D) 2

4294. $\frac{1}{\sqrt{8}} = \left(\frac{1}{16}\right)^{-x}$ tenglamani yeching.

A) $-\frac{3}{8}$ B) $-\frac{8}{3}$ C) $-\frac{3}{5}$ D) $\frac{3}{8}$

✓ $3^{x^2+x-12} = 1$ tenglamani yeching.

A) 5 B) –4; 3 C) 3; 4 D) 2; 3

Yechimi:

formula: $a^{f(x)}=1$, $f(x)=0$, $(a>0,\ a\neq 1)$

misol: $3^{x^2+x-12}=1$

$3^{x^2+x-12}=3^0$ **Javob: (B)**

$x^2+x-12=0$

$x_1=-4 \quad x_2=3$

IZOH: Agar "...= 1" ko'rinishida berilgan bo'lsa, "0" chi daraja qilib, Asoslarini bir xil qilib, tashlab yuboramiz va darajasini "0" ga tenglab yechamiz.

4295. $3^{5-2x}=1$ *tenglamani yeching.*

A) 3 B) 2 C) 2,5 D) 4

4296. $2^{x^2-7x+10}=1$ tenglamani yeching.

A) 5; 2 B) 4; 3 C) 2; – 5 D) 5

4297. $\left(2\frac{1}{3}\right)^{-x^2-2x+3}=1$ tenglamani yeching.

A) 1; 3 B)–3; 1 C) 3; 4 D) 2; 1

4298. $0,3^{x^3-x^2+x-1}=1$ tenglamani yeching.

A) 1; –1 B) 1 C) 2 D) 3

4299. $2^{\frac{x^2-1}{x^2-4}}=1$ tenglamani yeching.

A) ±4 B) ± 2 C)±3 D) ±1

4300. $2^{x^2}\cdot\left(\frac{1}{2}\right)^{\frac{1}{4}x}=\sqrt[4]{8}$ tenglamani yeching.

A) 1; $-\frac{3}{4}$ B) –1; $\frac{3}{4}$ C) 1; $-\frac{5}{4}$ D) 2; $-\frac{3}{4}$

4301. $5^{0,1x}\cdot\left(\frac{1}{5}\right)^{-0,06}=5^{x^2}$ tenglamani yeching.

A) 0,4 B) 0,3; –0,2 C) 0,7 D) –0,3; 0,2

4302. $\left(\frac{1}{2}\right)^{\sqrt{1-x}}\cdot\left(\frac{1}{2}\right)^{-1}=\left(\frac{1}{2}\right)^{2x}$ tenglamaning ildizini 99 chi darajasini toping.

A) 2 B) 0 C) 0,5 D)1

4303. $0,7^{\sqrt{x+12}}\cdot 0,7^{-2}=0,7^{\sqrt{x}}$ tenglamaning ildizlari nechta?

A) 4 B) 3 C) 2 D) 1

✔ $15^{x^2+x}=7^{x^2+x}$ tenglamani yeching.

A) 5 B) –1; 0 C) 3; 4 D) 2; 3

Yechimi:

formula: $a^{f(x)}=b^{f(x)}$, $\left(\frac{a}{b}\right)^{f(x)}=1$, $f(x)=0$, $(a,b>0,\ a,b\neq 1)$

misol: $15^{x^2+x}=7^{x^2+x}$

$\frac{15^{x^2+x}}{7^{x^2+x}}=1$

$\left(\frac{15}{7}\right)^{x^2+x}=1$

$x^2+x=0$

$x^2+x=0$

$x(x+1)=0$

$x_1=0 \quad x_2=-1$

J: (B)

IZOH: Asoslari har xil bo'lsa, darjalarini bir xilga keltirib "0" ga tenlab yechamiz.

4304. $5^x=8^x$ tenglamani yeching.

A) 1 B) 0 C) 2 D) 4

4305. $\left(\frac{1}{2}\right)^{5x}=\left(\frac{1}{3}\right)^{5x}$ tenglamani yeching.

A) 0 B) 1 C) 0,2 D) 5

4306. $3^{2x+6}=2^{x+3}$ tenglamani yeching.

A) 3 B) 2 C) –2 D) –3

4307. $5^{x-2}=4^{\frac{2x-4}{2}}$ tenglamani yeching.

A) 5 B) 3 C) 2 D) –2

✔ $3^{2x-1}+3^{2x-2}-3^{2x-4}=315$ tenglamani yeching.

A) 5 B) –3 C) 4 D) 3

Yechimi: darajasi kichigini qavsdan tashqariga chiqarish lozim.

$3^{2x-1}+3^{2x-2}-3^{2x-4}=315$

$3^{2x-4}\cdot\underbrace{\left(3^3+3^2-1\right)}_{35}=315$

$3^{2x-4}=\frac{315}{35}$ **Javob: (D)**

$3^{2x-4}=9$

$2x-4=2$

$x=3$

4308. $2^{3x+2}-2^{3x-2}=30$ tenglamani yeching.

A) 1 B) 2 C) 3 D) –1

4309. $3^{2x-1}+3^{2x}=108$ tenglamani yeching.

A) 1 B) 3 C) 2 D)–2

4310. $2^{x+1}+2^{x-1}+2^x=28$ tenglamani yeching.

A) 2 B) 3 C) 5 D) 4

4311. $2^{\sqrt{x}+2}-2^{\sqrt{x}+1}=12+2^{\sqrt{x}-1}$ tenglamani yeching.

A) 5 B) 3 C) 9 D) ±9

4312. $2\cdot 3^{3x-1}+27^{x-\frac{1}{3}}=9$ tenglamaning ildizini uchlanganini toping.

A) 2 B) 2/3 C) 3 D) –2/3

✔ $5^{2x-1}+2^{2x}-5^{2x}+2^{2x+2}=0$ tenglamani yeching.

A) 1 B) –3 C) 4 D) 3

Yechimi: Bu turdagi misollarni yechishda asosi "5" larni bir tarafga, asosi "2" larni bir tarafga to'plab, darajasi kichigini qavsdan tashqariga chiqarish lozim..

$5^{2x-1}+2^{2x}-5^{2x}+2^{2x+2}=0$

$5^{2x-1}-5^{2x}=-2^{2x}-2^{2x+2}$

$5^{2x-1}\underbrace{(1-5)}_{-4}=2^{2x-1}\underbrace{\left(2+2^3\right)}_{10}$ **Javob: (A)**

$\frac{5^{2x-1}}{2^{2x-1}}=\frac{10}{4}\Leftrightarrow\left(\frac{5}{2}\right)^{2x-1}=\frac{5}{2}$

$2x-1=1\Rightarrow x=1$

4313. $2^{3x+7}+5^{3x+4}+2^{3x+5}-5^{3x+5}=0$ tenglamani yeching.
A) -1 B) 1 C) 2 D) 0

4314. $2^{x+1}+2^{x-1}-3^{x-1}=3^{x-2}-2^{x-3}+2\cdot 3^{x-3}$ tenglamani yeching.
A) 2 B) 4 C) 3 D) 4

4315. $3^{x+3}+3^x=7^{x+1}+5\cdot 7^x$ tenglamani yeching.
A) -1 B) 3 C) 1 D) -2

4316. $3^{x+4}+3\cdot 5^{x+3}=5^{x+4}+3^{x+3}$ tenglamani yeching.
A) 3 B) -3 C) 6 D) -2

4317. $5^{3x}-7^x-35\cdot 5^{3x}+35\cdot 7^x=0$ tenglamani yeching.
A) 2 B) 0 C) 1 D) -1

4318. $2^{x+1}+2^{x-1}-3^{x-1}=3^{x-2}-2^{x-3}+2\cdot 3^{x-3}$ tenglamaning ildizi 10 dan qancha kam ?
A) 3 B) 6 C) 4 D) -4

✓ $\left(\frac{1}{4}\right)^x+\left(\frac{1}{2}\right)^x-6=0$ tenglamani yeching.
A) 1 B) -3 C) -1 D) 3

Yechimi: Bu turdagi misollarni yechishda belgilash kiritib kvadrat tenglamaga keltiramiz :

$$\left(\frac{1}{2}\right)^{2x}+\left(\frac{1}{2}\right)^x-6=0$$
$$\left(\frac{1}{2}\right)^x=t$$
$$\Leftrightarrow \begin{vmatrix}\left(\frac{1}{2}\right)^{2x}+\left(\frac{1}{2}\right)^x-6=0\\ t^2+t-6=0\\ t_1=-3\quad t_2=2\end{vmatrix}$$

$\left(\frac{1}{2}\right)^x=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$\left(\frac{1}{2}\right)^x=-3\Rightarrow\varnothing$ $\quad\left(\frac{1}{2}\right)^x=2$

$2^{-x}=2$ **Javob: (C)**

$-x=1$

$x=-1$

4319. $3^{2x+1}-10\cdot 3^x+3=0$ tenglamani yeching.
A) ± 1 B) 1 C) 2 D) 3

4320. $5^{3x+1}+34\cdot 5^{2x}-7\cdot 5^x=0$ tenglamani yeching.
A) 1 B) 2 C) 3 D) -1

4321. $3^{2x}-3^x=702$ tenglamani yeching.
A) 3 B) 2 C) 1 D) 4

4322. $4^x+2^{x+1}=804$ tenglamani yeching.
A) 1 B) 4 C) 2 D) 3

4323. $2^{2x+1}+2^{x+2}=16$ tenglamani yeching.
A) 1 B) 4 C) 3 D) 5

4324. Agar $3^{x+2}+9^{x+1}-810=0$ bo'lsa, $\frac{x+3}{5}$ ni toping.
A) 2 B) 3 C) 1 D) 4

4325. $8\cdot 4^{|x|}-33\cdot 2^{|x|}+4=0$ tenglamaning ildizlari ko'paytmasini toping.
A) 1 B) ± 2 C) 3 D) -4

4326. $25^{x^2+0,5}-5^{x^2}=5^{x^2+3}-25$ tenglamaning ildizlari yig'indisini toping.
A) 0 B) 2 C) 1 D) 4

✓ $9\cdot 16^x-7\cdot 12^x=16\cdot 9^x$ tenglamani yeching.
A) 2 B) -2 C) -1 D) 1

Yechimi: Bu turdagi misollarni yechishda oxiridagi ifodaga bo'lamiz va belgilash kiritib kvadrat tenglamaga keltiramiz :

$$9\cdot 16^x-7\cdot 12^x=16\cdot 9^x$$
$$9\cdot\left(\frac{16}{9}\right)^x-7\cdot\left(\frac{12}{9}\right)^x-16=0$$
$$9\cdot\left(\frac{4}{3}\right)^{2x}-7\cdot\left(\frac{4}{3}\right)^x-16=0$$

$$\begin{vmatrix}\left(\frac{4}{3}\right)^x=t\\ 9t^2-7t-16=0\\ t_1=-1\quad t_2=\frac{16}{9}\end{vmatrix}$$

$\left(\frac{4}{3}\right)^x=t$ bo'lgani uchun t ning o'rniga qo'yamiz:

$\left(\frac{4}{3}\right)^x=-1\Rightarrow\varnothing$ $\quad\left(\frac{4}{3}\right)^x=\frac{16}{9}$ **Javob: (A)**

$x=2$

4327. $12^x+27^x=2\cdot 8^x$ tenglamani yeching.
A) 0 B) 1 C) 2 D) 4

4328. $8^x+18^x-2\cdot 27^x=0$ tenglamani yeching.
A) 2 B) 3 C) 0 D) 1

4329. $4^x+10^x=2\cdot 25^x$ tenglamani yeching.
A) 2 B) 0 C) 3 **D) 4**

4330. $6\cdot 4^x-13\cdot 6^x+6\cdot 9^x=0$ tenglamani yeching.
A) ± 1 B) 0 C) 2 **D) 3**

4331. $\left(\frac{4}{9}\right)^x\cdot\left(\frac{27}{8}\right)^{x-1}=\frac{2}{3}$ tenglamani yeching.
A) 2 B) 3 C) 0 D) 5

4332. $\sqrt[3]{2^x}\cdot\sqrt[3]{3^x}=216$ tenglamani yeching.
A) 1 B) 2 C) 4 D) 9

✓ Agar $\begin{cases}3^x=9^{y+1}\\ 4y=5-x\end{cases}$ bo'lsa, $x+y$ ni toping.
A) 2 B) 3,5 C) $-3,5$ D) 1

Yechimi:

$$\begin{cases}3^x=9^{y+1}\\ 4y=5-x\end{cases}\Leftrightarrow\begin{cases}3^x=3^{2y+2}\\ 4y=5-x\end{cases}\Leftrightarrow\begin{cases}x=2y+2\\ 4y=5-x\end{cases}$$

$$\begin{vmatrix}4y=5-x\\ 4y=5-2y-2\\ 6y=3\\ y=0,5\end{vmatrix}\quad\begin{vmatrix}\Rightarrow x=2y+2\\ x=2\cdot 0,5+2=3\\ x+y=3+0,5=3,5\end{vmatrix}$$

Javob: (B)

4333. $\begin{cases} 2x-y=1 \\ 5^{x+y}=25 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-1;1)$ B) $(-1;-1)$ C) $(1;1)$ D) $(1;-1)$

4334. $\begin{cases} x-y=2 \\ 3^{x^2+y}=\dfrac{1}{9} \end{cases}$ tenglamalar sistemasini yeching.

A) $(0;-2);(-1;-3)$ B) $(-2;0);(-1;-3)$

C) $(0;-2);(1;-3)$ D) $(0;-2);(1;3)$

4335. Agar $\begin{cases} 2^{x-y}=128 \\ \left(\dfrac{1}{2}\right)^{x-2y+1}=\dfrac{1}{8} \end{cases}$ bo'lsa, $x\cdot y$ ni toping.

A) (12 ; 5) B) (5; 12) C) 65 D) 60

✔ Agar $\begin{cases} 2^x+2^y=5 \\ 2^{x+y}=4 \end{cases}$ bo'lsa, $x\cdot y$ ni toping.

A) 2 B) –2 C) –1 D) 0

Yechimi: Bu turdagi misollarni yechishda belgilash kiritib kvadrat tenglamaga keltiramiz :

$$\begin{cases} 2^x+2^y=5 \\ 2^{x+y}=4 \end{cases} \begin{pmatrix} 2^x=a \\ 2^y=b \end{pmatrix} \begin{cases} a+b=5 \\ a\cdot b=4 \end{cases} \begin{cases} a=5-b \\ a\cdot b=4 \end{cases} \Rightarrow (5-b)\cdot b=4$$

$$(5-b)\cdot b=4$$

$$b^2-5b+4=0 \qquad \begin{matrix} a=5-b & a=5-b \\ a_1=1 \quad a_2=4 & a_1=1 \quad a_2=4 \end{matrix}$$

$$b_1=4 \quad b_2=1 \Rightarrow$$

$\begin{pmatrix} 2^x=a \\ 2^y=b \end{pmatrix}$ bo'lgani uchun a, b ning o'rniga qo'yamiz:

$$\begin{pmatrix} 2^x=1 \\ 2^y=4 \end{pmatrix} \Rightarrow \begin{pmatrix} x=0 \\ y=2 \end{pmatrix} \quad \begin{pmatrix} 2^x=4 \\ 2^y=1 \end{pmatrix} \Rightarrow \begin{pmatrix} x=2 \\ y=0 \end{pmatrix}$$ **J: (D)**

$$x\cdot y=0\cdot 2=0$$

4336. $\begin{cases} 2^x\cdot 5^y=10 \\ 5^y-2^x=3 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-1;1)$ B) $(-1;-1)$ C) $(1;1)$ D) $(1;-1)$

4337. $\begin{cases} 5^x-5^y=100 \\ 5^{x-1}+5^{y-1}=30 \end{cases}$ tenglamalar sistemasini yeching.

A) $(2;3)$ B) $(3;1)$ C) $(1;2)$ D) $(3;2)$

4338. $\begin{cases} 2^x-9\cdot 3^y=7 \\ 2^x\cdot 3^y=\dfrac{8}{9} \end{cases}$ tenglamalar sistemasini yeching.

A) $(3;-2)$ B) $(-3;-2)$ C) $(-2;3)$ D) $(-3;2)$

4339. $\begin{cases} 9^{x+y}=729 \\ 3^{x-y}-2=1 \end{cases}$ tenglamalar sistemasini yeching.

A) $(-2;-1)$ B) $(2;-1)$ C) $(-2;1)$ D) $(2;1)$

4340. $\begin{cases} 4^{x+y}=128 \\ 5^{3x-2y-3}=1 \end{cases}$ tenglamalar sistemasini yeching.

A) $(2;-1,5)$ B) $(2;1,5)$ C) $(5;-1,5)$ D) $(1,5;2)$

4341. Agar $\begin{cases} 2^x+3^y=8\dfrac{1}{9} \\ 2^x\cdot 3^y=\dfrac{8}{9} \end{cases}$ bo'lsa, $x\cdot y$ ni toping.

A) 6 B) 8 C) -6 D) $(3;-2)$

4342. Agar $\begin{cases} \sqrt[x-1]{49}=\sqrt[y-1]{343} \\ 3^y=9^{2-x} \end{cases}$ bo'lsa, $x+y$ ni toping.

A) $\dfrac{17}{7}$ B) $\dfrac{23}{7}$ C) $\dfrac{19}{7}$ D) $-\dfrac{19}{7}$

4343. Agar $\begin{cases} 2^x\cdot 3^y=648 \\ 3^x\cdot 2^y=432 \end{cases}$ bo'lsa, $y-x$ ni toping.

A) 1 B) -1 C) 0 D) 5

KO'RSATKICHLI TENGSIZLIKLAR

✔ $4^{-x+5}>1$ tengsizlikni yeching.

A) $x>5$ B) $x\le 5$ C) $x<5$ D) $x\le 2$

Yechimi:

misol :

$$0,7^{2x^2-3x}\le 1\frac{3}{7}$$

$$0,7^{2x^2-3x}\le 0,7^{-1}$$

$$2x^2-3x\ge 1$$

$$2x^2-3x+1\ge 0$$

intervaldan

$$(-\infty;0,5]\cup[1;+\infty)$$

formula: $a^{f(x)}<a^{g(x)}$

$0<a<1$, $f(x)>g(x)$;	$a>1$ $f(x)<g(x)$;

$$4^{-x+5}>1$$

$$4^{-x+5}>4^0$$

$$-x+5>0$$

$$x->-5$$

$$x<5$$

Javob: (C)

IZOH: Asoslarini bir xil qilib, tashlab yuboramiz, agar asoslari "1" dan katta bo'lsa, tengsizlik belgisi o'zgarmaydi.

4344. $3^x>9$ tengsizlikni yeching.

A) $(-\infty;2)$ B) $(2;+\infty)$ C) $(-\infty;2]$ D) $[2;+\infty)$

4345. $\left(\dfrac{1}{2}\right)^x\le\dfrac{1}{4}$ tengsizlikni yeching.

A) $x\ge 2$ B) $x\le 2$ C) $x>2$ D) $x<2$

4346. $\left(\dfrac{1}{4}\right)^x<2$ tengsizlikni yeching.

A) $(-\infty;-0,5)$ B) $(-0,5;+\infty)$

C) $(-\infty;-0,5]$ D) $[-0,5;+\infty)$

4347. $4^x\ge\dfrac{1}{2}$ tengsizlikni yeching.

A) $(-\infty;0,5)$ B) $[-0,5;+\infty)$

C) $(0,5;+\infty)$ D) $(-\infty;-0,5]$

4348. $2^{3x} \ge \frac{1}{2}$ tengsizlikni yeching.

A) $x > -\frac{1}{3}$ B) $x \le 3$

C) $x > \frac{1}{3}$ D) $x \ge -0,(3)$

4349. $\left(\frac{1}{3}\right)^{x-1} \le \frac{1}{9}$ tengsizlikni yeching.

A) $x \ge 3$ B) $x \le 2$ C) $x \le 5$ D) $x \le 3$

4350. $5^{x-1} \le \sqrt{5}$ tengsizlikni yeching.

A) $(-\infty; -1,5)$ B) $(1,5; +\infty)$

C) $(-\infty; 1,5]$ D) $(-\infty; 1,5)$

4351. $3^{\frac{x}{2}} > 9$ tengsizlikning eng kichik butun yechimini toping.

A) 4 B) 6 C) -5 D) 5

4352. $3^{x^2-4} \ge 1$ tengsizlikning yechimi bo'lmaydigan butun sonlar nechta?

A) 4 B) 5 C) 3 D) 2

4353. $2^{-x^2+3x} < 4$ tengsizlikning yechimi bo'lmaydigan butun sonlar nechta ?

A) 2 B) 0 C) 3 D) 1

4354. $\left(\frac{7}{9}\right)^{2x^2-3x} \le \frac{9}{7}$ tengsizlikni yeching.

A) $(-\infty; 0,5) \cup (1; +\infty)$ B) $(-\infty; 0,5) \cup [1; +\infty)$

C) $(-\infty; 0,5] \cup [1; +\infty)$ D) $(-\infty; 0,5] \cup (1; +\infty)$

4355. $\left(\frac{13}{11}\right)^{x^2-3x} \le \frac{121}{169}$ tenglamaning butun yechimlari nechta ?

A) 2 B) 3 C) 1 D) 4

✓ $2^{2x-1} + 2^{2x-2} + 2^{2x-3} \ge 448$ tengsizlikni yeching.

A) $(-\infty; 4,5)$ B) $[4,5; +\infty)$

C) $(-\infty; 4,5]$ D) $(-\infty; 4,5)$

Yechimi:

$2^{2x-1} + 2^{2x-2} + 2^{2x-3} \ge 448$

$2^{2x-3}\underbrace{\left(2^2 + 2 + 1\right)}_{7} \ge 448$

$2^{2x-3} \ge \frac{448}{7} = 64$

$2^{2x-3} \ge 2^6$

$2x - 3 \ge 6$

$2x \ge 9$

$x \ge 4,5$

J: (B)

4356. $3^{x+2} + x^{x-1} < 28$ tengsizlikni yeching.

A) $(1; +\infty)$ B) $(-\infty; 1)$ C) $(-\infty; 1]$ D) $[1; +\infty)$

4357. $2^{x-1} + 2^{x+3} > 17$ tengsizlikni yeching.

A) $x > 1$ B) $x \le 1$ C) $x < 1$ D) $x < 2$

4358. $5^{3x+1} \le 5^{3x-3} + 624$ tengsizlikni yeching.

A) $x \le 1$ B) $x \le 2$ C) $x \ge 1$ D) $x \le 3$

4359. $4^{|x+1|} \ge 16$ tengsizlikning yechimi bo'lmaydigan butun sonlar nechta ?

A) 2 B) 4 C) 5 D) 3

4360. $3^{|x-2|} < 9$ tengsizlikni yeching.

A) $(-\infty; 0) \cup (4; +\infty)$ B) $[0; 4]$

C) $(0; 4)$ D) $(-\infty; 0] \cup (4; +\infty)$

4361. $25^{|x|} > 5^{|x+4|}$ tengsizlikni yeching.

A) $(-\infty; -\frac{4}{3}) \cup (4; +\infty)$ B) $(4; +\infty)$

C) $(-\infty; \frac{4}{3}) \cup (4; +\infty)$ D) $[-0,5; +\infty)$

4362. $2^{|x-2|} \le 4^{|x+1|}$ tengsizlikni yeching.

A) $(-\infty; -4) \cup (0; +\infty)$ B) $(-\infty; 4) \cup [1; +\infty)$

C) $(-\infty; -4] \cup [0; +\infty)$ D) $(-\infty; -4] \cup (0; +\infty)$

4363. $3^{\frac{1}{x+1}} > 9$ tengsizlikni yeching.

A) $-1 < x < -0,5$ B) $-0,5 < x < 1$

C) $0 < x < 1$ D) $-1 < x < 1$

4364. $\frac{1}{8} \cdot 2^{4x-2} \ge \left(\sqrt{2}\right)^{10}$ tengsizlikning eng kichik butun yechimini toping.

A) 2 B) 4 C) 3 D) 5

✓ $4^x < 3 \cdot 2^x + 4$ tengsizlikni yeching.

A) $(-\infty; 2)$ B) $(2; +\infty)$ C) $(-\infty; 2]$ D) $(-\infty; 2)$

Yechimi: Bu turdagi misollarni yechishda belgilash kiritib kvadrat tenglamaga keltiramiz :

$$\left.\begin{array}{l} 4^x < 3 \cdot 2^x + 4 \\ 2^{2x} - 3 \cdot 2^x - 4 < 0 \end{array}\right| \Leftrightarrow \left|\begin{array}{l} (2)^x = t \\ t^2 - 3t - 4 < 0 \\ t_1 = -1 \quad t_2 = 4 \end{array}\right.$$

intervalga qo'yamiz (oraliqlarga ajratamiz).

$(-1; 4)$

$-1 < t < 4$

$-1 < 2^x < 4$

$-1 < 2^x \quad 2^x < 2^2$

$(-\infty; +\infty) \quad x < 2$

Javob: (A)

IZOH: Belgilash kiritilgan ifodani, tengsizlikni yechib bo'lib keyin o'rniga qo'yish lozim.

4365. $3^{2x+5} - 3^{x+2} - 2 < 0$ tengsizlikni yeching.

A) $(2; +\infty)$ B) $(-\infty; -2)$

C) $(-\infty; 2]$ D) $[-2; +\infty)$

4366. $5^{2x} \le 6 \cdot 5^x - 5$ tengsizlikni yeching.

A) $0 \le x \le 1$ B) $x \le 1$

C) $0 \le x,\ x \ge 1$ D) $x \le 0$

4367. $5\cdot 2^{3x}-24\cdot 2^{5-3x}+56\le 0$ tengsizlikni yeching.

A) $x\le 1$ B) $x\ge 1$ C) $x<1$ D) $x<2$

4368. $5^{2x+1}>5^x+4$ tengsizlikning eng kichik butun yechimini toping.

A) 2 B) 3 C) 5 D) 1

4369. $\frac{1}{3^x+5}\le\frac{1}{3^{x+1}-1}$ tengsizlikni yeching.

A) $(-\infty;-1)\cup(1;+\infty)$ B) $[-1;1]$

C) $(-1;1]$ D) $(-\infty;0)\cup(4;+\infty)$

LOGARIFM VA UNING XOSSALARI

✓ $\log_2 16$ ni hisoblang.

A) 4 B) 2 C) 5 D) 3

Yechimi: o'qilishi — logarifm a asosga ko'ra b deb:

$\boxed{\log_a b=x\Leftrightarrow a^x=b};\ a\ne 1,\ a>0, b>0$

formula: *misol*:

$\log_a b=x$, $a^x=b$ | $\log_2 16=x$; $16=2^x$; $2^4=2^x$; $x=4$

Javob: (A)

IZOH: $\log_2 16$ ni, 2 ning nechanchi darajasi 16 ga teng deb qarang.

4370. $\log_5 125$ ni hisoblang.

A) 4 B) 3 C) 5 D) 6

4371. $(\log_4 16)-\frac{8}{9}$ ni hisoblang.

A) 1,1 B) 1,(9) C) 1,(1) D) 1,(6)

4372. $5\cdot(\log_3 27)+\sqrt{16}$ ni hisoblang.

A) 15 B) 10 C) 19 D) 16

4373. $\log_2 16+\log_3 81$ ni hisoblang.

A) 7 B) 4 C) 5 D) 8

4374. $\log_5 625-\log_6 216$ ni hisoblang.

A) 5 B) 4 C) 6 D) 1

✓ $\log_2\frac{1}{\sqrt{32}}$ ni hisoblang.

A) 1,5 B) −0,5 C) 5 D) −2,5

Yechimi:

formula: *misol*: *formula*: *misol*:

$\log_a a=1\Rightarrow \log_7 7=1$; $\log_x x=1$ $\quad \log_a 1=0\Rightarrow \log_7 1=0$; $\log_x 1=0$

formula: *misol*:

$\log_a b^x=x\cdot\log_a b$ | $\log_2\frac{1}{\sqrt{32}}=\log_2 2^{-\frac{5}{2}}=-\frac{5}{2}\cdot\log_2 2=-2,5$

formula: *misol*:

$\log_{a^x} b=\frac{1}{x}\cdot\log_a b$ | $\log_{\frac{1}{4}} 2=\log_{2^{-2}} 2=-\frac{1}{2}\cdot\log_2 2=-0,5$

4375. $\log_{a^3} a$ ni hisoblang $(a\ne 1,\ a>0)$.

A) $\frac{1}{3}$ B) 1 C) 3 D) 0

4376. $\log_{\sqrt[3]{2}} 2$ ni hisoblang.

A) 4 B) 2 C) 8 D) 3

4377. $\log_2 64-\log_2 1$ ni hisoblang.

A) 5 B) 6 C) 4 D) 3

4378. $\log_3 27-\log_2\frac{1}{8}$ ni hisoblang.

A) 4 B) 2 C) 6 D) 7

4379. $\log_2\frac{1}{2}+1+\log_3 3$ ni hisoblang.

A) 1 B) 0 C) 2 D) 6

4380. $\log_{a^4} a^{\frac{7}{3}}$ ni hisoblang. $(a\ne 1,\ a>0)$

A) $\frac{4}{3}$ B) $\frac{1}{7}$ C) $\frac{1}{12}$ D) $-\frac{1}{12}$

4381. $\log_{\frac{1}{a}} a^7$ ni hisoblang.

A) −7 B) 7 C) −1 D) 6

4382. $\log_{\sqrt{a}}\sqrt[3]{a}$ ni hisoblang.

A) 4 B) 1,5 C) 8 D) $\frac{2}{3}$

4383. $\log_{\sqrt[3]{3}} 81$ ni hisoblang.

A) 4 B) 2 C) 16 D) 1

4384. $\log_{16}\sqrt{2}$ ni hisoblang.

A) 0,25 B) 2 C) $\frac{1}{8}$ D) 8

4385. $\log_{a^2}\frac{1}{a^5}$ ni hisoblang.

A) −1,5 B) 0,5 C) 2,5 D) −2,5

4386. $\log_3 81+\log_3\frac{1}{9}$ ni hisoblang.

A) 2 B) 1 C) 0 D) 4

4387. $\log_{\frac{1}{2}}\frac{1}{32}-\log_{\frac{1}{2}} 4$ ni hisoblang.

A) 4 B) 2 C) 8 D) 7

4388. $\log_{0,5} 0,125+\log_{\frac{1}{2}}\sqrt[3]{2}+\frac{1}{3}$ ni hisoblang.

A) 5 B) 6 C) 3 D) 8

4389. $\log_4\frac{1}{16}+\log_5\frac{1}{125}-5$ ni hisoblang.

A) −10 B) −8 C) −11 D) 10

4390. $\log_{\frac{1}{5}} 125 \cdot \left(\log_{\frac{1}{3}} 27 - \log_{\frac{1}{6}} 36 \right)$ ni hisoblang.

A) –5 B) 6 C) 3 D) –15

4391. $\log_{27} 729$ son 5 dan qancha kam ?

A) 3 B) 2 C) 5 D) 4

4392. $\log_9 729$ sonning kubini hisoblang.

A) 125 B) 25 C) 27 D) 64

4393. $\log_{\frac{1}{3}} 729$ ni hisoblang.

A) 6 B) 4 C) –4 D) –6

4394. $\log_{\frac{5}{2}} \frac{2}{5}$ ni hisoblang.

A) 1 B) –1 C) 0 D) 2

4395. $\log_{\frac{5}{2}} \frac{4}{25}$ ni hisoblang.

A) –2 B) 3 C) 0,5 D) 2

4396. $\log_{\frac{5}{2}} \frac{8}{125}$ ni hisoblang.

A) 8 B) –4 C) –3 D) 6

4397. $\log_{13} \sqrt[3]{169}$ ni hisoblang.

A) $\frac{5}{2}$ B) 5 C) $\frac{2}{5}$ D) $\frac{1}{5}$

4398. $\log_{11} \sqrt[3]{121}$ ni hisoblang.

A) $1\frac{1}{3}$ B) 1,5 C) $\frac{1}{3}$ D) $\frac{2}{3}$

4399. $\log_{\frac{1}{3}} \sqrt[4]{243}$ ni hisoblang.

A) $1\frac{1}{4}$ B) $-1\frac{1}{4}$ C) $\frac{1}{4}$ D) $-1\frac{3}{4}$

4400. $\log_2 \frac{1}{\sqrt[6]{128}}$ ni hisoblang.

A) $-1\frac{1}{6}$ B) $-1\frac{5}{6}$ C) $1\frac{1}{6}$ D) $1\frac{5}{6}$

4401. $\log_{\frac{1}{16}} \sqrt[5]{64}$ sondan 10 marta katta sonni toping.

A) –0,3 B) 5 C) 30 D) –3

✓ $3^{5 \cdot \log_3 2}$ ni hisoblang.

A) 16 B) –0,5 C) 5 D) 32

Yechimi:

$\log_a b = x \Leftrightarrow a^x = b, \quad a \neq 1, a > 0, b > 0$

formula: $a^{\log_a c} = c \Rightarrow$ *misol*: $3^{5 \cdot \log_3 2} = 3^{\log_3 32} = 32$

Javob: (D)

IZOH: $a^{\log_b c} = c^{\log_b a}$ formulaga ham e'tibor bering.

4402. $2^{\log_2 5}$ ni hisoblang.

A) 5 B) 3 C) 0,5 D) 2

4403. $2^{\log_2 16}$ ni hisoblang.

A) 4 B) 16 C) 8 D) 4

4404. $3^{\log_3 \frac{1}{9}}$ ni hisoblang.

A) 9 B) $\frac{1}{9}$ C) $\frac{2}{9}$ D) $\frac{5}{9}$

4405. $25^{-\log_5 2}$ ni hisoblang.

A) 2 B) 5 C) $\frac{1}{4}$ D) $\frac{5}{4}$

4406. $64^{0,5 \log_2 10}$ ni hisoblang.

A) 10 B) 100 C) 1 D) 100

4407. $3^{\log_3 \frac{1}{7}}$ ni hisoblang.

A) 7 B) –7 C) 1/7 D) 6

4408. $5^{\log_5 16} - 3^{\log_3 18} + 7$ ni hisoblang.

A) 16 B) 5 C) 12 D) 18

4409. $3^{5 \log_3 2} + 7^{\frac{1}{2} \log_7 9}$ ni hisoblang.

A) 24 B) 6 C) 36 D) 35

4410. $8^{\log_2 5} - 3$ ni hisoblang.

A) 122 B) 4 C) 135 D) 132

4411. $9^{\log_3 12} - 44$ ni hisoblang.

A) 144 B) 100 C) 260 D) 188

4412. $0{,}125^{\log_{0,5} 1} + \log_{15} 225$ ni hisoblang.

A) 2 B) 3 C) 8 D) 1

4413. $\log_4 256 - \log_3 \frac{1}{243}$ ni hisoblang.

A) 1 B) 2 C) 3 D) 9

4414. $\log_7 \frac{1}{343} + 1$ ni hisoblang.

A) 12 B) –2 C) 3 D) 4

4415. $\log_{\frac{1}{3}} 9 - \log_{\frac{1}{2}} 64$ ni hisoblang.

A) –4 B) 6 C) 1 D) 4

4416. $5{,}5 + \log_{11} 1 - \log_{16} 64$ ni hisoblang.

A) 4 B) 6 C) 5 D) 4,5

4417. $5^{-\log_5 3} + \left(\frac{1}{6}\right)^{-\log_6 4}$ ni hisoblang.

A) 5 B) $3\frac{2}{3}$ C) $4\frac{2}{3}$ D) $4\frac{1}{3}$

4418. $\log_2 \sqrt[4]{2} + 2 - \log_3 \frac{1}{3\sqrt{3}}$ ni hisoblang.

A) 5,5 B) 1,9 C) 3,75 D) 3,5

4419. $\log_7 \sqrt[3]{\frac{7}{49}} + \frac{1}{3} + \left(9^{2 \log_3 5} - 25\right)$ ni hisoblang.

A) 300 B) 600 C) 250 D) 150

4420. $\log_{0,5} \frac{1}{\sqrt{32}} - \left(\frac{1}{9}\right)^{\frac{1}{2} \log_3 4}$ ni hisoblang.

A) 2,5 B) 3 C) 4,5 D) 2,25

4421. $9^{-\log_{\frac{1}{3}} 5} - \left(\frac{1}{3}\right)^{1+2\log_3 3}$ ni hisoblang.

A) 22 B) 21 C) 20 D) 19

✓ $10^{\lg 2}+\ln e$ ni hisoblang.

A) 1,5 B) –0,5 C) 3 D) –3

Yechimi:

formula: $\log_{10} b=\lg b$, $\log_e b=\ln b$ $\Rightarrow$ *misol*: $10^{\lg 2}+\ln e=\underbrace{10^{\log_{10}2}}_{2}+\underbrace{\log_e e}_{1}=3$

Javob: (C)

IZOH: $e\approx 2,7$ ga teng.

4422. $\lg 0,1-10^{\lg 4}$ ni hisoblang.

A) 5 B) 3 C) –4 D) –5

4423. $e^{-\ln 5}-0,1^{\lg 3}$ ni hisoblang.

A) $-\frac{2}{15}$ B) $-\frac{1}{15}$ C) 15 D) $\frac{8}{15}$

4424. $(0,1)^{-\lg 0,3}+10^{-\lg 4}$ ni hisoblang.

A) 0,5 B) 0,55 C) 2 D) 5

4425. $e^{-2\ln 0,3}+\ln\sqrt[9]{e^8}$ ni hisoblang.

A) 15 B) 12 C) 2 D) 15

4426. $10^{3-\lg 5}+\left(\frac{1}{2}\right)^{-2\log_2 3}$ ni hisoblang.

A) 180 B) 120 C) 150 D) 209

✓ $\log_2\log_3 81$ ni hisoblang.

A) 2 B) –1 C) 3 D) –3

Yechimi:

$\log_2\overbrace{\log_3 81}^{4}=\log_2 4=2$ **Javob: (A)**

IZOH: ichidan hisoblab chiqish lozim, yana bir misol:

$\log_3\log_2\log_2 256=$

$=\log_3\log_2\underbrace{\log_2 256}_{8}=\log_3\log_2 8=\underbrace{\log_3 3}_{1}=1$

4427. $\log_2\log_3 81$ ni hisoblang.

A) 2 B) 3 C) 4 D) 5

4428. $\log_3\log_2 8$ ni hisoblang.

A) 2 B) 0 C) 1 D) 6

4429. $2\log_{27}\log_{10}1000$ ni hisoblang.

A) $-\frac{2}{3}$ B) $\frac{2}{3}$ C) $1\frac{2}{3}$ D) $\frac{1}{3}$

4430. $\frac{1}{3}\log_9\log_2 8$ ni hisoblang.

A) 6 B) 4 C) $\frac{1}{3}$ D) $\frac{1}{6}$

4431. $\log_4\log_{16}256+\log_4\sqrt{2}$ ni hisoblang.

A) $\frac{3}{4}$ B) $1\frac{3}{4}$ C) $-\frac{1}{4}$ D) $\frac{1}{4}$

4432. $3\log_2\log_4 16+\log_{\frac{1}{2}}2$ ni hisoblang.

A) 4 B) 3 C) 2 D) 1

4433. $\log_8\log_4\log_2 16$ ni hisoblang.

A) 0 B) 1 C) 6 D) 2

✓ $\log_3 4,5+\log_3 2$ ni hisoblang.

A) 1,5 B) –0,5 C) 3 D) 2

Yechimi:

formula: $\log_a(x\cdot y)=\log_a x+\log_a y$ *misol*: $\log_3 4,5+\log_3 2=\log_3(4,5\cdot 2)=\log_3 9=2$

formula: $\log_a\left(\frac{x}{y}\right)=\log_a x-\log_a y$ *misol*: $\log_7 35-\log_7 5=\log_7\frac{35}{5}=\log_7 7=1$

Javob: (D)

IZOH: E'tibor bering asoslari bir xil bo'lgandagina bu formulalarni qo'llash mumkin.

4434. $\log_{12}2+\log_{12}72$ *ni hisoblang.*

A) 3 B) 12 C) 2 D) 144

4435. $\lg 5+\lg 2$ ni hisoblang.

A) 2 B) 1 C) 10 D) 0

4436. $\log_3 6+\log_3\frac{3}{2}$ ni hisoblang.

A) 3 B) 5 C) 2 D) 4

4437. $\lg 8+\lg 125$ ni hisoblang.

A) 3 B) 2 C) 1000 D) 10

4438. $\log_2 15-\log_2\frac{15}{16}$ ni hisoblang.

A) 2 B) 3 C) 15 D) 4

4439. $\log_5 75-\log_5 3$ ni hisoblang.

A) 4 B) 3 C) 5 D) 2

4440. $\log_{\frac{1}{3}}54-\log_{\frac{1}{3}}2$ ni hisoblang.

A) 3 B)–3 C)–5 D)–4

4441. $\log_8\frac{1}{16}-\log_8 32$ ni hisoblang.

A)–3 B) –5 C) 4 D) 3

4442. $\log_8 12-\log_8 15+\log_8 20$ ni hisoblang.

A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{5}{3}$ D) $1\frac{2}{3}$

4443. $\log_9 15+\log_9 18-\log_9 10$ ni hisoblang.

A) 1,5 B) 2,5 C) 0,5 D) 4,5

4444. $\frac{1}{2}\log_7 36+\log_7 14-3\log_7\sqrt[3]{21}$ ni hisoblang.

A) 2 B) $\log_7 8$ C) 4 D) $\log_7 4$

4445. $2\log_{\frac{1}{3}}6-\frac{1}{2}\log_{\frac{1}{3}}400+3\log_{\frac{1}{3}}\sqrt[3]{45}$ *ni hisoblang.*

A) 4 B)–4 C) 3 D) 5

4446. $36^{\log_6 5}+10^{1-\log_{10}2}-8^{\log_2 3}$ ni hisoblang.

A) 98 B) 25 C) 3 D) 27

4447. $\left(81^{\frac{1}{4}-\frac{1}{2}\log_9 4}+25^{\log_{125}8}\right)\cdot 49^{\log_7 2}$ ni hisoblang.

A) 19 B) 4 C) $\frac{4}{19}$ D) $\frac{19}{4}$

4448. $\log_{36}2-\frac{1}{2}\log_{\frac{1}{6}}3$ ni hisoblang.

A) 0,25 B) 4 C) 2 D) $\frac{1}{2}$

4449. $2\log_{25}30+\log_{0,2}6$ ni hisoblang.

A) 1 B) 12 C) 2 D) 6

4450. $4\log_{\frac{1}{2}}3-\frac{2}{3}\log_{\frac{1}{2}}27-2\log_{\frac{1}{2}}6$ ni hisoblang.

A) 0,5 B) 0,2 C) 0,9 D) 2

4451. $\left(\log_3 27-\log_3 9\right)\left(\log_3 48+\log_3\frac{1}{16}\right)+\log_3 81$ ni hisoblang.

A) 25 B) 0,2 C) 5 D) 0,5

4452. $\frac{2}{3}\lg 0,001+\lg\sqrt{1000}-\frac{3}{5}\lg\sqrt{100000}$ ni hisoblang.

A) $\frac{4}{3}$ B) $\frac{3}{4}$ C) -2 D) $\frac{8}{3}$

4453. $36^{\log_6 5}+10^{1-\lg 2}-3^{\log_6 36}$ ni hisoblang.

A) 28 B) 26 C) 22 D) 21

4454. $\dfrac{\log_2 24-\frac{1}{2}\log_2 72}{\log_3 18-\frac{1}{3}\log_3 72}$ ni hisoblang.

A) $\frac{8}{9}$ B) $1\frac{1}{8}$ C) 8 D) 0,25

4455. $\dfrac{\log_7 14-\frac{1}{3}\log_7 56}{\log_6 30-\frac{1}{2}\log_6 150}$ ni hisoblang.

A) $\frac{1}{3}$ B) $\frac{4}{5}$ C) $1\frac{2}{3}$ D) $1\frac{1}{3}$

4456. $\dfrac{3\log_7 2-\frac{1}{2}\log_7 64}{4\log_5 2+\frac{1}{3}\log_5 27}$ ni hisoblang.

A) 0 B) 7 C) 1 D) 6

✓ $\dfrac{\log_8 25}{\log_8 125}$ ni hisoblang.

A) 1,5 B) $\frac{2}{3}$ C) 3 D) 0

Yechimi:

formula: $\log_a b=\dfrac{\log_c b}{\log_c a}$ *misol*: $\dfrac{\log_8 25}{\log_8 125}=\log_{125}25=\frac{2}{3}\log_5 5=\frac{2}{3}$

Javob: (B)

IZOH: Agar quyidagicha bo'lsa:

formula: $\log_a b=\dfrac{1}{\log_b a}$ *misol*: $\sqrt{2^{\frac{1}{\log_5 2}}}=\sqrt{2^{\log_2 5}}=\sqrt{5}$

4457. $\dfrac{\log_3 8}{\log_3 16}$ ni hisoblang.

A) $\frac{3}{4}$ B) $\frac{4}{3}$ C) $\frac{3}{2}$ D) $2\frac{1}{3}$

4458. $\dfrac{\log_5 27}{\log_5 9}$ ni hisoblang.

A) 3 B) 4 C) 1,5 D) 6

4459. $\dfrac{\log_5 36-\log_5 12}{\log_5 9}$ ni hisoblang.

A) 0,25 B) 4 C) 2 D) $\frac{1}{2}$

4460. $\dfrac{\log_7 8}{\log_7 15-\log_7 30}$ ni hisoblang.

A) 5 B) 4 C) 6 D) -3

4461. $\dfrac{3\lg 2+3\lg 5}{\lg 1300-\lg 13}$ ni hisoblang.

A) 0,5 B) 2,5 C) 0,25 D) 1,5

4462. $\dfrac{\log_2 4+\log_2\sqrt{10}}{\log_2 20+3\log_2 2}$ ni hisoblang.

A) 2 B) 0,5 C) 5 D) 0,25

4463. $\dfrac{3\lg 2+3\lg 5}{\lg 1300-\lg 0,13}$ ni hisoblang.

A) 0,75 B) 0,25 C) 1,(1) D) 0,5

4464. $\dfrac{3\ln 2+3\ln 5}{\ln 1300-\ln 13}$ ni hisoblang.

A) 0,5 B) 2,5 C) 3,5 D) 1,5

4465. $2\log_2 3\cdot\log_3 2\cdot\log_3\frac{1}{81}$ ni hisoblang.

A) 10 B) -8 C) 7 D) 8

4466. $\log_5 2\cdot\log_4 243\cdot\log_2 5\cdot\log_3 4$ ni hisoblang.

A) 10 B) 0,125 C) 2 D) 2,5

4467. $\sqrt{25^{\frac{1}{\log_6 5}}+49^{\frac{1}{\log_8 7}}}$ ni hisoblang.

A) 1 B) 100 C) 10 D) 36

4468. $\dfrac{1}{\log_2 4}+\dfrac{1}{\log_4 4}+\dfrac{1}{\log_8 4}+\dfrac{1}{\log_{16}4}+\dfrac{1}{\log_{32}4}+$
$+\dfrac{1}{\log_{64}4}+\dfrac{1}{\log_{128}4}$ ni hisoblang.

A) 18 B) 7 C) 14 D) 16

✓ $\dfrac{\lg\left(\sqrt{3}+1\right)}{\lg\left(4+2\sqrt{3}\right)}$ ni hisoblang.

A) 0,5 B) $\frac{2}{3}$ C) 1,5 **D) 0**

Yechimi:

formula: $\log_a b=\dfrac{\log_c b}{\log_c a}$ | *misol*: $\dfrac{\lg\left(\sqrt{3}+1\right)}{\lg\left(4+2\sqrt{3}\right)}=\log_{\left(\sqrt{3}+1\right)^2}\left(\sqrt{3}+1\right)=\dfrac{1}{2}$

Javob: (A)

4469. $\dfrac{\lg\left(7-4\sqrt{3}\right)}{\lg\left(2-\sqrt{3}\right)}$ ni hisoblang.

A) 2 B) 3 C) 0,5 D) –2

4470. $16^{\log_2\left(5-\sqrt{10}\right)+\log_{0,5}\left(\sqrt{5}-\sqrt{2}\right)}$ ni hisoblang.

A) 24 B) 25 C) 26 D) 44

4471. $\dfrac{\log_3 256\cdot\log_2\frac{1}{81}}{\log_5\frac{1}{16}\cdot\log_4 125}$ ni hisoblang.

A) $\frac{3}{16}$ B) $5\frac{1}{3}$ C) 6 D) 5

4472. $\dfrac{\log_5 30}{\log_{30}5}-\dfrac{\log_5 150}{\log_6 5}$ ni hisoblang.

A) 4 B) –1 C) 2 D) 1

4473. $\log_3^{-1}\sqrt[3]{\sqrt[3]{\sqrt{3}}}$ ni hisoblang.

A) 3 B) 9 C) 27 D) 16

4474. $0{,}2^{\log_5\left(4+1+\frac{1}{4}+\ldots\right)}$ ni hisoblang.

A) 3,2 B) $\frac{3}{16}$ C) 16 D) – 16

4475. $(0{,}125)^{\log_{\sqrt{2}}\left(\frac{1}{4}-\frac{1}{8}+\frac{1}{16}-\frac{1}{32}+\ldots\right)}$ ni hisoblang.

A) 6 B) 16 C) 12 D) 36

4476. $\log_{128}\left((0{,}25)^{\log_{16}\left(\frac{1}{3}+\frac{1}{9}+\frac{1}{27}+\ldots\right)}\right)$ ni hisoblang.

A) 2 B) 14 C) 1/12 D) 1/14

✓ $\dfrac{\lg^2\left(x^3\right)}{\lg^3\left(x^2\right)}\cdot\lg\sqrt{x}$ ni hisoblang.

A) 1,5 B) $\frac{2}{3}$ C) $\frac{9}{16}$ D) 0

Yechimi:

$$\frac{\lg^2\left(x^3\right)}{\lg^3\left(x^2\right)}\cdot\lg\sqrt{x}=\frac{\left(\lg\left(x^3\right)\right)^2}{\left(\lg\left(x^2\right)\right)^3}\cdot\frac{1}{2}\lg x=\frac{(3\lg x)^2}{(2\lg x)^3}\cdot\frac{1}{2}\lg x$$

$\boxed{\lg x=a}$

$=\dfrac{(3\cdot a)^2}{(2\cdot a)^3}\cdot\dfrac{1}{2}a=\dfrac{9a^2}{8a^3}\cdot\dfrac{a}{2}=\dfrac{9\not{a}^2}{8\not{a}^3}\cdot\dfrac{\not{a}}{2}=\dfrac{9}{16}$ **Javob: (C)**

4477. $\dfrac{\ln^3\left(x^3\right)}{\ln^2\left(x^5\right)}\cdot\dfrac{1}{\ln\left(x^4\right)}$ ni soddalashtiring.

A) 0,25 B) 0,5 C) 2,7 D) 0,27

4478. $\dfrac{\log_2^2 14+\log_2 14\log_2 7-2\log_2^2 7}{\log_2 14+2\log_2 7}$ ni hisoblang.

A) 1 B) 0 C) –1 D) 2

4479. $\dfrac{2\log_3^2 2-\log_3^2 18-\log_3 2\log_3 18}{2\log_3 2+\log_3 18}$ ni hisoblang.

A) –2 B) 2 C) –1 D) 3

4480. $\dfrac{\log_5^2 15-\log_5^2 3+2\log_5 15+2\log_5 3}{\log_5 15+\log_5 3}$ ni hisoblang.

A) 5 B) 4 C) 6 D) 3

4481. $\dfrac{\log_2 729\cdot\log_3\frac{1}{256}}{\log_7 216\cdot\log_6 343}$ ni hisoblang.

A) $\frac{16}{3}$ B) $-5\frac{1}{3}$ C) $\frac{3}{5}$ D) $5\frac{1}{3}$

4482. $\left(\dfrac{\log_6 27+2\log_6 2}{\log_6\sqrt[3]{0{,}25}+\log_6\frac{1}{3}}\right)^3$ ni hisoblang.

A) 5 B) –3 C) –27 D) 4

4483. $\left(\dfrac{1}{\sqrt{2}-1}\right)^{\frac{\log_6\log_6\left(\sqrt{2}+1\right)}{\log_6\left(\sqrt{2}+1\right)}}$ ni hisoblang.

A) $\sqrt{2}+1$ B) $\sqrt{2}$ C) $\sqrt{2}-1$ D) $\log_6\left(\sqrt{2}+1\right)$

✓ Agar $\log_2\left(\sqrt{3}-1\right)+\log_2\left(\sqrt{6}-2\right)=a$ bo'lsa, $\log_2\left(\sqrt{3}+1\right)+\log_2\left(\sqrt{6}+2\right)$ yig'indini hisoblang.

A) $\sqrt{3}-a$ B) $1-a$ C) $2-a$ D) $\sqrt{6}-a$

Yechimi:

$$+\begin{cases}\log_2\left(\sqrt{3}-1\right)+\log_2\left(\sqrt{6}-2\right)=a\\ \log_2\left(\sqrt{3}+1\right)+\log_2\left(\sqrt{6}+2\right)=x\end{cases}$$

$\log_2(\sqrt{3}-1)+\log_2(\sqrt{3}+1)+\log_2(\sqrt{6}+2)+\log_2(\sqrt{6}-2)=a+x$

$\log_2\left(\sqrt{3}-1\right)\cdot\left(\sqrt{3}+1\right)+\log_2\left(\sqrt{6}+2\right)\cdot\left(\sqrt{6}-2\right)=a+x$

$\log_2\left(\sqrt{3}^2-1^2\right)+\log_2\left(\sqrt{6}^2-2^2\right)=a+x$

$\log_2 2+\log_2 2=a+x$

$2=a+x$ **Javob: (C)**

$x=2-a$

4484. Agar $\log_4\left(\sqrt{3}-1\right)+\log_4\left(\sqrt{6}-2\right)=a$ bo'lsa, $\log_4\left(\sqrt{3}+1\right)+\log_4\left(\sqrt{6}+2\right)$ yig'indini hisoblang.

A) $\sqrt{3}-a$ B) $1-a$ C) $2-a$ D) $\sqrt{6}-a$

4485. Agar $\log_3\left(\sqrt{7}-2\right)+\log_3\left(\sqrt{5}-2\right)=b$ bo'lsa, $\log_3\left(\sqrt{7}+2\right)+\log_3\left(\sqrt{5}+2\right)$ yig'indini hisoblang.

A) $\sqrt{3}-b$ B) $1-b$ C) $2-b$ D) $\sqrt{6}-b$

LOGARIFMIK SHAKL ALMASHTIRISHLAR

✓ Agar $\log_3 5=a$, $\log_3 2=b$ bo'lsa, $\log_6 45$ ni a va b orqali ifodalang.

A) $\frac{2-a}{b+1}$ B) $\frac{2+a}{b-1}$ C) $\frac{2-a}{b-1}$ D) $\frac{2+a}{b+1}$

Yechimi:

$$\log_6 45=\frac{\log_3(9\cdot 5)}{\log_3(2\cdot 3)}=\frac{\log_3 9+\log_3 5}{\log_3 2+\log_3 3}=\frac{2+a}{b+1}$$

Javob: (D)

IZOH: berilgan ifodalar asosida qaysi son bo'lsa, $\left(\log_{\square} 5=a,\ \log_{\square} 2=b\right)$ shu asosga ko'ra qilib kasr ko'rinishda yoyib $\left(\log_6 45=\frac{\log_{\square} 45}{\log_{\square} 6}\right)$ ishlash lozim.

4486. Agar $\lg 2=a$ va $\lg 3=b$ bo'lsa, $\log_9 20$ ni a va b orqali ifodalang.

A) $\frac{1+a}{2b}$ B) $\frac{1-a}{2b}$ C) $\frac{2-a}{b-1}$ D) $\frac{b}{1+2a}$

4487. Agar $\log_2 3=a$, $\log_2 5=b$ bo'lsa, $\log_{15}135$ ni a va b orqali ifodalang.

A) $\frac{3b+a}{a+b}$ B) $\frac{1-a}{2b}$ C) $\frac{2a-b}{a+b}$ D) $\frac{3a+b}{b+a}$

4488. Agar $\lg 5=a$ va $\lg 3=b$ bo'lsa, $\log_{30}8$ ni a va b orqali ifodalang.

A) $\frac{1+a}{2b}$ B) $\frac{3(1-a)}{b+1}$ C) $\frac{2-a}{b+1}$ D) $\frac{3b}{1+2a}$

4489. Agar $\log_2 3=a$, $\log_2 5=b$ bo'lsa, $\log_{24}100$ ni a va b orqali ifodalang.

A) $\frac{3b+a}{a+b}$ B) $\frac{2+b}{3+a}$ C) $\frac{2a-b}{a+b}$ D) $\frac{2(1+b)}{3+a}$

4490. Agar $\lg 2=a$ va $\lg 7=b$ bo'lsa, $\log_{0,2}98$ ni a va b orqali ifodalang.

A) $\frac{2b+a}{a-1}$ B) $\frac{1-a}{2b}$ C) $\frac{2-a}{a+3}$ D) $\frac{b}{3+a}$

✓ Agar $\log_{147}63=a$ bo'lsa, $\log_7 3$ ning qiymatini toping.

A) $\frac{2a-1}{2-a}$ B) $\frac{2a}{a-1}$ C) $\frac{4a}{1-a}$ D) $\frac{2+a}{a+1}$

Yechimi: $\log_{147}63=a\Rightarrow\frac{\log_7 63}{\log_7 147}=a$

$$\frac{\log_7(9\cdot 7)}{\log_7(49\cdot 3)}=a\ \Rightarrow\frac{1+2\log_7 3}{2+\log_7 3}=a$$

$$1+2\log_7 3=2a+a\cdot\log_7 3$$

$$2\log_7 3-a\cdot\log_7 3=2a-1$$

$$\log_7 3\cdot(2-a)=2a-1$$

$$\log_7 3=\frac{2a-1}{2-a}$$

4491. Agar $\log_6 108=a$ bo'lsa, $\log_2 3$ ning qiymatini toping.

A) $\frac{3+a}{a}$ B) $\frac{3-a}{3a}$ C) $\frac{2a-3}{3-a}$ D) $\frac{a-2}{3-a}$

4492. Agar $\log_{98}56=a$ bo'lsa, $\log_7 2$ ni a orqali ifodalang.

A) $\frac{1-a}{2-a}$ B) $\frac{1-2a}{a-3}$ C) $\frac{2-a}{a-1}$ D) $\frac{1-3a}{a-2}$

4493. Agar $\log_{50}40=a$ bo'lsa, $\log_5 2$ ning qiymatini toping.

A) $\frac{3+a}{a-a}$ B) $\frac{3-a}{2-a}$ C) $\frac{2a-3}{a}$ D) $\frac{1-2a}{a-3}$

4494. Agar $\log_4 125=a$ bo'lsa, $\lg 64$ ni a orqali ifodalang.

A) $\frac{18}{2a+3}$ B) $\frac{2-a}{3a}$ C) $\frac{2a-3}{18}$ D) $\frac{3}{2a-3}$

✓ Agar $\log_{12}2=a$ bo'lsa, $\log_6 16$ ning qiymatini

A) $\frac{3a}{1-a}$ B) $\frac{2a}{a-1}$ C) $\frac{4a}{1-a}$ D) $\frac{2+a}{a+1}$

Yechimi: $\log_{12}2=a\Rightarrow\frac{1}{\log_2 12}=a$

$$\frac{1}{\log_2(4\cdot 3)}=a\Rightarrow\frac{1}{2+\log_2 3}=a$$

$$1=2a+a\log_2 3$$

$$\frac{1-2a}{a}=\log_2 3$$

$$\log_6 16=\frac{\log_2 16}{\log_2 6}=\frac{4}{1+\log_2 3}=\frac{4}{1+\frac{1-2a}{a}}=\frac{4a}{1-a}$$

J: C

4495. Agar $\log_8 0,75$ $\log_2 3=a$ bo'lsa, ni a orqali ifodalang.

A) $\frac{a-2}{3}$ B) $\frac{2-a}{3a}$ C) $\frac{2-a}{2}$ D) $\frac{3}{2-a}$

4496. Agar $\log_{0,5} 27 = a$ bo'lsa, $\log_{\sqrt{3}} \sqrt[6]{1,5}$ ning qiymatini toping.

A) $\frac{3+a}{a}$ B) $\frac{3-a}{3a}$ C) $\frac{2a-3}{a}$ D) $\frac{a+3}{3a}$

✓ Agar $\log_2 a = 2 va \log_3 b = 2$ bo'lsa, $\log_6 ab$ ning qiymatini toping.

A) 2 B) 3 C) 6 D) –2

Yechimi:

$$\left.\begin{array}{l}\log_2 a = 2\\ a = 2^2 = 4\end{array}\right| \Rightarrow \left|\begin{array}{l}\log_3 b = 2\\ b = 3^2 = 9\end{array}\right.$$

$\log_6 ab = \log_6 4 \cdot 9 = \log_6 36 = 2$ **Javob: (A)**

4497. Agar $\log_a x = 2 va \log_b x = 3$ bo'lsa, $\log_{ab} x$ ni qiymatini toping.

A) $\frac{1}{2}$ B) $1\frac{1}{5}$ C) $\frac{5}{6}$ D) $\frac{1}{5}$

4498. Agar $\log_{\frac{b}{a}}\left(\frac{a^2}{b}\right) = -\frac{1}{2}$ bo'lsa, $\log_{a^2 b}(ab)$ ni qiymatini toping.

A) $\frac{1}{4}$ B) $\frac{2}{3}$ C) –1 D) $\frac{4}{5}$

LOGARIFMIK TAQQOSLASHLAR

✓ Quyidagi sonlardan qaysilari musbat ?

$a = \log_{0,2} 8;\ b = \log_{0,3} 0,8;\ c = \log_{0,9} 9;\ d = \log_{15} 12$

A) $d;b$ B) $a;d$ C) $a;b$ D) $c;b$

Yechimi:

Agar $0 < a < 1 (a > 1)$ va $0 < b < 1 (b > 1)$ bo'lsa, $\log_a b$ son musbat **masalan** : $\log_{0,3} 0,8;\ \log_{15} 12$

Agar $0 < a < 1 (a > 1)$ va $b > 1 (0 < b < 1)$ bo'lsa, $\log_a b$ manfiy. **masalan** : $\log_{0,2} 8;\ \log_4 0,3$ **Javob: (A)**

4499. Quyidagi sonlardan qaysilari manfiy ?

$e = \log_{0,9} 0,6;\ b = \log_{1,2} \frac{3}{8};\ p = \log_{0,8} \frac{2}{5};\ q = \log_{\frac{1}{4}} 0,6$

A) $b;p$ B) $e;q$ C) b D) $e;b$

4500. Quyidagi sonlardan qaysilari musbat ?

$r = \log_{\frac{1}{9}} 0,9;\ t = \log_{12} 17;\ f = \log_9 8;\ q = \log_{|-9|} 0,09$

A) $r;t;f$ B) $f;t$ C) q D) $r;t$

4501. Quyidagi sonlardan qaysilari musbat ?

$n = \log_{99} 999;\ z = \log_{0,09} 0,001;\ e = \log_2 \frac{2}{5};\ s = \log_{\frac{5}{4}} 2,6$

A) $n;z$ B) $n;z;s$ C) e D) $e;s$

4502. Quyidagi sonlardan qaysilari manfiy ?

$e = \log_{2,9} 1,6;\ b = \log_{3,1} \frac{1}{5};\ p = \log_{0,4} \frac{1}{4};\ q = \log_{\frac{1}{2}} 0,2$

A) $b;p$ B) $e;q$ C) b D) $e;b$

LOGARIFMIK FUNKSIYA ANIQLANISH SOHASI

✓ $y = \lg(2x-5)$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty; 2,5)$ B) $(2,5; 3)$

C) $(2,5; +\infty)$ D) $[2,5; +\infty)$

Yechimi:

$$\log_a b \begin{cases} b>0 \\ a>0 \\ a\neq 1 \end{cases} \Rightarrow \left| \lg(2x-5) \begin{cases} 2x-5>0 \\ 10>0 \\ 10\neq 1 \end{cases} \right. \Rightarrow \left| \begin{array}{l} 2x-5>0 \\ x>2,5 \\ (2,5; +\infty) \end{array} \right.$$

Javob: (C)

4503. $y = \log_3(2-x)$ funksiyaning aniqlanish sohasini toping.

A) $x > 2$ B) $x < 3$ C) $x < 2$ D) $x \le 2$

4504. $y = \log_2(x^2 - 2x)$ funksiyaning aniqlanish sohasini toping.

A) $(-\infty; 0) \cup (2; +\infty)$ B) $[0; 2]$

C) $(-\infty; 0] \cup [2; +\infty)$ D) $(0; 2)$

4505. $y = \ln(64^{-x} - 8^{1-x})$ funksiyaning aniqlanish sohasini toping.

A) $[-1; +\infty)$ B) $(-\infty; -1)$

C) $(-\infty; -1]$ D) $(-1; +\infty)$

4506. $y = \frac{1}{\ln(1-x)} + \sqrt{x+2}$ funksiyaning aniqlanish sohasiga tegishli butun sonlar nechta?

A) 4 B) 3 C) 2 D) 5

4507. $y = \frac{\sqrt{8-x}}{\lg(x-1)}$ funksiyaning aniqlanish sohasiga tegishli butun sonlar yig'indisini toping.

A) 33 B) 35 C) 34 D) 40

4508. $y = \log_{\sqrt{10}}(6 + x - x^2)$ funksiyaning aniqlanish sohasiga tegishli butun sonlar yig'indisini toping.

A) 3 B) 2 C) 4 D) –3

4509. $y = \log_6 \frac{3x+2}{1-x}$ funksiyaning aniqlanish sohasini toping.

A) $x > 1,5$ B) $x < -0,6$

C) $-0,(6) < x < 1$ D) $-\frac{2}{3} < x < 2$

4510. $y = \log_{\pi} \frac{x^2 - 3x + 10}{25 - 9x^2}$ funksiyaning aniqlanish sohasini toping.

A) $\left(-\infty; \frac{5}{3}\right) \cup \left(\frac{5}{3}; +\infty\right)$ B) $\left[-\frac{5}{3}; 2\right]$

C) Ø D) $\left(-\frac{5}{3}; \frac{5}{3}\right)$

✓ $y=\log_x(3-x)$ funksiyaning aniqlanish sohasini toping.

A) $(0;1)$ B) $(1;3)$ C) $(0;1)\cup(1;3)$ D) $x\neq 3$

Yechimi:

$$\log_a b \quad \begin{cases} b>0 \\ a>0 \\ a\neq 1 \end{cases} \Rightarrow \log_x(3-x) \begin{cases} 3-x>0 \\ x>0 \\ x\neq 1 \end{cases} \quad \begin{matrix} 3-x>0 \\ x<3 \\ (-\infty;3) \end{matrix}$$

$x>0$ *va* $x<3$, $x\neq 1$ *sonlar o'qida chizib* $(0;1)\cup(1;3)$ **Javob: (C)**

4511. $y=\log_x(6-x)$ funksiyaning aniqlanish sohasini toping.

A) $0<x<6$ B) $x<6$

C) $0<x<1,\ 1<x<6$ D) $0<x\leq 1,\ 1<x<6$

4512. $y=\log_{1-x}(x-\frac{1}{4})$ funksiyaning aniqlanish sohasini toping.

A) $\left(\frac{1}{4};1\right)$ B) $\left[\frac{1}{4};2\right]$

C) $\left(-\infty;\frac{1}{4}\right]\cup[1;+\infty)$ D) $\left(\frac{1}{4};\frac{1}{2}\right)$

LOGARIFMIK TENGLAMALAR

✓ $\log_6(x-5)=2$ tenglamani yeching.

A) 31 B) 41 C) 48 D) 36

Yechimi:

formula: $\log_a f(x)=b \Leftrightarrow f(x)=a^b,\ (f(x)>0)$

misol: $\log_6(x-5)=2 \Leftrightarrow x-5=6^2 \Leftrightarrow x-5=36 \Leftrightarrow x=41$ **Javob: (B)**

4513. $\log_5 x=4$ tenglamani yeching.

A) 64 B) 16 C) 625 D) 125

4514. $\log_{999}(x-4)=0$ tenglamani yeching.

A) 4 B) 99999 C) 5 D) 25

4515. $\log_3(x+2)=3$ tenglamani yeching.

A) 25 B) 29 C) 27 D) 30

4516. $\log_{\frac{1}{4}}(x-\frac{1}{4})=-2$ tenglamani yeching.

A) $16\frac{1}{2}$ B) $16\frac{1}{4}$ C) $15\frac{1}{4}$ D) $16\frac{1}{3}$

4517. $\log_{\frac{1}{6}}(0,5+x)=-1$ tenglamani yeching.

A) 4,5 B) 0,2 C) 5,5 D) 2,5

4518. $\lg x=-1$ tenglamani yeching.

A) 0,1 B) $\sqrt{10}$ C) 10 D) -1

4519. $\ln x=\frac{1}{2}$ tenglamani yeching.

A) e B) 0,6 C) $\sqrt{e}$ D) e^2

4520. $\log_2|x-1|=1$ tenglamani yeching.

A) $-1;3$ B) 3 C) 2 D) -1

✓ $\log_3\log_2(x+500)=2$ tenglamani yeching.

A) 48 B) 41 C) 15 D) 12

Yechilishi:

formula: $\log_a f(x)=b \Leftrightarrow f(x)=a^b,\ (f(x)>0)$

misol: $\log_3\log_2(x+500)=2 \Leftrightarrow \log_2(x+500)=3^2 \Leftrightarrow x+500=2^9 \Leftrightarrow x=512-500=12$ **Javob: (D)**

4521. $\log_2\log_3 x=0$ tenglamani yeching.

A) 3 B) 9 C) 8 D) 1

4522. $\log_{\frac{1}{5}}\log_5\sqrt{5x}=0$ tenglamani yeching.

A) 0 B) 5 C) 1 D) -5

4523. $\log_{18}\log_2\log_2\left(-\frac{1}{x}\right)=0$ tenglamani yeching.

A) $-\frac{1}{16}$ B) $\frac{1}{8}$ C) $-\frac{1}{4}$ D) $-\frac{1}{8}$

4524. $\lg(3+2\cdot\lg(1+x))=0$ tenglamani yeching.

A) $-0,9$ B) -15 C) -15 D) 1

✓ $\log_4 x-\log_{16} x=\frac{1}{4}$ tenglamani yeching.

A) 8 B) 2 C) 5 D) 12

Yechilishi:

$\log_4 x-\log_{16} x=\frac{1}{4} \Leftrightarrow \log_4 x-\log_4\sqrt{x}=\frac{1}{4} \Leftrightarrow \log_4\frac{x}{\sqrt{x}}=\frac{1}{4} \Leftrightarrow \log_4\sqrt{x}=\frac{1}{4} \Leftrightarrow \sqrt{x}=4^{1/4} \Leftrightarrow \sqrt{x}=\sqrt{2} \Leftrightarrow x=2$ **Javob: (B)**

4525. $\log_2 x+\log_8 x=8$ tenglamani yeching.

A) 64 B) 16 C) 8 D) –

4526. $\log_2 x-\log_{0,5} x=9$ tenglamani yeching.

A) $\sqrt{2^{11}}$ B) 4,5 C) $16\sqrt{2}$ D) ·

4527. $\log_9 x^2+\log_{\sqrt{3}} x=3$ tenglamani yeching.

A) 6 B) 3 C) 9 D) –3

✓ $\log_2(x-5)+\log_2(x+2)=3$ tenglamani yeching.

A) 5 B) –3 C) 2 D) 6

Yechilishi:

$$\begin{cases}\log_2(x-5)+\log_2(x+2)=3\\ \log_2(x-5)\cdot(x+2)=3\\ \log_2\left(x^2-3x-10\right)=3\end{cases}\Rightarrow\begin{cases}x^2-3x-10=2^3\\ x^2-3x-10=2^3\\ x_1=-3\quad x_2=6\end{cases}$$

Bu topilgan javoblarni logarifmik funksiyalarning aniqlanish sohasiga tegishli yoki tegishli emasligiga qarab olinadi.

$$\begin{cases}x-5>0\\ x-2>0\end{cases}\Leftrightarrow\begin{cases}x>5\\ x>2\end{cases}\Rightarrow(5;+\infty)$$

$x_1=-3\ \varnothing$

$x_2=6\in(5;+\infty)$

Javob: (D)

4528. $\log_3(x-2)+\log_3(x+6)=2$ tenglamani yeching.

A) –7 ; 3 B) 4 C) 3 D) 7

4529. $\lg(x-1)+\lg(x+1)=0$ tenglamani yeching.

A) $\sqrt{2}$ B) $-\sqrt{2}$ C) $\pm\sqrt{2}$ D) $\sqrt{5}$

4530. $\ln(x+\sqrt{3})+\ln(x-\sqrt{3})=0$ tenglamani yeching.

A) 2 B) –2 C) ± 2 D) 3

✓ $\lg(x-1)-\lg(2x-11)=\lg 2$ tenglamani yeching.

A) 7 B) –3 C) –7 D) 4

Yechilishi:

$$\lg(x-1)-\lg(2x-11)=\lg 2$$

$$\lg\frac{x-1}{2x-11}=\lg 2$$

$$\log_a f(x)=\log_a g(x)\quad f(x)=g(x)$$

$$\frac{x-1}{2x-11}=2$$

$$x-1=4x-22$$

$$-3x=-21$$

$$x=7$$

J: (A)

4531. $\log_5 x=2\log_5 3+4\log_{25} 2$ tenglamani yeching.

A) 25 B) 18 C) 36 D) 16

4532. $\log_3 x=9\log_{27} 8-3\log_3 4$ tenglamani yeching.

A) 8 B) 16 C) –8 D) 2

4533. $\log_3(x^2-x)-\log_3 x=\log_3 3$ tenglamani yeching.

A) 2 B) 4 C) 5 D) –4

4534. $\frac{1}{2}\lg(x^2+x-5)=\lg 5x+\lg\frac{1}{5x}$ tenglamani yeching.

A) 4 B) 2 C) 5 D) –4

4535. $\log_{\frac{1}{2}}(3x-1)=\log_{\frac{1}{2}}(6x+8)$ tenglamani yeching.

A) –3 B) 18 C) Ø D) 16

4536. $\lg(3x-1)-\lg(x+5)=\lg 5$ tenglamani yeching.

A) Ø B) –1 C) –13 D) 0

4537. $\log_3 x^2-\log_3\frac{x}{x+6}=3$ tenglamani yeching.

A) 8 B) 6; 3 C) –9; 3 D) 3

✓ $\log_7(x-1)\cdot\log_7 x=\log_7 x$ tenglamani yeching.

A) 1; 8 B) 8 C) –7 D) 4

Yechilishi:

$$\log_7(x-1)\cdot\log_7 x=\log_7 x$$

$$\log_7(x-1)\cdot\log_7 x-\log_7 x=0$$

$$\log_7 x\cdot\left(\log_7(x-1)-1\right)=0$$

$$\log_7 x=0\qquad \log_7(x-1)-1=0$$

$$x=7^0\qquad x-1=7$$

$$x=1\qquad x=8$$

logarifmik funksiyalarning aniqlanish sohasiga ko'ra

$$\begin{cases}x-1>0\\ x>0\end{cases}\Leftrightarrow\begin{cases}x>1\\ x>0\end{cases}\Rightarrow(1;+\infty)$$

$x_1=1\ \varnothing$

$x_2=8\in(1;+\infty)$

Javob: (B)

4538. $\log_3(3x+1)\cdot\log_3 x=2\log_3(3x+1)$ tenglamani yeching.

A) 0; 3 B) 3 C) 9 D) 6

4539. $\log_{1/3} x\cdot\log_{1/3}(3x-2)=\log_{1/3}(3x-2)$ tenglamani yeching.

A) 1 B) 0,(3); 1 C) –1 D) 3

4540. $\log_{\sqrt{3}}(x-2)\cdot\log_5 x=2\log_3(x-2)$ tenglamani yeching.

A) 3 B) 3; 5 C) 5; 2 D) –3; 5

✓ $4^{2x+3}=5$ tenglamani yeching.

A) $\frac{\log_4 5+1}{2}$ B) $\frac{\log_6 11+1}{2}$

C) $\frac{\log_3 5-1}{2}$ D) $\frac{\log_4 5-3}{2}$

Yechilishi:

formula:

$$f(x)=a^b\Leftrightarrow\log_a f(x)=b,\quad(f(x)>0)$$

misol:

$$4^{2x+3}=5$$

$$2x+3=\log_4 5$$

$$2x=\log_4 5-3$$

$$x=\frac{\log_4 5-3}{2}$$

Javob: (D)

4541. $2^x = 5$ tenglamani yeching.

A) $\log_5 2$ B) $\log_2 5$ C) 5 D) –2

4542. $3^{4x} = 10$ tenglamani yeching.

A) $\frac{\log_3 10}{4}$ B) $\frac{\log_{10} 3}{4}$ C) –1,3 D) 0,3

4543. $7^{1-2x} = 2$ tenglamani yeching.

A) $\frac{1-\log_2 7}{3}$ B) $\frac{1-\log_5 2}{2}$

C) $\frac{1-\log_7 2}{2}$ D) $\frac{1+\log_2 5}{2}$

4544. $7^{2x} + 7^x - 12 = 0$ tenglamani yeching.

A) $\log_3 7$ B) –4; $\log_7 3$ C) $\log_7 3$ D) 4

4545. $8^{x+1} - 8^{2x-1} - 30 = 0$ tenglamani yeching.

A) $\log_2 15$ B) $\frac{2}{3}; \frac{2+\log_2 15}{3}$

C) $\frac{2+\log_2 15}{3}$ D) $\frac{2}{3}$

4546. $\left(\frac{1}{9}\right)^x - 5\left(\frac{1}{3}\right)^x + 6 = 0$ tenglamani yeching.

A) –1; $\log_3 0{,}5$ B) $-\log_3 2$ C) –1 D) 0,3

✓ $\log_2^2 x - 5 \cdot \log_2 x + 6 = 0$ tenglamani yeching.

A) 4; 8 B) 8 C) –7 D) 4

Yechilishi: Bu turdagi misollarni yechishda belgilash kiritib kvadrat tenglamaga keltiramiz :

$$\left.\begin{array}{l} \log_2^2 x - 5 \cdot \log_2 x + 6 = 0 \\ \log_2 x = y \end{array}\right| \Rightarrow \left|\begin{array}{l} y^2 - 5 \cdot y + 6 = 0 \\ y_1 = 3 \quad y_2 = 2 \end{array}\right.$$

$\log_2 x = y$ bo'lgani uchun y ning o'rniga qo'yamiz:

$\log_2 x = 3$ $\log_2 x = 2$

$x_1 = 8$ $x_2 = 4$ **Javob: (A)**

4547. $\lg^2 x - \lg x - 2 = 0$ tenglamani yeching.

A) 10; 0,1 B) 100; 0,01

C) 0,1; 100 D) 10; 100

4548. $\log_3^2 x - 4 \cdot \log_3 x + 3 = 0$ tenglamani yeching.

A) 3; 27 B) 27; 9 C) –3; 27 D) 3

4549. $\log_2^2 x - 4 \cdot \log_2 x - 1 = 0$ tenglama ildizlari ko'paytmasini toping.

A) 25 B) 16 C) 8 D) 81

4550. $\log_2^2 \frac{x}{2} - \log_2 4x = 3$ tenglama ildizlari ko'paytmasini toping.

A) 8 B) 0,5; 16 C) –8 D) 16

4551. $\log_{0,2}^2 \frac{x}{25} + \log_{0,2}^2 \frac{x}{5} = 1$ tenglama ildizlari ko'paytmasini toping.

A) 625 B) 125 C) 5; 25 D) –5; 25

✓ $x^{\lg x - 1} = 100$ tenglamani yeching.

A) 4; 0,1 B) 100 C) –0,1 D) 0,1; 10

Yechilishi:

$$\left.\begin{array}{l} x^{\lg x - 1} = 100 \\ \lg x^{\lg x - 1} = \lg 100 \\ (\lg x - 1)\lg x = 2 \\ \lg x = y \end{array}\right| \Rightarrow \left|\begin{array}{l} (y-1)\,y = 2 \\ y^2 - y - 2 = 0 \\ y_1 = -1 \quad y_2 = 2 \end{array}\right.$$

$\lg x = y$ bo'lgani uchun y ning o'rniga qo'yamiz:

$\lg x = -1$ $\lg x = 2$

$x_1 = 0{,}1$ $x_2 = 100$ **Javob: (D)**

IZOH: Bu turdagi misollarni yechishda qaysi asosga berilgan bo'lsa, ikkala tomonini shu asosga ko'ra logarifimlash lozim.

4552. $x^{\log_2 x + 4} = 32$ tenglamani yeching.

A) 10; 0,1 B) –5; 1 C) 2; 1/32 D) 1; 32

4553. $x^{3 - \log_3 x} = 9$ tenglamani yeching.

A) 2; 1 B) 9; 3 C) 8 D) 8; 1

4554. $x^{(\lg x + 7)/7} = 10^{\lg x + 1}$ tenglama ildizlari ko'paytmasini toping.

A) 1 B) 7 C) –3; 27 D) $\pm\sqrt{7}$

4555. $x^{2\lg x} = 10x^2$ tenglama ildizlari ko'paytmasini toping.

A) 10 B) 100 C) –10 D) 0,1

LOGARIFMIK TENGSIZLIKLAR

✓ $a = \log_3 \frac{6}{5}$ va $b = \log_3 \frac{5}{6}$ sonlarni taqqoslang.

A) $a < b$ B) $a > b$ C) $a \le b$ D) $a \ge b$

Yechilishi:

formula: *misol:*

$$\left.\begin{array}{l} (a>1) \quad b>c \\ \log_a b > \log_a c \end{array}\right| \Rightarrow \left|\begin{array}{l} \log_{3,4} 11 \ va \log_{3,4} 7 \\ 11 > 7 \\ \log_{3,4} 11 > \log_{3,4} 7 \end{array}\right.$$

formula: *misol:*

$$\left.\begin{array}{l} (0<a<1) \quad b>c \\ \log_a b < \log_a c \end{array}\right| \Rightarrow \left|\begin{array}{l} \log_{0,4} 11 \ va \log_{0,4} 7 \\ 11 > 7 \\ \log_{0,4} 11 < \log_{0,4} 7 \end{array}\right.$$

$a = \log_3 \frac{6}{5}$ va $b = \log_3 \frac{5}{6}$

$\frac{6}{5} > \frac{5}{6}$

$a > b$

Javob: (B)

4556. $a=\log_{\frac{1}{3}}9$ va $b=\log_{\frac{1}{3}}17$ sonlarni taqqoslang.

A) $a\le b$ B) $a<b$ C) $a>b$ D) $a\ge b$

4557. $a=\log_{\frac{1}{2}}\pi$ va $b=\log_{\frac{1}{2}}e$ sonlarni taqqoslang.

A) $a>b$ B) $a=b$ C) $a<b$ D) $a\ge b$

4558. $a=\log_2\frac{\sqrt{5}}{2}$ va $b=\log_2\frac{\sqrt{3}}{2}$ sonlarni taqqoslang.

A) $a>b$ B) $a=b$ C) $a<b$ D) $a\ge b$

✓ $a=\log_{\frac{1}{6}}4$; $b=\log_{\frac{1}{5}}6$ va $c=\log_{\frac{1}{5}}4$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $c>b>a$ B) $b>c>a$

C) $a>c>b$ D) $a>b>c$

Yechilishi:

$b=\log_{\frac{1}{5}}6$ va $c=\log_{\frac{1}{5}}4$

$b<c$

$a=\log_{\frac{1}{6}}4$ va $c=\log_{\frac{1}{5}}4$

$4=4$

kichigi katta bo'ladi

$\frac{1}{6}<\frac{1}{5}\Rightarrow a>c$

$a>c>b$

Javob: (C)

4559. $a=\log_{\frac{1}{3}}7$; $b=\log_{\frac{1}{3}}8$ va $c=\log_{\frac{1}{4}}7$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $c>a>b$ B) $b>c>a$

C) $a>c>b$ D) $a>b>c$

4560. $a=2\log_2 5$; $b=\log_{\frac{1}{4}}\frac{5}{26}$ va $c=\log_{\frac{1}{8}}\frac{1}{23}$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli?

A) $c>b>a$ B) $b>c>a$

C) $a>b>c$ D) $a>c>b$

✓ $\log_{0,2}(4-3x)\ge -1$ tengsizlikni yeching.

A) $\left(-\frac{1}{3};1\frac{1}{3}\right)$ B) $\left(\frac{1}{3};1\frac{1}{3}\right)$

C) $\left(\frac{1}{3};-1\frac{1}{3}\right)$ D) $\left(-\frac{1}{3};\frac{1}{3}\right)$

Yechilishi:

formula: $\log_a f(x)\ge b$

$a>1$ $\begin{cases} f(x)>0, \\ f(x)\ge a^b \end{cases}$

misol: $\log_2(x+3)<4$

$\begin{cases} x+3>0 \\ x+3<2^4 \end{cases}$

$x+3<2^4$

$x+3<16$

$x<13$

$x>-3$ va $x<13$ ni sonlar o'qida chizib:

$(-3;13)$

misol: $\log_{0,2}(4-3x)\ge -1$

formula: $\log_a f(x)\ge b$

$0<a<1$ $\begin{cases} f(x)>0, \\ f(x)\le a^b \end{cases}$

$\begin{cases} 4-3x>0 \\ 4-3x\le 0,2^{-1} \end{cases}$

$4-3x\le 0,2^{-1}$

$-3x\le 5-4$

$x\ge -\frac{1}{3}$

$x<1\frac{1}{3}$ va $x\ge -\frac{1}{3}$ ni sonlar o'qida chizib:

$\left(-\frac{1}{3};1\frac{1}{3}\right)$

Javob: (A)

4561. $\log_{\sqrt[4]{2}}(7-x)\ge 4$ tengsizlikni yeching.

A) $(-\infty;5]$ B) $(-\infty;-7)\cup(7;+\infty)$

C) $(5;7)$ D) $[-5;7)$

4562. $\log_{1/5}(4-x)>-1$ tengsizlikni yeching.

A) $(-\infty;4]$ B) $(-\infty;-1)\cup(4;+\infty)$

C) $[-1;4)$ D) $(-1;4)$

4563. $\log_5(5-2x)\le 1$ tengsizlikni yeching.

A) $[0;2,5)$ B) $(0;2,5]$

C) $(-\infty;2,5]$ D) $(-\infty;2,5)$

4564. $\log_{1/3}(x-5)\le -2$ tengsizlikni yeching.

A) $(-\infty;14]$ B) $[14;+\infty)$ C) $(8;14)$ D) $(5;14)$

4565. $\lg(x^2-8x+13)>0$ tengsizlikni yeching.

A) $(2;6)$ B) $[2;6)$

C) $(-\infty;2)\cup(6;+\infty)$ D) $(-\infty;2]\cup[6;+\infty)$

4566. $\log_{1/2}(x^2-5x-6)\ge -3$ tengsizlikni yeching.

A) $[-2;-1)\cup(6;7]$ B) $(-\infty;-1)\cup(6;+\infty)$

C) $(-2;3)\cup(6;7)$ D) $[-2;3)\cup[6;7]$

4567. $\log_{\sqrt{3}}\frac{3x}{3x-1,5}>0$ tengsizlikni yeching.

A) $(-\infty;0,5]$ B) $(-\infty;0)\cup(0;+\infty)$

C) $(0;0,5)$ D) $(0,5;+\infty)$

4568. $\log_{\frac{1}{\sqrt{2}}}\frac{4x-1}{4x+8}<0$ tengsizlikni yeching.

A) $(-2;6)$ B) $[2;6)$

C) $(-\infty;-2)$ D) $(-\infty;-2]\cup[0,25;+\infty)$

4569. $3^{\log_3(4-x)}>9$ tengsizlikni yeching.

A) $x<-5$ B) $-5<x<5$

C) $x<4$ D) $-5\le x\le 4$

4570. $25^{\log_5(x-4)}>9$ tengsizlikni yeching.

A) $x\le 7$ B) $7>x$ C) $x\ge 7$ D) $x>4$

4571. $6^{\log_6(8-x)}>4$ tengsizlikni yeching.

A) $x>4$ B) $4<x<8$ C) $x>3$ D) $x<4$

4572. $7^{\log_7(11-x)}>9$ tengsizlikni yeching.

A) $-5\le x<4$ B) $x=-5$

C) $x<2$ D) $x\le 5$

4573. $\log_{\frac{1}{\sqrt{3}}}(x-5)+2\log_{\sqrt{3}}(x-5)<4$ tengsizlikni yeching.

A) $(10;20]$ B) $(14;+\infty)$

C) $(6;15)$ D) $(5;14)$

4574. $\log_2(3-2x)-\log_{\frac{1}{8}}(3-2x)>\frac{4}{3}$ tengsizlikni yeching.

A) $(-2;0,5)$ B) $[2;6)$

C) $(-\infty;0,5)$ D) $(-\infty;-2]\cup[0,5;+\infty)$

4575. $\log_{\frac{1}{3}}(x+2)-\log_9(x+2)>-\frac{3}{2}$ tengsizlikni yeching.

A) $-2<x<1$ B) $x>1$

C) $x<4$ D) $0\le x\le 1$

4576. $\log_5(3-x)-\log_5 12<0$ tengsizlikni qanoatlantiruvchi butun sonlar nechta ?

A) 13 B) 11 C) 5 D) 10

4577. $\log_2\log_{\frac{1}{3}}\log_5 x>0$ tengsizlikni yeching.

A) $1<x<\sqrt[3]{5}$ B) $x>\sqrt[3]{5}$

C) $x<\sqrt{5}$ D) $0\le x\le 1$

✓ $\log_{\frac{1}{2}}(2x+3)>\log_{\frac{1}{2}}(x+1)$ tengsizlikni yeching.

A) $(-\infty;6)$ B) $(2;+\infty)$

C) $\varnothing$ D) $(5;1)$

Yechilishi:

formula:

$\log_a f(x)<\log_a g(x)$

$0<a<1$: $\begin{cases} g(x)>0, \\ f(x)>0, \\ f(x)>g(x); \end{cases}$ $a>1$: $\begin{cases} g(x)>0, \\ f(x)>0, \\ f(x)<g(x) \end{cases}$

$\log_{\frac{1}{2}}(2x+3)>\log_{\frac{1}{2}}(x+1)$

$\begin{cases} 2x+3>0 \\ x+1>0 \\ 2x+3<x+1 \end{cases} \Leftrightarrow \begin{cases} x>-1,5 \\ x>-1 \\ x<-2 \end{cases}$

sonlar o'qida chizib:

$\varnothing$ *yechimi yo'q*

Javob: (C)

4578. $\lg(3x-4)<\lg(2x+1)$ tengsizlikning butun yechimlari o'rta arifmetigini toping.

A) 3 B) 16 C) 9 D) 4

4579. $\log_{0,3}(3x-8)>\log_{0,3}(x^2+4)$ tengsizlikni yeching.

A) $\varnothing$ B) $(-2;+\infty)$ C) $\left(\frac{8}{3};+\infty\right)$ D) $(-4;+\infty)$

4580. $\log_{\frac{1}{3}}(x^2+x+2)\le\log_{\frac{1}{3}}(2x^2-18)$ tengsizlikning butun yechimlari nechta?

A) 5 B) 3 C) 2 D) 4

✓ $(x^2-8x+7)\sqrt{\log_5(x^2-3)}\le 0$ tengsizlikni yeching.

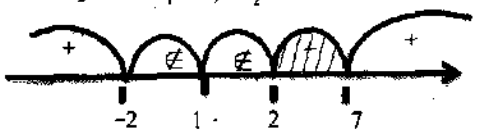
A) $[-2;7]\cup\{-2\}$ B) $[3;7]\cup\{-2\}$

C) $[1;7]\cup\{-2\}$ D) $[2;7]\cup\{-2\}$

Yechimi: "0" ga tenglab intervalga qo'yamiz.

$x^2-8x+7=0$ $\quad\sqrt{\log_5(x^2-3)}=0$

$x_1=7;\ x_2=1$ $\quad x_1=2;\ x_2=-2$



Aniqlanish sohasiga tegishli bo'lmaganiga $[2;7]\cup\{-2\}$ **Javob: (D)**

4581. $\frac{\log_{\sqrt{6}}(x)-2}{\log_{\sqrt{6}}(x)-4}\le 0$ tengsizlikning yechimlaridan nechtasi tub sonlardan iborat?

A) 7 B) 5 C) 8 D) 6

4582. $\frac{2\log_4(x)}{\log_4(x)+2}\le 1$ tengsizlikning yechimlaridan iborat tub sonlarning yig'indisini toping.

A) 41 B) 21 C) 17 D) 28

4583. $(x^2-12x+32)\sqrt{\log_3(x-5)}\le 0$ tengsizlikni yeching.

A) $[6;8]$ B) $[7;8)$ C) $(7;8]$ D) $(7;8$

✓ $\sqrt{x^{4\lg x}}<10x$ tengsizlikni yeching.

A) $\left(\frac{1}{\sqrt{10}};10\right)$ B) $(1;10)$ C) $(0;10)$ D) $(0;1)$

Yechimi:

$\sqrt{x^{4\lg x}}<10x \Rightarrow (x^{4\lg x})^{\frac{1}{2}}<10x$

$x^{2\lg x}<10x$

2 ta tomonini "lg" laymiz

$\lg x^{2\lg x}<\lg(10x)$

$2\lg x\cdot\lg x<\lg 10+\lg x$

$\lg x=a$

$\Leftrightarrow \begin{cases} 2a^2<1+a \\ 2a^2-a-1<0 \\ a_1=0,5\ \ a_2=1 \end{cases}$

intervalga qo'yamiz (oraliqlarga ajratamiz) va "–" li oraliqni olamiz.

$(-0,5;1) \Leftrightarrow -0,5<a<1$

$-0,5<\lg x<1$

$10^{-0,5}<x<10^1 \Leftrightarrow \left(\frac{1}{\sqrt{10}};10\right)$ **Javob: (A)**

4584. $x^{\log_2 x+2} < 8$ tengsizlikni yeching.

A) $\left(2^{-5};2\right)$ B) $\left(2^{-4};2\right)$

C) $\left(2^{-3};2\right)$ D) $\left(2^{-2};2\right)$

4585. $\log_{0,5}(x+3)^4 > \log_{0,5}(3x-7)^4$ tengsizlikni yeching.

A) $(-\infty;-3)\cup(-3;1)\cup(5;+\infty)$ B) $(5;+\infty)$

C) $(-\infty;-3)\cup(-3;1)$ D) $(-\infty;1)\cup(1;+\infty)$

4586. $\log_{0,5}(x+5)^4 > \log_{0,5}(3x-1)^4$ tengsizlikni yeching.

A) $(3;+\infty)$ B) $(-\infty;1)$

C) $(-\infty;-5)\cup(-5;-1)\cup(3;+\infty)$ D) $(-1;3)$

Ko'rsatkichli funksiyaning o'suvchi yoki kamayuvchiligi

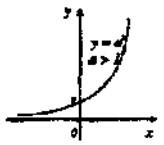
✓ O'suvchi funksiyalarni aniqlang.

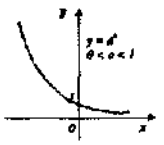
1) $0,3^x$ 2) $0,3^{-x}$ 3) $1,6^{-2x}$ 4) $1,6^{2x}$ 5) 8^{-x}

A)2; 4; 5 B) 1; 3 C) 2;5 D) barchasi

Yechimi: $y=a^x$

Ko'rsatkichli funksiya $a>1$ bo'lganda barcha haqiqiy sonlar to'plamida **o'suvchi**; agar $0<a<1$ bo'lganda **kamayuvchi**.





kamyuvchi		*o'suvchi*	
1) $0,3^x$	$y=a^x$	2) $0,3^{-x}$	$y=a^x$
3) $1,6^{-2x}$	$0<a<1$	4) $1,6^{2x}$	$a>1$
		5) 8^{-x}	

Izoh: darajasi "–" kelsa :

$1,6^{-2x}=\left(\frac{8}{5}\right)^{-2x}=\left(\frac{5}{8}\right)^{2x}$ $0,3^{-x}=\left(\frac{3}{10}\right)^{-x}=\left(\frac{10}{3}\right)^{x}$ **J: (A)**

4587. O'suvchi funksiyalarni aniqlang.

1) $1,1^{-x}$ 2) $0,4^x$ 3) $2,2^{-x}$ 4) $2,3^x$ 5) 3^{-x}

A)2; 4; 5 B) 1; 3 C) 2;5 D) 4

4588. Kamayuvchi funksiyalarni aniqlang.

1) $1,1^{-x}$ 2) $0,4^x$ 3) $2,2^{-x}$ 4) $2,3^x$ 5) 3^{-x}

A)2; 4; 5 B) 1; 2; 3; 4 C) 2; 5 D) barchasi

4589. O'suvchi funksiyalarni aniqlang.

1) $0,78^x$ 2) $1,69^x$ 3) $\left(\frac{1}{2}\right)^{-x}$ 4) $0,7^{-x}$ 5) 4^{-x}

A)2; 4; 5 B) 1; 3 C) 2; 3; 4 D) 4

4590. Kamayuvchi funksiyalarni aniqlang.

1) $0,3^{-x}$ 2) $0,4^x$ 3) $\left(\frac{1}{7}\right)^{-x}$ 4) $1,3^{-2x}$ 5) $0,7^x$

A)2; 4; 5 B) 1; 2; 3; 4 C) 2;5 D) barchasi

Logarifmik funksiyaning o'suvchi yoki kamayuvchiligi

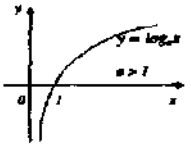
✓ Kamayuvchi funksiyalarni aniqlang.

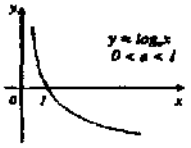
1) $\log_{0,2} x$ 2) $\log_6 x$ 3) $\lg x$ 4) $\log_{\frac{\sqrt{15}}{4}} x$ 5) $\log_{11} x$

A)2; 4; 5 B) 1; 4 C) 2;5 D) barchasi

Yechimi: $y=\log_a x$

Logarifmik funksiya aniqlanish sohasida agar $a>1$ bo'lsa, **o'suvchi**. Agar $0<a<1$ bo'lganda **kamayuvchi**.





kamyuvchi		*o'suvchi*	
1) $\log_{0,2} x$	$y=\log_a x$	2) $\log_6 x$	$y=\log_a x$
4) $\log_{\frac{\sqrt{15}}{4}} x$	$0<a<1$	3) $\lg x$	$a>1$
		5) $\log_{11} x$	

J: (B)

4591. O'suvchi funksiyalarni aniqlang.

1) $\log_{0,075} x$ 2) $\log_7 x$ 3) $\lg x$ 4) $\log_{\frac{\sqrt{3}}{2}} x$ 5) $\log_{11} x$

A)2; 4; 5 B) 1; 3 C) 2;5 D) 2; 3; 5

4592. Kamayuvchi funksiyalarni aniqlang.

1) $\log_{\sqrt{5}} x$ 2) $\log_{\frac{1}{5}} x$ 3) $\ln x$ 4) $\log_{\frac{\sqrt{3}}{2}} x$ 5) $\log_{\frac{1}{e}} x$

A) 2; 4; 5 B) 1; 2; 3; 4 C) 2; 5 D) barchasi

4593. O'suvchi funksiyalarni aniqlang.

1) $\log_{\sqrt{3}} x$ 2) $\log_{\frac{1}{3}} x$ 3) $\ln x$ 4) $\log_{\frac{\sqrt{24}}{5}} x$ 5) $\log_{\frac{1}{e}} x$

A)2; 4; 5 B) 1; 3 C) 2; 3; D) 4

4594. Kamayuvchi funksiyalarni aniqlang.

1) $\lg x$ 2) $\log_{0,6} x$ 3) $\ln x$ 4) $\log_{\frac{\sqrt{7}}{2}} x$ 5) $\log_2 x$

A) 2; B) 1; 2; 3; 4 C) 2;5 D) barchasi

TRIGONOMETRIYA

BURCHAK VA ULARNING O'LCHOVI

✓ 40° burchakning radian o'lchovini toping

A) $\frac{2\pi}{9}$ B) $\frac{\pi}{9}$ C) $\frac{2\pi}{5}$ D) $\frac{3\pi}{7}$

Yechilishi:

formula: $\boxed{a\ rad=\alpha^\circ\cdot\frac{\pi}{180^\circ}}$

$$a\ rad=\alpha^\circ\cdot\frac{\pi}{180^\circ}=40^\circ\cdot\frac{\pi}{180^\circ}=\frac{40^\circ}{180^\circ}\cdot\pi=\frac{2\pi}{9}$$

Javob: (A)

4595. 105° burchakning radian o'lchovini toping.

A) $\frac{5\pi}{12}$ B) $\frac{6\pi}{11}$ C) $\frac{7\pi}{11}$ D) $\frac{7\pi}{12}$

4596. 150° burchakning radian o'lchovini toping.

A) $\frac{7\pi}{12}$ B) $\frac{10\pi}{12}$ C) $\frac{3\pi}{5}$ D) $\frac{2\pi}{5}$

4597. 21° burchakning radian o'lchovini toping.

A) $\frac{11\pi}{60}$ B) $\frac{7\pi}{5}$ C) $\frac{7\pi}{60}$ D) $\frac{2\pi}{5}$

4598. 240° burchakning radian o'lchovini toping.

A) $\frac{4\pi}{3}$ B) $\frac{2\pi}{3}$ C) $\frac{3\pi}{2}$ D) $\frac{5\pi}{6}$

✓ $\frac{2\pi}{3}$ radianda ifodalangan burchakning gradus o'lchovini toping.

A) 135° B)120° C) 145° D)75°

Yechilishi:

formula: $\alpha^\circ=a\cdot\frac{180^\circ}{\pi}$

$$\alpha^\circ=a\cdot\frac{180^\circ}{\pi}=\frac{2\pi}{3}\cdot\frac{180^\circ}{\pi}=\frac{2\cancel{\pi}}{\cancel{3}}\cdot\frac{\cancel{180}^\circ}{\cancel{\pi}}=120^\circ$$

Javob: (B)

4599. $\frac{4\pi}{3}$ radianda ifodalangan burchakning gradus o'lchovini toping.

A) 225° B) 200° C) 210° D) 240°

4600. $\frac{4\pi}{9}$ radianda ifodalangan burchakning gradus o'lchovini toping.

A) 70° B) 80° C) 110° D) 90°

✓ $36'$ da ifodalangan burchakning gradus o'lchovini toping.

A) $0{,}35^\circ$ B) $1{,}2^\circ$ C) $0{,}5^\circ$ D) $0{,}6^\circ$

Yechilishi:

formula: $\alpha'=\left(\frac{\alpha}{60}\right)^\circ$ $\alpha''=\left(\frac{\alpha}{60\cdot60}\right)^\circ$

$$36'=\left(\frac{36}{60}\right)^\circ=\left(\frac{3}{5}\right)^\circ=0{,}6^\circ$$ **Javob: (D)**

Izoh: α' va α'' ga e'tibor bering. ikkalasi 2 xil topiladi.

4601. $24'$ burchakning gradus o'lchovini toping.

A) $0{,}4^\circ$ B) $0{,}6^\circ$ C) $0{,}2^\circ$ D) $2{,}4^\circ$

4602. $24''$ burchakning gradus o'lchovini toping.

A) $1/180^\circ$ B) $1/50^\circ$ C) $1/150^\circ$ D) $1/100^\circ$

4603. $45'$ burchakning gradus o'lchovini toping.

A) $0{,}85^\circ$ B) $0{,}75^\circ$ C) $0{,}25^\circ$ D) $0{,}45^\circ$

4604. $50''$ burchakning gradus o'lchovini toping.

A) $\left(\frac{1}{45}\right)^\circ$ B) $\left(\frac{1}{72}\right)^\circ$ C) $\left(\frac{1}{55}\right)^\circ$ D) $\left(\frac{1}{85}\right)^\circ$

✓ $9^\circ15'$ burchakning radian o'lchovini toping.

A) $\frac{37\pi}{360}$ B) $\frac{47\pi}{360}$ C) $\frac{37\pi}{720}$ D) $\frac{37\pi}{180}$

Yechilishi: avval burchakni necha gradus ekanligini topamiz :

$$9^\circ15'=9^\circ+\left(\frac{15}{60}\right)^\circ=9^\circ+\left(\frac{1}{4}\right)^\circ=(9+0{,}25)^\circ=9{,}25^\circ$$

keyin esa:

$$a\ rad=\alpha^\circ\cdot\frac{\pi}{180^\circ}=9{,}25^\circ\cdot\frac{\pi}{180^\circ}=\left(\frac{37}{4}\right)^\circ\cdot\frac{\pi}{180^\circ}=\frac{37\pi}{720}$$

Javob: (C)

4605. $24^\circ36'$ burchakning radian o'lchovini toping.

A) $\frac{41\pi}{300}$ B) $\frac{41\pi}{150}$ C) $\frac{41\pi}{250}$ D) $\frac{31\pi}{300}$

4606. $27^\circ45'$ burchakning radian o'lchovini toping.

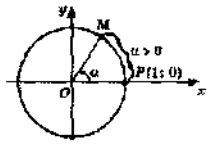
A) $\frac{37\pi}{360}$ B) $\frac{47\pi}{360}$ C) $\frac{37\pi}{240}$ D) $\frac{37\pi}{180}$

✓ 145° burchak qaysi chorakda joylashgan?

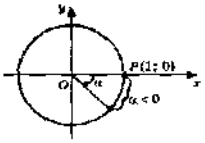
A) I B) II C) III D) IV

Yechilishi: burchaklarni birlik aylanalarda qo'yiladi.

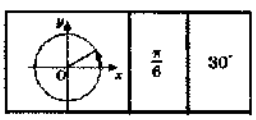
masalan

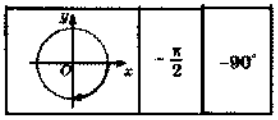


Agar musbat gradus bo'lsa, soat mili yo'nalishiga qarama-qarshi harakat qilish lozim.

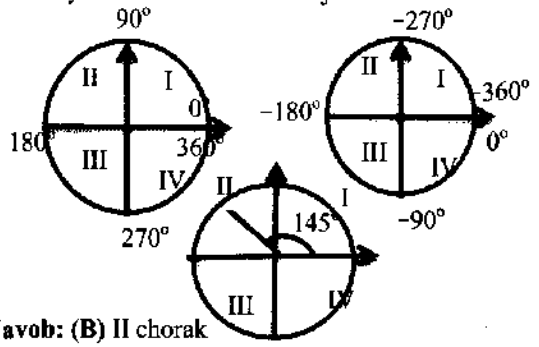


Agar manfiy gradus bo'lsa, soat mili yo'nalishi bo'ylab harakat qilish lozim.





Birlik aylanada 4 ta chorak mavjud:



Javob: (B) II chorak

4607. 60° burchak qaysi chorakda joylashgan?
A) I B) II C) III D) IV

4608. 145° burchak qaysi chorakda joylashgan.
A) I B) II C) III D)IV

4609. 195° burchak qaysi chorakda joylashgan?
A) I B) II C) III D) IV

4610. 340° burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4611. $\frac{16\pi}{9}$ burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4612. $\frac{6\pi}{5}$ burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4613. 620° burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4614. $\frac{401\pi}{90}$ burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4615. –188° burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4616. –367° burchak qaysi chorakda joylashgan?
A) I B) II C) III D) IV

4617. –912° burchak qaysi chorakda joylashgan?
A) I B) II C) III D) IV

✓ P(1;0) nuqtani $\alpha-\frac{\pi}{2}$ burchakka burish natijasida hosil bo'lgan nuqta qaysi chorakda yotishini aniqlang.

$0<\alpha<\frac{\pi}{2}$

A) I B) II C) III D)IV

Yechilishi: $0<\alpha<\frac{\pi}{2}$ ekanligidan kelib chiqib α ga shu oraliqdagi biror qiymatni beramiz, masalan $\alpha=40^\circ$

bunda $\alpha-\frac{\pi}{2}=40^\circ-90^\circ=-50^\circ$ bu esa IV –chorakdir.

Javob: (D) IV

4618. P(1;0) nuqtani $\alpha-\pi$ burchakka burish natijasida hosil bo'lgan nuqta qaysi chorakda yotishini aniqlang

$0<\alpha<\frac{\pi}{2}$.

A) I B) II C) III D) IV

4619. P(1;0) nuqtani $\frac{3\pi}{2}-\alpha$ burchakka burish natijasida hosil bo'lgan nuqta qaysi chorakda yotishini aniqlang

$0<\alpha<\frac{\pi}{2}$.

A) I B) II C) III D) IV

4620. P(–1;0) nuqtani $\frac{\pi}{2}+\alpha$ burchakka burish natijasida hosil bo'lgan nuqta qaysi chorakda yotishini aniqlang

$0<\alpha<\frac{\pi}{2}$.

A) I B) II C) III D) IV

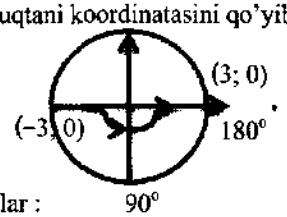
4621. P(0;1) nuqtani $\alpha-\frac{\pi}{2}$ burchakka burish natijasida hosil bo'lgan nuqta qaysi chorakda yotishini aniqlang

$0<\alpha<\frac{\pi}{2}$.

A) I B) II C) III D)IV

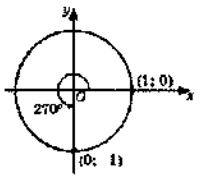
✓ P(–3;0) nuqtani 180° burchakka burish natijasida hosil bo'lgan nuqta koordinatasini toping.
A) P(0;–3) B) P(–1;0) C) P(–3;0) D) P(3;0)

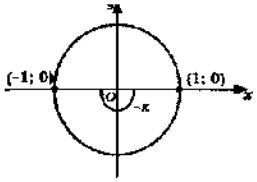
Yechilishi: P(–3;0) nuqtani koordinatasini qo'yib, keyin 180° ga burish lozim.



Javob: (D)

yana bir nechta misollar :





4622. P(1;0) nuqtani 90° burchakka burish natijasida hosil bo'lgan nuqta koordinatasini toping.
A) (0;1) B) (–1;0) C) (1;1) D) (0;0)

4623. P(2;0) nuqtani $-\pi$ burchakka burish natijasida hosil bo'lgan nuqta koordinatasini toping.
A) (0;1) B) (–2;0) C) (0;–2) D) (2;1)

4624. P(0;–5) nuqtani $-\frac{\pi}{2}$ burchakka burish natijasida hosil bo'lgan nuqta koordinatasini toping.
A) (0;0) B) (–5;0) C) (5;0) D) (0;–5)

4625. $(-1;0)$ nuqtani hosil qilish uchun P(1;0) nuqtani burish kerak bo'lgan burchakni toping.
A) 270°;–90° B) 90°; –270°
C) 360°; 0° D) 180°; –180°

4626. $(0;1)$ nuqtani hosil qilish uchun P(1;0) nuqtani burish kerak bo'lgan burchakni toping.
A) 270°;–90° B) 90°; –270°
C) 360°; 0° D) 180°; –180°

4627. $(0;-1)$ nuqtani hosil qilish uchun P(1;0) nuqtani burish kerak bo'lgan burchakni toping.
A) 270°;–90° B) 90°; –270°
C) 360°; 0° D) 180°; –180°

✓ Soatning minut mili 8 minutda necha gradusga buriladi?
A) 48° B) 36° C) 24° D) 64°
Yechilishi:

Formula: 1 minut = 6°. demak, 8 minut = $8 \cdot 6^\circ = 48^\circ$
Javob: (A)

4628. Soatning minut mili 9 minutda necha gradusga buriladi?.
A) 54° B) 48° C) 36° D) 18°

4629. Soatning minut mili 6 minutda necha gradusga buriladi?.
A) 54° B) 48° C) 36° D) 18°

4630. Soatning minut mili 3,5 minutda necha gradusga buriladi?.
A) 54° B) 21° C) 36° D) 14°

✓ 4 burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

Yechilishi: formula $1 \approx 57^\circ 17' 45''$

demak, $4 \approx 4 \cdot 57^\circ \approx 228^\circ$ **Javob: (C)**

4631. 2 burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4632. 3,2 burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4633. 6,7 burchak qaysi chorakda joylashgan?
A) I B) II C) III D)IV

4634. $\frac{\pi}{2}$ *va* 2 qaysi biri katta ?
A) 2 B) $\pi/2$ C) teng D)Ø

4635. $\frac{3\pi}{2}$ *va* 4,6 qaysi biri kichik ?
A) teng B) $3\pi/2$ C)4,6 D)Ø

4636. $-\frac{2\pi}{3}$ *va* $-\sqrt{10}$ qaysi biri katta ?
A) teng B) $-2\pi/3$ C) $-\sqrt{10}$
D) aniqlab bo'lmaydi.

BURCHAKNING SINUSI, KOSINUSI, TANGENSI VA KOTANGENSI TA'RIFLARI

✓ $\sin\frac{\pi}{4}$ ni hisoblang.
A) $\frac{1}{2}$ B) 1 C) $\frac{1}{\sqrt{2}}$ D) $\frac{2\sqrt{2}}{2}$

Yechilishi: Quyidagi jadvalda $\sin\alpha$ (sinus), $\cos\alpha$ (kosinus), $tg\alpha = \frac{\sin\alpha}{\cos\alpha}$ (tangens) va $ctg\alpha = \frac{\cos\alpha}{\sin\alpha}$ (kotangens) ni α ga bog'liq xoldagi ba'zi qiymatlari keltirilgan:

Burchak α, Gradus (radian)	Funksiyalar			
	sin α	cos α	tg α	ctg α
0° (0)	0	1	0	Mavjud emas
30° (π /6)	1/2	$\sqrt{3}/2$	$1/\sqrt{3}$	$\sqrt{3}$
45° (π /4)	$\sqrt{2}/2$	$\sqrt{2}/2$	1	1
60° (π /3)	$\sqrt{3}/2$	1/2	$\sqrt{3}$	$1/\sqrt{3}$
90° (π /2)	1	0	Mavjud emas	0
180° (π)	0	-1	0	Mavjud emas
270° (3 π /2)	-1	0	Mavjud emas	0
360° (2 π)	0	1	0	Mavjud emas

$\sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$
Javob: (C) (mahrajdagi irratsionallikni qutqarilgan)

4637. $\cos\frac{\pi}{3}$ ni hisoblang.
A) $\frac{1}{2}$ B) 1 C) $\frac{1}{\sqrt{3}}$ D) 0

4638. $tg\frac{\pi}{6}$ ni hisoblang.
A) $\sqrt{3}$ B) 1 C) $\frac{1}{\sqrt{3}}$ D) $\frac{2\sqrt{2}}{2}$

4639. $tg\frac{\pi}{4}$ ni hisoblang.
A) $\frac{\sqrt{3}}{3}$ B) 1 C) $\frac{1}{\sqrt{2}}$ D) $\sqrt{3}$

4640. $\cos 45^\circ$ ni hisoblang.
A) $\frac{1}{2}$ B) 1 C) $\frac{1}{\sqrt{2}}$ D) $\frac{2\sqrt{2}}{2}$

4641. $\sin\frac{\pi}{3}$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) 1 C) $\frac{\sqrt{3}}{2}$ D) $\frac{1}{2}$

4642. $\sin\frac{\pi}{2}+\sin\frac{3\pi}{2}$ ni hisoblang.

A) $\sqrt{2}$ B) 0 C) $\frac{1}{\sqrt{2}}$ D) $2\sqrt{3}$

4643. $\sin\frac{\pi}{2}+\cos\frac{\pi}{2}$ ni hisoblang.

A) $\sqrt{3}$ B) 0 C) 1 D) $\frac{1}{2}\sqrt{3}$

4644. $\sin\pi-\cos\pi$ ni hisoblang.

A) -1 B) $\frac{1}{2}$ C) 1 D) 0

4645. $\sin 0-\cos 2\pi$ ni hisoblang.

A) -1 B) 1 C) 0 D) $\frac{1}{2}$

4646. $\sin\pi+\sin 1{,}5\pi$ ni hisoblang.

A) 1 B) -1 C) 0 D) $\frac{\sqrt{2}}{2}$

4647. $\cos 0-\cos\frac{3\pi}{2}$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) 1 D) $\frac{1}{2}$

4648. $tg\pi+\cos\pi$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{1}{2}$ C) 0 D) -1

4649. $tg0^\circ-tg180^\circ$ ni hisoblang.

A) 0 B) 1 C) -1 D) $\frac{1}{2}$

4650. $tg\pi+\sin\pi$ ni hisoblang.

A) 1 B) $\sqrt{3}$ C) $\frac{\sqrt{2}}{2}$ D) 0

4651. $\cos\pi-tg2\pi$ ni hisoblang.

A) $\sqrt{3}$ B) -1 C) $\frac{1}{2}$ D) 0

4652. $3\sin\frac{\pi}{6}+2\cos\frac{\pi}{6}-tg\frac{\pi}{3}$ ni hisoblang.

A) $2\sqrt{3}$ B) $\frac{3}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{3-2\sqrt{3}}{2}$

4653. $5\sin\frac{\pi}{6}+3tg\frac{\pi}{4}-\cos\frac{\pi}{4}-10tg\frac{\pi}{4}$ ni hisoblang.

A) $\frac{-\sqrt{2}}{2}$ B) $\frac{9-2\sqrt{3}}{2}$ C) $-\frac{9}{2}-\frac{\sqrt{2}}{2}$ D) 1

4654. $\left(2tg\frac{\pi}{6}-tg\frac{\pi}{3}\right):\cos\frac{\pi}{6}$ ni hisoblang.

A) $\frac{2}{3}$ B) $\frac{1}{2}$ C) 0 D) $\frac{-2}{3}$

4655. $\sin\frac{\pi}{3}\cos\frac{\pi}{6}-tg\frac{\pi}{4}$ ni hisoblang.

A) 0,25 B) $-\frac{1}{4}$ C) $\frac{1}{2}$ D) $\frac{\sqrt{3}}{2}$

4656. $a=\frac{\pi}{4}$ bo'lsa, $2\sin a+\sqrt{2}\cos a$ ifodani qiymatini toping.

A) $1-\sqrt{2}$ B) $\frac{3-\sqrt{2}}{2}$ C) 1 D) $1+\sqrt{2}$

4657. $a=60^\circ$ bo'lsa, $0{,}5\cos a-\sqrt{3}\sin a$ ifodani qiymatini toping

A) $-\frac{5}{4}$ B) $\frac{5}{4}$ C) $\sqrt{3}$ D) 0

4658. $a=\frac{\pi}{6}$ bo'lsa, $\sin 3a-\cos 2a$ ifodani qiymatini toping.

A) 0 B) $\frac{-1}{4}$ C) $\frac{1}{2}$ D) -1

4659. $a=\frac{\pi}{2}$ bo'lsa, $\cos\frac{a}{2}+\sin\frac{a}{3}$ ifodani qiymatini toping.

A) $\frac{\sqrt{2}+2}{2}$ B) $\frac{1}{2}+\sqrt{2}$ C) $\frac{1}{2}$ D) $\frac{1+\sqrt{2}}{2}$

4660. $a^2\sin\frac{\pi}{2}+2ab\cos\pi-b^2\sin\frac{3\pi}{2}$ ifodani soddalashtiring.

A) $(a-b)^2$ B) $(a+b)^2$

C) $-(a-b)^2$ D) a^2+b^2

4661. $a^2\sin 90^\circ-2ab\sin 180^\circ+b^2\sin 270^\circ$ ifodani soddalashtiring.

A) $(a-b)^2$ B) $-(a+b)^2$

C) a^2-b^2 D) a^2+b^2

4662. $a^3\sin 2\pi+2ab\cos\frac{3\pi}{2}+b^2tg2\pi$ ifodani soddalashtiring.

A) $(a-b)^3$ B) $(a+b)^3$

C) a^3 D) 0

4663. $a^3ctg270^\circ+b^3tg180^\circ$ ifodani soddalashtiring.

A) -1 B) a^3+b^3

C) $\frac{1}{2}$ D) 0

$a^3ctg90^\circ+b^3tg45^\circ$ ifodani soddalashtiring.

A) -1 B) a^3+b^3

C) b^3 D) 0

4664. $4a^2\sin^4\frac{\pi}{4}-6abtg^2\frac{\pi}{6}+(bctg\frac{\pi}{4})^2$ ifodani soddalashtiring.

A) $(a-b)^2$ B) $(a+b)^2$

C) $-(a-b)^2$ D) a^2+b^2

4665. $\dfrac{(2a\cos\frac{\pi}{3})^3-(b\cos 0)^3+(3ab\sin 0)^2}{(5a\cos\frac{\pi}{2})^3+2a\sin\frac{\pi}{6}-2b\cos^2\frac{\pi}{4}}$ ifodani soddalashtiring.

A) $a-b$ B) a^2+ab+b^2

C) $-(a-b)^3$ D) a^2-ab+b^2

4666. $\dfrac{(a\sin\frac{\pi}{2})^2-(b\,tg\frac{\pi}{4})^2}{2a^2\sin\frac{\pi}{6}-2ab\cos 0+(b\,ctg\frac{\pi}{4})^2}$ ifodani soddalashtiring.

A) $\dfrac{a+b}{a-b}$ B) $(a-b)^2$

C) a^2-b^2 D) 1

✓ (1; 0) nuqtani $\left(\frac{1}{2};\frac{\sqrt{3}}{2}\right)$ koordinatali nuqta hosil qilish uchun necha gradusga buriladi?

A) 48° B) 30° C) 45° D) 60°

Yechilishi: ixtiyoriy nuqtali koordinata abssisasi cosinus ordinatasi sinusdir.

$(x;y)\Leftrightarrow(\cos\alpha;\sin\alpha)\quad x=\cos\alpha;\ y=\sin\alpha$

. demak,

$\left(\frac{1}{2};\frac{\sqrt{3}}{2}\right)\Rightarrow(\cos\alpha;\sin\alpha)\Rightarrow\alpha=60^\circ$

J:D)

ya'ni $\left(\cos 60^\circ;\sin 60^\circ\right)\Rightarrow\left(\frac{1}{2};\frac{\sqrt{3}}{2}\right)$

4667. (1; 0) nuqtani $\left(\frac{\sqrt{3}}{2};\frac{1}{2}\right)$ koordinatali nuqta hosil qilish uchun necha gradusga buriladi?

A) 60° B) 30° C) 90° D) 45°

4668. (1; 0) nuqtani $\left(\frac{\sqrt{2}}{2};\frac{\sqrt{2}}{2}\right)$ koordinatali nuqta hosil qilish uchun necha gradusga buriladi?

A) 60° B) 90° C) 45° D) 180°

4669. (1; 0) nuqtani $(0;1)$ koordinatali nuqta hosil qilish uchun necha gradusga buriladi?

A) 60° B) 90° C) 30° D) 60°

4670. (1; 0) nuqtani $(0;-1)$ koordinatali nuqta hosil qilish uchun necha gradusga buriladi?

A) 180° B) 270° C) 60° D) 90°

SINUS, COSINUS VA TANGENSNING ISHORALARI

✓ $\sin 150^\circ$ *va* $\cos\frac{2\pi}{5}$ larning ishorasini aniqlang.

A) +; – B) +; + C) – ; – D) – ; +

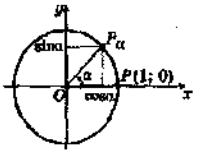
Yechilishi: Agar

$\sin\alpha\to Oy$ *o'qi*,

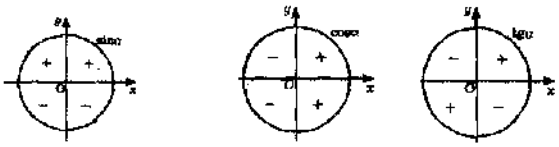
$\cos\alpha\to Ox$ *o'qi*

va $tg\alpha=\dfrac{y}{x}=\dfrac{\sin\alpha}{\cos\alpha}$

ekanligini hisobga olsak,



sinus ishoralari: cosinus ishoralari: tangens ishoralari:



$\sin 150^\circ$ *va* $\cos\frac{7\pi}{5}$ sin(II chorak) *va* cos(III chorak)

+; – **Javob:** (A)

Izoh: tangens va kotangens bir xil ishoralari

4671. $\sin 247^\circ$ va $\cos 276^\circ$ sonli ifodalarning ishorasini aniqlang.

A) +; – B) +; + C) – ; – D) –; +

4672. $\cos 590^\circ$ va $tg303^\circ$ sonli ifodalarning ishorasini aniqlang.

A) +; – B) +; + C) – ; – D) – ; +

4673. $tg650^\circ$ va $\cos 230^\circ$ sonli ifodalarning ishorasini aniqlang.

A) +; – B) +; + C) –; – D) – ; +

4674. $\sin 110^\circ$ va $ctg220^\circ$ sonli ifodalarning ishorasini aniqlang.

A) +; – B) +; + C) – ; – D) – ; +

4675. $\dfrac{\cos 320^\circ}{\sin 217^\circ}$ va $\dfrac{tg185^\circ}{\sin 140^\circ}$ sonli ifodalarning ishorasini aniqlang.

A) +; – B) +; + C) – ; – D) – ; +

4676. $\sin\left(\frac{\pi}{2}-a\right)$ va $\cos\left(\frac{\pi}{2}+a\right)$ sonli ifodalarning ishorasini aniqlang $x\in\left[0;\frac{\pi}{2}\right]$.

A) +; – B) +; + C) – ; – D) – ; +

4677. $tg\left(\frac{3\pi}{2}-a\right)$ va $\sin(\pi-a)$ sonli ifodalarning ishorasini aniqlang $x\in\left[0;\frac{\pi}{2}\right]$.

A) +; – B) +; + C) – ; – D) – ; +

4678. $\cos(a-\pi)$ va $tg(a-\pi)$ sonli ifodalarning ishorasini aniqlang $x\in\left[0;\frac{\pi}{2}\right]$.

A) +; – B) +; + C) – ; – D) – ; +

AYNI BIR BURCHAKNING SINUSI, KOSINUSI VA TANGENSI ORASIDAGI MUNOSABATLAR

✓ $\cos\alpha=\frac{5}{13}$ va $\frac{3\pi}{2}<\alpha<2\pi$ bo'lsa $tg\alpha$ ni hisoblang.

A) $-\frac{12}{5}$ B) $\frac{12}{13}$ C) $\frac{12}{5}$ D) $-\frac{5}{12}$

Yechilishi: Ayniyat formulalar :

1) $\sin^2\alpha+\cos^2\alpha=1$

$\sin\alpha=\pm\sqrt{1-\cos^2\alpha}$;

$\cos\alpha=\pm\sqrt{1-\sin^2\alpha}$

2) $tg\alpha=\frac{\sin\alpha}{\cos\alpha}$, $ctg\alpha=\frac{\cos\alpha}{\sin\alpha}$

$tg\alpha\cdot ctg\alpha=1$

3) $1+tg^2\alpha=\frac{1}{\cos^2\alpha}$

$\cos\alpha=\pm\frac{1}{\sqrt{1+tg^2\alpha}}$

4) $1+ctg^2\alpha=\frac{1}{\sin^2\alpha}$

$\sin\alpha=\pm\frac{1}{\sqrt{1+ctg^2\alpha}}$

yuqorida keltirilgan 1) $\sin\alpha=\pm\sqrt{1-\cos^2\alpha}$ formuladan sinusni topamiz, ± ishoradan biri $\sin\alpha$ ni $\frac{3\pi}{2}<\alpha<2\pi$ IV-chorakdagi ishorasi hisoblanadi, $\sin(IV)=-$ ekanligini hisobga olsak,

$$\sin\alpha=-\sqrt{1-\cos^2\alpha}=-\sqrt{1-\left(\frac{5}{13}\right)^2}=-\frac{12}{13}$$

$$tg\alpha=\frac{\sin\alpha}{\cos\alpha}=\frac{-\frac{12}{13}}{\frac{5}{13}}=-\frac{12}{5}=-2,4$$

Javob: (A)

4679. $\sin a=0,8$ va $\frac{\pi}{2}<a<\pi$ bo'lsa, $\cos a$ ni hisoblang.

A) 0,6 B) −0,6 C) 0,8 D) −0,2

4680. $\cos a=-\frac{3}{5}$ va $\frac{\pi}{2}<a<\pi$ bo'lsa, $\sin a$ ni hisoblang.

A) $-\frac{5}{4}$ B) $\frac{4}{5}$ C) $\frac{4}{3}$ D) $-\frac{4}{5}$

4681. $\sin a=-\frac{2}{5}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa, $\cos a$ ni hisoblang.

A) $\frac{3}{21}$ B) $\frac{3}{\sqrt{21}}$ C) $-\frac{\sqrt{21}}{5}$ D) $\frac{21}{5}$

4682. $\cos a=\frac{12}{13}$ va $\frac{3\pi}{2}<a<2\pi$ bo'lsa, $\sin a$ ni hisoblang.

A) $\frac{5}{13}$ B) $-\frac{5}{13}$ C)−0,8 D)−0,2

4683. $\sin a=-\frac{2}{5}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa tga ni hisoblang.

A) $\frac{2}{21}$ B) $\frac{3}{\sqrt{21}}$ C) $\frac{2}{\sqrt{21}}$ D) $\frac{1}{7}$

4684. $\cos a=-\frac{3}{5}$ va $\frac{\pi}{2}<a<\pi$ bo'lsa, $ctga$ ni hisoblang.

A) $\frac{3}{4}$ B) $-\frac{6}{8}$ C) $\frac{4}{3}$ D) $-\frac{8}{6}$

4685. $tga=\frac{15}{8}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa $\sin a$ ni hisoblang.

A) $-\frac{17}{15}$ B) $\frac{15}{17}$ C) $\frac{17}{15}$ D) $-\frac{15}{17}$

4686. $ctga=-3$ va $\frac{3\pi}{2}<a<2\pi$ bo'lsa tga ni hisoblang.

A) $-\frac{1}{3}$ B) $\frac{1}{3}$ C) 3 D) $-\frac{1}{5}$

✓ $\cos^4 a-\sin^4 a=\frac{1}{8}$ bo'lsa $\cos a$ ni hisoblang.

A) $-\frac{3}{4}$ B) $\pm\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{4}{3}$

Yechilishi:

$\cos^4 a-\sin^4 a=\frac{1}{8}$

$(\cos^2 a-\sin^2 a)\underbrace{(\cos^2 a+\sin^2 a)}_{1}=\frac{1}{8}$

$(\cos^2 a-\sin^2 a)=\frac{1}{8}$

$(\cos^2 a-\underbrace{\sin^2 a}_{1-\cos^2 a})=\frac{1}{8}$

$\cos^2 a-1+\cos^2 a=\frac{1}{8}$

$2\cos^2 a=\frac{1}{8}+1$

$\cos^2 a=\frac{9}{16}$

$\cos a=\pm\frac{3}{4}$

Javob: (B)

4687. $\cos^4 a-\sin^4 a=\frac{1}{2}$ bo'lsa, $\sin a$ ni hisoblang.

A) −1 B) 2 C) $\pm\frac{1}{2}$ D) $\frac{1}{2}$

4688. $\cos^4 a-\sin^4 a=-\frac{1}{5}$ bo'lsa, $\cos a$ ni katta qiymatini toping.

A) $-\frac{2}{\sqrt{10}}$ B) $\frac{2}{3\sqrt{10}}$ C) $\frac{1}{5}$ D) $\frac{\sqrt{10}}{5}$

✓ $tga=2$ bo'lsa, $\frac{\sin^2 a+\sin a\cos a}{\cos^2 a+3\cos a\sin a}$ ning qiymatini toping.

A) $\frac{3}{7}$ B) $\frac{6}{7}$ C) $-\frac{3}{7}$ D) $\frac{7}{6}$

Yechilishi: $tg\alpha=\frac{\sin a}{\cos\alpha}=2\Rightarrow\boxed{\sin\alpha}=2\cos\alpha$

$$\frac{\boxed{\sin^2 a}+\boxed{\sin a}\cos a}{\cos^2 a+3\cos a\boxed{\sin a}}=\frac{(2\cos\alpha)^2+2\cos\alpha\cos a}{\cos^2 a+3\cos a\,2\cos\alpha}=$$

$$=\frac{4\cos^2\alpha+2\cos^2\alpha}{\cos^2 a+6\cos^2 a}=\frac{6\cos^2\alpha}{7\cos^2 a}=\frac{6}{7}$$

Javob: (B)

4689. $tga=\frac{\sqrt{6}}{2}$ bo'lsa, $\frac{\sin^2 a+2\cos^2 a}{\sin^2 a-\cos^2 a}$ ning qiymatini toping.

A) 7 B) 6 C) −7 D) −8

4690. $ctga=\frac{1}{3}$ bo'lsa, $\frac{2\sin a+3\cos a}{3\sin a-5\cos a}$ ning qiymatini toping.

A) 2,25 B) 0,25 C)1,75 D) 1,25

4691. $tga=\frac{1}{3}$ bo'lsa $\frac{\sin a}{\sin^3 a+3\cos^3 a}$ ning qiymatini toping.

A) $-\frac{5}{41}$ B) $-\frac{10}{82}$ C) $\frac{82}{10}$ D) $\frac{5}{41}$

✓ $\sin a-\cos a=\frac{1}{5}$ bo'lsa, $\sin a\cdot\cos a$ ning qiymatini toping.

A) $-\frac{3}{4}$ B) 1 C) $-\frac{12}{25}$ D) 0

Yechilishi: Ikkita tomonini kvadratga ko'tarish lozim.

$$\sin a-\cos a=\frac{1}{5}$$

$$(\sin a-\cos a)^2=\left(\frac{1}{5}\right)^2$$

$$\underline{\sin^2 a}-2\sin a\cdot\cos a+\underline{\cos^2 a}=\frac{1}{25}$$

$$\underline{1}-2\sin a\cdot\cos a=\frac{1}{25}$$

$$2\sin a\cdot\cos a=-\frac{24}{25}$$

$$\sin a\cdot\cos a=-\frac{12}{25}$$

Javob: (C)

4692. $\sin a+\cos a=p$ bo'lsa, $\sin a\cdot\cos a$ ning qiymatini toping.

A) $-\frac{p^2+1}{2}$ B) $\frac{p^2}{2}-1$ C) $\frac{p^2-1}{2}$ D) $\frac{p^2+1}{2}$

4693. $\sin a+\cos a=p$ bo'lsa $\sin^2 a+\cos^2 a$ ning qiymatini toping.

A) −2 B) $p-1$ C) $1+p$ D) 1

4694. $\sin a+\cos a=p$ bo'lsa $\sin^3 a+\cos^3 a$ ning qiymatini toping.

A) $-\frac{p^3-3p}{2}$ B) $\frac{p^3-1}{2}$ C) $\frac{3p^3-p}{2}$ D) 0

4695. $\sin a+\cos a=\frac{1}{2}$ bo'lsa, $\sin a\cdot\cos a$ ning qiymatini toping.

A) $-\frac{3}{4}$ B) $-\frac{3}{8}$ C) $\frac{3}{8}$ D) $\frac{3}{4}$

4696. $\sin a+\cos a=\frac{1}{2}$ bo'lsa, $\sin^3 a+\cos^3 a$ ning qiymatini toping.

A) $-\frac{11}{4}$ B) $-\frac{11}{16}$ C) $\frac{16}{11}$ D) $\frac{11}{16}$

4697. $\sin a-\cos a=\frac{1}{5}$ bo'lsa, $\sin a\cdot\cos a$ ning qiymatini toping.

A) $-\frac{24}{50}$ B) $\frac{1}{2}$ C) $\frac{12}{25}$ D) $-\frac{3}{4}$

4698. $\sin a-\cos a=\frac{1}{5}$ bo'lsa $\sin^3 a-\cos^3 a$ ning qiymatini toping.

A) $-\frac{1}{125}$ B) $\frac{1}{125}$ C) $\frac{1}{25}$ D) $\frac{37}{125}$

✓ $(1+tg^2\alpha)-\frac{(\sin\alpha+\cos\alpha)^2}{\cos^2\alpha}$ ni soddalashtiring.

A) $tg\alpha$ B) $-2tg\alpha$ C) $2tg\alpha$ D) 0

Yechilishi: Ayniyat formulalaridan foydalanish lozim.

$$(1+tg^2\alpha)-\frac{(\sin\alpha+\cos\alpha)^2}{\cos^2\alpha}=$$

$$=(1+\frac{\sin^2\alpha}{\cos^2\alpha})-\frac{\sin^2\alpha+2\sin\alpha\cdot\cos\alpha+\cos^2\alpha}{\cos^2\alpha}=$$

$$=\frac{\cos^2\alpha+\sin^2\alpha}{\cos^2\alpha}-\frac{1+2\sin\alpha\cdot\cos\alpha}{\cos^2\alpha}=\frac{1-1-2\sin\alpha\cdot\cos\alpha}{\cos^2\alpha}=$$

$$=\frac{-2\sin\alpha\cdot\cos\alpha}{\cos^2\alpha}=\frac{-2\sin\alpha\cdot\cancel{\cos\alpha}}{\cancel{\cos^2\alpha}}=-\frac{2\sin\alpha}{\cos\alpha}=-2tg\alpha$$

Javob: (B)

4699. Quyidagilardan qaysi biri ayniyat ?

1. $(1-\cos a)(1+\cos a)=\sin^2 a$ 2. $2-\sin^2 a-\cos^2 a=1$

3. $\frac{\sin^2 a}{1-\sin^2 a}=-tg^2 a$ 4. $\frac{\cos^2 a}{1-\cos^2 a}=ctg^2 a$

A) 1; 3 B) 2; 3; 4 C) 1;2;4 D) 1; 3; 4

4700. Quyidagilardan qaysi biri ayniyat ?

1. $\frac{1}{1+tg^2 a}+\sin^2 a=1$ 2. $\frac{1}{1+ctg^2 a}+\cos^2 a=1$

3. $(1-\sin^2 a)(1+tg^2 a)=1$

4. $\sin^2 a(1+ctg^2 a)-\cos^2 a=\sin^2 a$

A) 1 B) 1; 2; 3 C) 1; 2; 4 D) 1; 2; 3; 4

4701. Quyidagilardan qaysi biri ayniyat ?

1. $(1-\cos 2a)(1+\cos 2a)=\sin^2 2a$ 2. $\frac{\sin a}{1-\cos a}=\frac{1+\cos a}{\sin a}$

3. $\sin^2 a+\cos^2 a+ctg^2 a=\frac{1}{\cos^2 a}$ 4. $\frac{\sin a-1}{\cos^2 a}=\frac{1}{1+\sin a}$

A) 1; 2 B) 1; 3; 4 C) 1; 2; 3 D) 2; 3; 4

4702. $\cos a \cdot tga - 2\sin a$ ni soddalashtiring.

A) $3\sin a$ B) 0 C) $-\sin a$ D) $\sin a$

4703. $\cos a - \sin a \cdot ctga$ ni soddalashtiring.

A) $\cos a$ B) 0 C) 1 D) $-\cos a$

4704. $\frac{\sin^2 a}{1+\cos a}$ ni soddalashtiring.

A) $\cos a$ B) $-\sin a$ C) tga D) $1-\cos a$

4705. $\frac{\cos^2 a}{1-\sin a}$ ni soddalashtiring.

A) $\cos a$ B) $1+\sin a$ C) $\sin 2a$ D) $1-\sin a$

4706. $\frac{\sin^2 a-1}{1-\cos^2 a}$ ning son qiymatini toping, bunda $a=\frac{\pi}{6}$.

A) -3 B) $\frac{3}{4}$ C) $-\frac{3}{4}$ D) $\frac{4}{3}$

4707. $a=\frac{\pi}{3}$ bo'lsa, $\frac{1}{\cos^2 a}-1$ ning son qiymatini toping.

A) $\frac{1}{\sqrt{3}}$ B) 0 C) 3 D) $\frac{1}{3}$

4708. $\cos^2 a + tg^2 a + \sin^2 a$ ning son qiymatini toping, bunda $a=\frac{\pi}{6}$.

A) $-\frac{3}{4}$ B) $\frac{3}{4}$ C) $\frac{3}{5}$ D) $\frac{4}{3}$

4709. $\frac{1}{tg\alpha+ctg\alpha}$ ni soddalashtiring.

A) $\cos a$ B) $\cos a \sin a$ C) $\sin 2a$ D) $1-\sin a$

4710. $\frac{\sin a}{1+\cos a}+\frac{1+\cos a}{\sin a}$ ni soddalashtiring.

A) $\cos a$ B) $-\frac{\sin a}{2}$ C) tga D) $\frac{2}{\sin a}$

4711. $\frac{(\sin\alpha+\cos\alpha)^2}{\sin^2\alpha}-(1+ctg^2\alpha)$ ni soddalashtiring.

A) $\cos a$ B) $2ctga$ C) $2ctg^2 a$ D) $ctg\alpha$

✓ $\frac{2\sin x-\cos x}{2\cos x+\sin x}=3$ bo'lsa tgx ni toping.

A) $-\frac{1}{7}$ B) -7 C) 5 D) -5

Yechilishi: proporsiya qilib ishlab chiqish lozim.

$$\frac{2\sin x-\cos x}{2\cos x+\sin x}=3$$

$$3\cdot 2\cos x+3\cdot\sin x=2\sin x-\cos x$$

$$7\cos x=-\sin x$$

$$7=-\frac{\sin x}{\cos x}$$

$$tgx=-7$$

Agar $ctgx$ ni so'raganda $ctg\alpha=\frac{1}{tgx}\Rightarrow ctg\alpha=-\frac{1}{7}$ **J:** (B)

4712. $\frac{2\sin x-3\cos x}{2\cos x-5\sin x}=7$ bo'lsa, $ctgx$ ni toping.

A) $\frac{37}{17}$ B) $\frac{37}{11}$ C) $-\frac{11}{37}$ D) -1

4713. $\frac{12\sin x-31\cos x}{21\cos x-51\sin x}=1$ bo'lsa, tgx ni toping.

A) $-\frac{52}{63}$ B) $-\frac{52}{39}$ C) $\frac{52}{63}$ D) $\frac{52}{39}$

4714. $\frac{\sin x-\cos x}{\cos x+\sin x}=-5$ bo'lsa, $ctgx$ ni toping.

A) $-\frac{2}{3}$ B) $-\frac{3}{2}$ C) 1,5 D) $\frac{2}{3}$

α va $-\alpha$ BURCHAKLARNING SINUSI, KOSINUSI, TANGENSI VA KOTANGENSI

✓ $\cos(-\frac{\pi}{6})\sin(-\frac{\pi}{3})+tg(-\frac{\pi}{4})$ ni hisoblang.

A) $-\frac{4}{7}$ B) $\frac{1}{4}$ C) $-\frac{3}{4}$ D) $-\frac{7}{4}$

Yechilishi: Formula:

$$\boxed{\cos(-\alpha)=\cos\alpha} \quad \boxed{tg(-\alpha)=-tg\alpha}$$
$$\boxed{\sin(-\alpha)=-\sin\alpha} \quad \boxed{ctg(-\alpha)=-ctg\alpha}$$

$$\cos(-\frac{\pi}{6})\sin(-\frac{\pi}{3})+tg(-\frac{\pi}{4})=\cos\frac{\pi}{6}\cdot\left(-\sin\frac{\pi}{3}\right)-tg\frac{\pi}{4}=$$

$$=\frac{\sqrt{3}}{2}\cdot\left(-\frac{\sqrt{3}}{2}\right)-1=-\frac{3}{4}-1=-\frac{7}{4}$$ **Javob:** (D)

4715. $2\sin(-\frac{\pi}{6})\cos(-\frac{\pi}{6})+\sin^2(-\frac{\pi}{4})$ ni hisoblang.

A) 0 B) $\frac{-\sqrt{3}-1}{2}$ C) $\frac{1-\sqrt{3}}{2}$ D) $-\sqrt{3}$

4716. $\cos(-\frac{\pi}{4})+ctg(-\frac{\pi}{2})-\sin(-\frac{3\pi}{2})+ +ctg(-\frac{\pi}{4})$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}+2$ B) $\frac{\sqrt{2}+2}{2}$ C) $\frac{\sqrt{2}}{2}$ D) $-\frac{1}{2}$

4717. $\frac{3-\sin^2(-\frac{\pi}{3})-\cos^2(-\frac{\pi}{3})}{2\cos(-\frac{\pi}{4})}$ ni hisoblang.

A) -4 B) $\sqrt{2}$ C) $\frac{\sqrt{2}}{2}$ D) 2

4718. $2\sin(-\frac{\pi}{6})-3ctg(-\frac{\pi}{4})+7{,}5tg(-\pi)+\frac{1}{8}\cos(-\frac{3\pi}{2})$ ni hisoblang.

A) -4 B) $\frac{\sqrt{2}+2}{2}$ C) $\frac{\sqrt{2}}{2}$ D) 2

4719. $tg(-a)\cos a+\sin a$ ni soddalashtiring.

A) $-2\sin a$ B) 0 C) $\sin a$ D) -2

4720. $\dfrac{\cos(-a)+\sin(-a)}{\cos^2 a-\sin^2 a}$ ni soddalashtiring.

A) $\dfrac{1}{\sin a-\cos a}$ B) $\dfrac{1}{\cos a-\sin a}$

C) $\dfrac{1}{\cos a+\sin a}$ D) 1

4721. $\dfrac{\sin^3(-a)+\cos^3(-a)}{1-\sin(-a)\cos(-a)}$ ni soddalashtiring.

A) $-2\sin a$ B) $\cos a-\sin a$

C) $\sin a-\cos a$ D) $\cos a+\sin a$

QO'SHISH FORMULALARI

✓ $\cos 75^\circ$ ni hisoblang.

A) $\dfrac{\sqrt{6}}{4}$ B) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$ C) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$ D) $\dfrac{4}{3}$

Yechilishi: Qo'shish Formulalari:

$\cos(\alpha+\beta)=\cos\alpha\cdot\cos\beta-\sin\alpha\cdot\sin\beta.$

$\cos(\alpha-\beta)=\cos\alpha\cdot\cos\beta+\sin\alpha\cdot\sin\beta.$

$\sin(\alpha+\beta)=\sin\alpha\cdot\cos\beta+\cos\alpha\cdot\sin\beta.$

$\sin(\alpha-\beta)=\sin\alpha\cdot\cos\beta-\cos\alpha\cdot\sin\beta.$

$tg(\alpha\pm\beta)=\dfrac{tg\alpha\pm tg\beta}{1\mp tg\alpha\cdot tg\beta}$ $ctg(\alpha\pm\beta)=\dfrac{ctg\alpha\cdot ctg\beta\mp 1}{ctg\alpha\pm ctg\beta}$

$\cos 75^\circ=\cos(45^\circ+30^\circ)=\cos 45^\circ\cdot\cos 30^\circ-\sin 45^\circ\cdot\sin 30^\circ=$

$=\dfrac{\sqrt{2}}{2}\cdot\dfrac{\sqrt{3}}{2}-\dfrac{\sqrt{2}}{2}\cdot\dfrac{1}{2}=\dfrac{\sqrt{6}}{4}-\dfrac{\sqrt{2}}{4}=\dfrac{\sqrt{6}-\sqrt{2}}{4}$

Javob: (C)

4722. $\cos 135^\circ$ ni hisoblang.

A) $-\dfrac{\sqrt{2}}{2}$ B) $\dfrac{\sqrt{2}}{2}$ C) $\dfrac{\sqrt{3}}{2}$ D) -2

4723. $\sin 210^\circ$ ni hisoblang.

A) 0 B) $\dfrac{\sqrt{3}}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) $-\dfrac{1}{2}$

4724. $\cos 120^\circ$ ni hisoblang.

A) $-\dfrac{\sqrt{3}}{2}$ B) 0 C) -1 D) $-\dfrac{1}{2}$

4725. $\cos 150^\circ$ ni hisoblang.

A) 0 B) $\dfrac{\sqrt{3}}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) $-\dfrac{1}{2}$

4726. $\cos 240^\circ$ ni hisoblang.

A) 0 B) $\dfrac{\sqrt{3}}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) $-\dfrac{1}{2}$

4727. $\cos 210^\circ$ ni hisoblang.

A) 0 B) $\dfrac{\sqrt{3}}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) $-\dfrac{1}{2}$

✓ $\sin\dfrac{5\pi}{12}\cos\dfrac{\pi}{12}+\sin\dfrac{\pi}{12}\cos\dfrac{5\pi}{12}$ ni hisoblang.

A) 0 B) -1 C) 2 D) 1

Yechilishi: Qo'shish formulalaridan birini yoyib yozib qo'yilgan uni yeg'ib olish lozim:

$\sin(\alpha+\beta)=\sin\alpha\cdot\cos\beta+\cos\alpha\cdot\sin\beta.$

$\sin\dfrac{5\pi}{12}\cos\dfrac{\pi}{12}+\sin\dfrac{\pi}{12}\cos\dfrac{5\pi}{12}=\sin\left(\dfrac{5\pi}{12}+\dfrac{\pi}{12}\right)=\sin\left(\dfrac{\pi}{2}\right)=1$

Javob: (D)

4728. $\cos\dfrac{7\pi}{9}\cos\dfrac{11\pi}{9}-\sin\dfrac{7\pi}{9}\sin\dfrac{11\pi}{9}$ ni hisoblang.

A) 1 B) $\dfrac{1}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) 0

4729. $\cos\dfrac{8\pi}{7}\cos\dfrac{\pi}{7}+\sin\dfrac{8\pi}{7}\sin\dfrac{\pi}{7}$ ni hisoblang.

A) 0 B) 1 C) -1 D) $-\dfrac{1}{2}$

4730. $\sin 73^\circ\cos 17^\circ+\cos 73^\circ\sin 17^\circ$ ni hisoblang.

A) -1 B) 0 C) $-\dfrac{1}{2}$ D) 1

4731. $\sin 73^\circ\cos 13^\circ-\sin 13^\circ\cos 73^\circ$ ni hisoblang.

A) 0 B) $\dfrac{\sqrt{3}}{2}$ C) $-\dfrac{\sqrt{3}}{2}$ D) $-\dfrac{1}{2}$

4732. $\cos\dfrac{7\pi}{12}\sin\dfrac{\pi}{12}-\sin\dfrac{7\pi}{12}\cos\dfrac{\pi}{12}$ ni hisoblang.

A) $-\dfrac{1}{2}$ B) 1 C) -1 D) 0

4733. $\cos 57^\circ 30'\cos 27^\circ 30'+\ +\sin 57^\circ 30'\sin 27^\circ 30'$ ni hisoblang.

A) $\dfrac{\sqrt{3}}{2}$ B) $\dfrac{\sqrt{2}}{2}$ C) $\dfrac{1}{2}$ D) -2

4734. $\cos 19^\circ 30'\cos 25^\circ 30'-\ -\sin 19^\circ 30'\sin 25^\circ 30'$ ni hisoblang.

A) $-\dfrac{\sqrt{2}}{2}$ B) $\dfrac{\sqrt{2}}{2}$ C) $\dfrac{\sqrt{3}}{2}$ D) -2

4735. $\cos 3\alpha\cos\alpha-\sin\alpha\sin 3\alpha$ ni soddalashtiring.

A) $\cos a$ B) $\cos 4a$ C) $\sin 2a$ D) $\cos 2a$

4736. $\cos 5\beta\cos 2\beta+\sin 5\beta\sin 2\beta$ ni soddalashtiring.

A) $\cos 7\beta$ B) $\sin 7\beta$ C) $\cos 3\beta$ D) $\sin 3\beta$

4737. $\cos(\dfrac{\pi}{7}+a)\cos(\dfrac{5\pi}{14}-a)-\sin(\dfrac{\pi}{7}+a)\cdot\sin(\dfrac{5\pi}{14}-a)$ ni soddalashtiring.

A) $\cos\dfrac{3\pi}{14}$ B) 0 C) $\cos\dfrac{2\pi a}{9}$ D) 1

4738. $\cos(\dfrac{7\pi}{5}+a)\cos(\dfrac{2\pi}{5}+a)+\sin(\dfrac{7\pi}{5}+a)\sin(\dfrac{2\pi}{5}+a)$ ni soddalashtiring.

A) $\cos\pi$ B) $\sin\dfrac{7\pi a}{5}$ C) $\cos\dfrac{\pi}{5}$ D) $\sin\pi$

4739. $\frac{tg29^\circ+tg31^\circ}{1-tg29^\circ tg31^\circ}$ ni hisoblang.

A) $\sqrt{3}$ B) $\frac{1}{\sqrt{3}}$ C) -1 D) $-\frac{1}{\sqrt{3}}$

4740. $\frac{tg\frac{7\pi}{16}-tg\frac{3\pi}{16}}{1+tg\frac{7\pi}{16}tg\frac{3\pi}{16}}$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) -1 C) 0 D) 1

✓ $\cos(\frac{\pi}{3}+a)$ ni hisoblang, bunda $\sin a=\frac{1}{\sqrt{3}}$ va $0<a<\frac{\pi}{2}$

A) $-\frac{3-\sqrt{6}}{6}$ B) $-\frac{\sqrt{6}-3}{3}$

C) $\frac{\sqrt{3}-\sqrt{2}}{2}$ D) $-\frac{1}{2}$

Yechilishi: $\cos(\frac{\pi}{3}+a)$ ni qo'shish formulasi $cos(\alpha+\beta)=cos\alpha\cdot cos\beta-sin\alpha\cdot sin\beta.$ ga asosan yoyilgan holga keltiramiz :

$$\cos(\frac{\pi}{3}+a)=cos\frac{\pi}{3}\cdot cos\alpha-sin\frac{\pi}{3}\cdot sin\alpha=\frac{1}{2}\cdot cos\alpha-\frac{\sqrt{3}}{2}\cdot sin\alpha$$

$\cos\alpha$ ni qiymati berilmagan. $\cos\alpha$ qiymatini $\sin a=\frac{1}{\sqrt{3}}$ va $0<a<\frac{\pi}{2}$ dan topamiz:

$$\cos\alpha=+\sqrt{1-\sin^2\alpha}=\sqrt{1-\left(\frac{1}{\sqrt{3}}\right)^2}=\frac{\sqrt{2}}{\sqrt{3}}$$

$$\frac{1}{2}\cdot cos\alpha-\frac{\sqrt{3}}{2}\cdot sin\alpha=\frac{\sqrt{2}}{2\sqrt{3}}-\frac{1}{2}=\frac{\sqrt{2}-\sqrt{3}}{2\sqrt{3}}=-\frac{3-\sqrt{6}}{6}$$

Javob: (A)

4741. Agar $\cos a=-\frac{1}{3}$ bo'lsa, $\cos(a-\frac{\pi}{4})$ ni hisoblang. $\frac{\pi}{2}<a<\pi$

A) $\frac{\sqrt{2}-2}{2}$ B) $-\frac{4-\sqrt{2}}{6}$ C) 1 D) $-\frac{\sqrt{2}-4}{6}$

4742. Agar $\cos a=-\frac{3}{5}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa, $\sin(a+\frac{\pi}{6})$ ni hisoblang.

A) $-\frac{4\sqrt{3}+3}{10}$ B) $\frac{3-4\sqrt{2}}{10}$ C) 1 D) $-\frac{4\sqrt{3}-3}{10}$

✓ $\cos(a+\beta)+\cos(\frac{\pi}{2}-a)\cos(\frac{\pi}{2}-\beta)$ ni soddalashtiring.

A) $\sin(a+\beta)$ B) $\sin a\cdot\sin\beta$

C) $\cos(\beta-a)$ D) $\cos a\cdot\cos\beta$

Yechilishi: Birinchi $\cos(\frac{\pi}{2}-a)$ va $\cos(\frac{\pi}{2}-\beta)$ ni qo'shish formulasiga ko'ra topib olamiz:

$$\cos(\frac{\pi}{2}-a)=cos\frac{\pi}{2}\cdot cos\alpha+sin\frac{\pi}{2}\cdot sin\alpha=$$
$$=0\cdot cos\alpha+1\cdot sin\alpha=sin\alpha.$$
$$\cos(\frac{\pi}{2}-\beta)=cos\frac{\pi}{2}\cdot cos\beta+sin\frac{\pi}{2}\cdot sin\beta=$$
$$=0\cdot cos\beta+1\cdot sin\beta=sin\beta.$$

$$\underbrace{\cos(a+\beta)}_{\cos a\cdot\cos\beta-\sin a\cdot\sin\beta}\underbrace{+\cos(\frac{\pi}{2}-a)\cos(\frac{\pi}{2}-\beta)}_{\sin a\cdot\sin\beta}=\cos a\cdot\cos\beta$$

Javob: (D)

4743. $\sin(\frac{\pi}{2}-a)\sin(\frac{\pi}{2}-\beta)-\cos(a-\beta)$ ni soddalashtiring.

A) $-\sin a\sin\beta$ B) $\cos a\cos\beta$

C) $\sin a\sin\beta$ D) $-\cos(a-\beta)$

4744. $\cos(\frac{\pi}{2}-a)\sin(\frac{\pi}{2}-\beta)-\sin(a-\beta)$ ni soddalashtiring.

A) $\sin(a-\beta)$ B) $\cos a\sin\beta$

C) $-\sin a\cos\beta$ D) $-\sin(a-\beta)$

4745. $\sin(a+\beta)+\sin(\frac{\pi}{2}-a)\sin(-\beta)$ ni soddalashtiring.

A) $\sin(a+\beta)$ B) $\cos a\sin\beta$

C) $-\sin a\cos\beta$ D) $\sin a\cos\beta$

4746. $\sin(a+\beta)+\sin(-a)\cos(-\beta)$ ni soddalashtiring.

A) $\sin a\cos\beta$ B) $\sin\beta\cos a$

C) $-\sin a\cos\beta$ D) $\sin(a-\beta)$

4747. $\cos(-a)\sin(-\beta)-\sin(a-\beta)$ ni soddalashtiring.

A) $\sin(a+\beta)$ B) $\cos a\sin\beta$

C) $-\sin a\cos\beta$ D) $-\sin(a-\beta)$

4748. $\frac{\cos(\alpha+\beta)+2\sin\alpha\sin\beta}{\sin(\alpha+\beta)-2\cos\beta\sin\alpha}$ ni soddalashtiring.

A) $ctg(a+\beta)$ B) $ctg(\beta-a)$

C) $tg(a-\beta)$ D) $tg(a+\beta)$

4749. $\frac{2\cos a\sin\beta+\sin(a-\beta)}{2\cos a\cos\beta-\cos(a-\beta)}$ ni soddalashtiring.

A) $-\sin(a+\beta)$ B) $tg(a+\beta)$

C) $-tg(a+\beta)$ D) $ctg(a+\beta)$

4750. $\frac{\cos a\cos\beta-\cos(a+\beta)}{\cos(a-\beta)-\sin a\sin\beta}$ ni soddalashtiring.

A) $tg(a+\beta)$ B) $tg(a-\beta)$

C) $tga\cdot tg\beta$ D) $-tg(a-\beta)$

✓ $tg(\frac{\pi}{4}-a)=4$ bo'lsa, tga ni toping.

A) $\frac{7}{3}$ B) $-\frac{5}{3}$ C) $-\frac{3}{5}$ D) $1\frac{2}{3}$

Yechilishi: $tg(\frac{\pi}{4}-a)$ ni qo'shish formulasiga ko'ra yoyib olamiz:

$$tg(\frac{\pi}{4}-a)=\frac{tg\frac{\pi}{4}-tg\alpha}{1+tg\frac{\pi}{4}\cdot tg\alpha}=\frac{1-tg\alpha}{1+tg\alpha}$$

$$\frac{1-tg\alpha}{1+tg\alpha}=4$$
$$4+4tg\alpha=1-tg\alpha$$
$$4tg\alpha+tg\alpha=1-4$$
$$5tg\alpha=-3$$
$$tg\alpha=-\frac{3}{5}$$

Javob: (C)

4751. $tg(\frac{\pi}{4}+a)=\frac{7}{3}$ bo'lsa $ctga$ ni toping.

A) 0,4 B) 2,5 C) $\sqrt{3}$ D) 1

4752. $tg(\frac{\pi}{4}+a)=2$ bo'lsa $ctga$ ni toping.

A) 3 B) $\frac{2}{3}$ C) -3 D) $\frac{1}{3}$

✓ $tga=\frac{7+\sqrt{x}}{2}$ $tg\beta=\frac{7-\sqrt{x}}{2}$ va $a+\beta=45^\circ$ bo'lsa x ni toping.

A) 28 B) 73 C) 36 D) 41

Yechilishi:

$$a+\beta=45^\circ$$
$$tg(a+\beta)=tg45^\circ$$
$$\frac{tg\alpha+tg\beta}{1-tg\alpha\cdot tg\beta}=1$$
$$tg\alpha+tg\beta=1-tg\alpha\cdot tg\beta$$
$$\frac{7+\sqrt{x}}{2}+\frac{7-\sqrt{x}}{2}=1-\frac{7+\sqrt{x}}{2}\cdot\frac{7-\sqrt{x}}{2}$$
$$7=1-\frac{7^2-\sqrt{x}^2}{4}$$
$$28=4-49+x$$
$$73=x$$

Javob: (B)

4753. $tga=\frac{5+\sqrt{x}}{2}$ $tg\beta=\frac{5-\sqrt{x}}{2}$ va $a+\beta=45^\circ$ bo'lsa x ni toping.

A) 28 B) 25 C) 36 D) 41

4754. $\begin{cases} tg\beta=\frac{3-\sqrt{x}}{2} \\ tga=\frac{3+\sqrt{x}}{2} \end{cases}$ $a+\beta=\frac{\pi}{4}$; x ni toping.

A) 17 B) 16 C) 9 D) 10

4755. $\begin{cases} \cos\alpha\cdot\cos\beta=\frac{1}{6} \\ tg\alpha\cdot tg\beta=2 \end{cases}$ $\cos(\alpha+\beta)=?$ ni toping.

A) -1/6 B) -1/3 C) 1/2 D) 1/3

4756. $\begin{cases} \sin x\cdot\sin y=\frac{1}{4} \\ ctgx\cdot ctg\,y=3 \end{cases}$ $\cos(x-y)=?$ ni toping.

A) -1 B) 0,5 C) 0 D) 1

IKKILANGAN BURCHAKNING SINUSI, VA COSINUSI TANGENSI

✓ $2\sin\frac{\pi}{8}\cos\frac{\pi}{8}$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{1}{2}$

Yechilishi: Formula: $\sin 2\alpha=2\cdot\sin\alpha\cdot\cos\alpha$

$$2\sin\frac{\pi}{8}\cos\frac{\pi}{8}=\sin 2\cdot\frac{\pi}{8}=\sin\frac{\pi}{4}=\frac{\sqrt{2}}{2}$$

Javob: (A)

Formula: $\cos 2\alpha=\cos^2\alpha-\sin^2\alpha$

$$\cos^2\frac{\pi}{8}-\sin^2\frac{\pi}{8}=\cos 2\cdot\frac{\pi}{8}=\cos\frac{\pi}{4}=\frac{\sqrt{2}}{2}$$

4757. $2\sin 15^\circ\cos 15^\circ$ ni hisoblang.

A) $-\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{1}{2}$

4758. $\cos^2 15^\circ-\sin^2 15^\circ$ ni hisoblang.

A) $-\frac{1}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{\sqrt{2}}{2}$

4759. $(\cos 75^\circ-\sin 75^\circ)^2$ ni hisoblang.

A) $\frac{1}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) 1

4760. $(\cos 15^\circ+\sin 15^\circ)^2$ ni hisoblang.

A) $-\frac{2}{3}$ B) $\frac{1}{2}$ C) $\frac{3}{2}$ D) 0

4761. $4\sin\frac{\pi}{8}\cos\frac{\pi}{8}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\sqrt{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4762. $4\cdot\cos^2\frac{\pi}{8}-4\cdot\sin^2\frac{\pi}{8}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $2\sqrt{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4763. $2\sin\frac{\pi}{12}\cos\frac{\pi}{12}+\frac{1}{4}$ ni hisoblang.

A) 0,75 B) 0,25 C) 0,4 D) $\frac{\sqrt{3}}{2}+\frac{1}{4}$

4764. $\frac{\sqrt{2}}{2}-(\cos\frac{\pi}{8}+\sin\frac{\pi}{8})^2$ ni hisoblang.

A) -1 B) $\frac{\sqrt{2}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) 0

✓ $2\cos^2 15^\circ-1$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

Yechilishi:

$$2\cos^2 15^\circ-1=2\cos^2 15^\circ-\overbrace{(\sin^2 15^\circ+\cos^2 15^\circ)}^{1}=$$

$$=\cos^2 15^\circ-\sin^2 15^\circ=\cos 2\cdot 15^\circ=\cos 30^\circ=\frac{\sqrt{3}}{2}$$

Javob: (B)

4765. $1-2\sin^2 22{,}5^\circ$ ni hisoblang.

A) $\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4766. $2\cos^2\frac{\pi}{8}-1$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{2}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4767. $1-2\sin^2\frac{\pi}{12}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

✓ $\frac{\sin 3a}{\sin a}-\frac{\cos 3a}{\cos a}$ ni soddalashtiring.

A) 1 B) $\cos 2a$ C) $\sin 2a$ D) 2

Yechilishi: Formula: $\sin\alpha\cdot\cos\alpha=\frac{1}{2}\sin 2\alpha$

$$\frac{\sin 3a}{\sin a}-\frac{\cos 3a}{\cos a}=\frac{\sin 3a\cdot\cos a-\cos 3a\cdot\sin a}{\sin a\cos a}=$$

$$=\frac{\sin(3a-a)}{\sin a\cos a}=\frac{\sin 2a}{\frac{1}{2}\sin 2a}=2$$

Javob: (D)

Formula: $tg2\alpha=\frac{2tg\alpha}{1-tg^2\alpha}$

4768. $\sin a\cos a$ ni soddalashtiring.

A) $\sin 2a$ B) $\cos 2a$ C) $\sin 3a$ D) $0{,}5\sin 2a$

4769. $\cos a\cos(\frac{\pi}{2}-a)$ ni soddalashtiring.

A) $\frac{\sin 2a}{2}$ B) $\cos\frac{a}{2}$ C) $\cos 2a$ D) $\sin 2a$

4770. $\cos 4a+\sin^2 2a$ ni soddalashtiring.

A) $\cos^2 a$ B) $\cos^2 2a$ C) $\sin^2 2a$ D) $\sin 2a$

4771. $\sin 2a+(\sin a-\cos a)^2$ ni soddalashtiring.

A) $\cos^2 a$ B) $\sin^2 2a$ C) 1 D) $2\sin 2a+1$

4772. $\frac{1+\sin 2a}{\sin a+\cos a}-\sin a$ ni soddalashtiring.

A) $\cos a$ B) $\sin a$ C) $\cos 2a$ D) $\sin 2a$

4773. $\frac{2}{tga+ctga}$ ni soddalashtiring.

A) $\cos 2a$ B) $\sin a$ C) $\sin^2 2a$ D) $\sin 2a$

4774. $\sin a=\frac{3}{5}$ va $\frac{\pi}{2}<a<\pi$ bo'lsa, $\sin 2a$ ni hisoblang.

A) $\frac{24}{25}$ B) $-\frac{24}{25}$ C) $\frac{4}{5}$ D) 1

4775. $\cos a=-\frac{4}{5}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa, $\cos 2a$ ni hisoblang.

A) $\frac{3}{5}$ B) $-\frac{8}{5}$ C) $\frac{7}{25}$ D) $\frac{7}{5}$

4776. $\cos a=\frac{4}{5}$ va $\frac{3\pi}{2}<a<2\pi$ bo'lsa, $\sin 2a$ ni hisoblang.

A) $-\frac{6}{5}$ B) $-\frac{24}{25}$ C) $\frac{4}{5}$ D) $\frac{24}{25}$

4777. $\sin a=-\frac{3}{5}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa, $\cos 2a$ ni toping.

A) $\frac{3}{5}$ B) $-\frac{8}{5}$ C) $\frac{7}{25}$ D) $\frac{7}{5}$

4778. $\sin a+\cos a=\frac{1}{2}$ bo'lsa, $\sin 2a$ ni toping.

A) $-\frac{3}{4}$ B) $\frac{3}{4}$ C) $\frac{3}{2}$ D) $\frac{4}{3}$

4779. $\sin a-\cos a=-\frac{1}{3}$ bo'lsa, $\sin 2a$ ni toping.

A) $\frac{3}{8}$ B) $-\frac{8}{9}$ C) $\frac{4}{3}$ D) $\frac{8}{9}$

4780. $tg\alpha=\frac{3}{5}$ bo'lsa, $tg2\alpha$ ni toping.

A) $\frac{7}{25}$ B) $-\frac{8}{5}$ C) $\frac{15}{8}$ D) $\frac{7}{5}$

4781. $\frac{2tg\frac{\pi}{8}}{1-tg^2\frac{\pi}{8}}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) 1 C) $\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4782. $\frac{6tg15^\circ}{1-tg^2 15^\circ}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\sqrt{3}$ C) $-\frac{\sqrt{2}}{2}$ D) $2\sqrt{3}$

KELTIRISH FORMULALARI

✓ $ctg1125^\circ$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

Yechilishi: Jadvalni tushuning:

Formula: $\sin(\frac{\pi}{2}-\alpha)=\cos\alpha$ | *misol:* $\sin 60^\circ=\sin(\frac{\pi}{2}-30^\circ)=\cos 30^\circ=\frac{\sqrt{3}}{2}$

Formula: $\sin(\frac{\pi}{2}+\alpha)=\cos\alpha$ | *misol:* $\sin 135^\circ=\sin(90^\circ+45^\circ)=-\cos 45^\circ=-\frac{\sqrt{2}}{2}$

Formula: $\sin(\pi-\alpha)=\sin\alpha$ | *misol:* $\sin 150^\circ=\sin(180^\circ-30^\circ)=\sin 30^\circ=\frac{1}{2}$

Formula: $\sin(\pi+\alpha)=-\sin\alpha$ | *misol:* $\sin\frac{7\pi}{6}=\sin(\pi+\frac{\pi}{6})=-\sin\frac{\pi}{6}=-\frac{1}{2}$

Formula: $\sin(\frac{3\pi}{2}-\alpha)=-\cos\alpha$ | *misol:* $\sin 240^\circ=\sin(\frac{3\pi}{2}-30^\circ)=-\cos 30^\circ=-\frac{\sqrt{3}}{2}$

Formula: $\sin(\frac{3\pi}{2}+\alpha)=-\cos\alpha$ | *misol:* $\sin 300^\circ=\sin(\frac{3\pi}{2}+30^\circ)=-\cos 30^\circ=-\frac{\sqrt{3}}{2}$

Formula: $\sin(2\pi-\alpha)=-\sin\alpha$ | *misol:* $\sin 300^\circ=\sin(2\pi-60^\circ)=-\sin 60^\circ=-\frac{\sqrt{3}}{2}$

Formula: $\sin(2\pi+\alpha)=\sin\alpha$ | *misol:* $\sin 420^\circ=\sin(360^\circ+60^\circ)=\sin 60^\circ=\frac{\sqrt{3}}{2}$

Formula: $\sin(2\pi-\alpha)=\sin\alpha$ | *misol:* $\sin 690^\circ=\sin(4\pi-30^\circ)=-\sin 30^\circ=-\frac{1}{2}$

Formula: $\sin(2\pi+\alpha)=\sin\alpha$ | *misol:* $\sin 720^\circ=\sin(4\pi+0^\circ)=\sin 0^\circ=0$

Formula: $\sin(2\pi-\alpha)=\sin\alpha$ | *misol:* $\sin\frac{47\pi}{6}=\sin(8\pi-\frac{\pi}{6})=\sin\frac{\pi}{6}=\frac{1}{2}$

Formula: $\cos(2\pi-\alpha)=\cos\alpha$ | *misol:* $\cos\frac{11\pi}{2}=\cos(6\pi-\frac{\pi}{2})=\cos\frac{\pi}{2}=0$

Formula: $\cos(2\pi+\alpha)=\cos\alpha$ | *misol:* $\cos 16{,}25\pi=\cos(16\pi+\frac{\pi}{4})=\cos\frac{\pi}{4}=\frac{\sqrt{2}}{2}$

Formula: $\cos(\pi+\alpha)=-\cos\alpha$ | *misol:* $\cos(-7\pi)=\cos(7\pi+0)=-\cos 0=-1$

Formula: $tg(2\pi+\alpha)=tg\alpha$ | *misol:* $tg390^\circ=tg(360^\circ+30^\circ)=tg30^\circ=\frac{1}{\sqrt{3}}$

Formula: $tg(\pi-\alpha)=-tg\alpha$ | *misol:* $tg(-\frac{2\pi}{3})=-tg(\frac{2\pi}{3})=-tg(\pi-\frac{\pi}{3})=tg\frac{\pi}{3}=\sqrt{3}$

Formula: $ctg(2\pi+\alpha)=ctg\alpha$ | *misol:* $ctg1125^\circ=ctg(6\pi+45^\circ)=ctg45^\circ=1$

γ	sinγ	cosγ	tgγ	ctgγ
$\frac{\pi}{2}-\alpha$	cosα	sinα	ctgα	tgα
$\frac{\pi}{2}+\alpha$	cosα	−sinα	−ctgα	−tgα
$\pi-\alpha$	sinα	−cosα	−tgα	−ctgα
$\pi+\alpha$	−sinα	−cosα	tgα	ctgα
$\frac{3\pi}{2}-\alpha$	−cosα	−sinα	ctgα	tgα
$\frac{3\pi}{2}+\alpha$	−cosα	sinα	−ctgα	−tgα
$2\pi-\alpha$	−sinα	cosα	−tgα	−ctgα
$2\pi+\alpha$	sinα	cosα	tgα	ctgα

Javob: (B)

4783. $\sin\frac{13\pi}{2}$ ni hisoblang.

A) −1 B) 0 C) 1 D) $\frac{1}{2}$

4784. $\cos\frac{11\pi}{2}$ ni hisoblang.

A) −1 B) 0 C) 1 D) $\frac{\sqrt{3}}{2}$

4785. $\sin 720^\circ$ ni hisoblang.

A) −1 B) 0 C) 1 D) $\frac{1}{2}$

4786. $\cos 540^\circ$ ni hisoblang.

A) −1 B) 0 C) 1 D) $\frac{1}{2}$

4787. $\cos 420^\circ$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{2}}{2}$

4788. $tg570^\circ$ ni hisoblang.

A) −1 B) 1 C) $\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

4789. $\sin 3630^\circ$ ni hisoblang.

A) $\frac{\sqrt{3}}{2}$ B) $\sqrt{3}$ C) 0 D) $\frac{1}{2}$

4790. $ctg960^\circ$ ni hisoblang.

A) −1 B) 1 C) $\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

4791. $\sin 17\pi$ ni hisoblang.

A) $\frac{\sqrt{2}}{2}$ B) 0 C) 1 D) $\frac{1}{2}$

4792. $\cos 7\pi$ ni hisoblang.

A) −1 B) 0 C) 1 D) $\frac{1}{2}$

4793. $2\sin 75^\circ \cos 75^\circ$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) 1 C) $\frac{\sqrt{2}}{2}$ D) $\frac{1}{2}$

4794. $\cos^2 75^\circ - \sin^2 75^\circ$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) $-\frac{\sqrt{2}}{2}$ D) 0

4795. $\cos 630^\circ - \sin 1470^\circ - ctg1125^\circ$ ning son qiymatini toping.

A) $\frac{\sqrt{2}}{2}$ B) 1 C) $-\frac{3}{2}$ D) $\frac{1}{2}$

4796. $tg1800^\circ - \sin 495^\circ + \cos 945^\circ$ ning son qiymatini toping.

A) $-\sqrt{2}$ B) 0 C) 1 D) $\frac{\sqrt{2}}{2}$

4797. $\cos 7230^\circ - \sin 900^\circ$ ning son qiymatini toping.

A) $-\sqrt{2}$ B) 0 C) 1 D) $\frac{\sqrt{3}}{2}$

4798. $\sin(-7\pi) - 2\cos\frac{31\pi}{3} - tg\frac{7\pi}{4}$ ni son qiymatini toping.

A) $\frac{\sqrt{2}}{2}$ B) 0 C) 1 D) $\frac{\sqrt{3}}{2}$

4799. $\cos(-9\pi) + 2\sin(-\frac{49\pi}{6}) - ctg(-\frac{21\pi}{4})$ ni son qiymatini toping.

A) -1 B) $\frac{\sqrt{2}}{2}$ C) 1 D) $\frac{\sqrt{3}}{2}$

4800. $\frac{\sin(-6,5\pi) + tg(-7\pi)}{\cos(-7\pi) + ctg(-16,25\pi)}$ ni son qiymatini toping.

A) 0,5 B) $\frac{\sqrt{2}}{2}$ C) 1 D) $\frac{\sqrt{3}}{2}$

4801. $\cos^2(\pi-a)\cos(3\pi-a) - \sin(a-\pi)\sin(a-3\pi)$ ni soddalashtiring.

A) $\cos 2a$ B) $\sin^2 a - \cos^3 a$

C) $\cos^3 a - \sin^2 a$ D) $\cos^2 2a$

4802. $\cos(\pi-a)\cos(3\pi-a) - \sin(a-\pi)\sin(a-3\pi)$ ni soddalashtiring.

A) $-\cos 2a$ B) $\cos^2 2a$ C) 1 D) $\cos 2a$

4803. $\frac{\sin(\frac{\pi}{2}-a) + \sin(\pi-a)}{\cos(\pi-a) + \sin(2\pi-a)}$ ni soddalashtiring.

A) -1 B) $\sin a$ C) $\sin 2a$ D) $-\cos 2a$

4804. $\frac{\cos(\pi-a) + \cos(\frac{\pi}{2}-a)}{\sin(\pi-a) - \sin(\frac{\pi}{2}-a)}$ ni soddalashtiring.

A) $\cos 2a$ B) $tg2a$ C) 1 D) $-\sin 2a$

4805. $\frac{\sin(a-\pi)}{tg(a+\pi)} \cdot \frac{tg(\pi-a)}{\cos\left(\frac{\pi}{2}-a\right)}$ ni soddalashtiring.

A) $ctga$ B) $-\frac{1}{2}\sin 2a$ C) $\cos a$ D) 1

4806. $\frac{\sin^2(\pi-a) + \sin^2\left(\frac{\pi}{2}-a\right)}{\sin(\pi-a)} \cdot tg(\pi-a)$ ni soddalashtiring.

A) $\frac{1}{\cos a}$ B) $-\frac{1}{\cos a}$ C) 1 D) $-tga$

4807. $\sin x\cos y = \frac{1}{3}$ va $\cos x\sin y = \frac{2}{3}$ bo'lsa $ctg(x-y) = ?$

A) -1 B) $-2\sqrt{2}$ C) 1 D) $\frac{1}{2}$

4808. $\sin x\cos y = -\frac{1}{3}$ va $\cos x\sin y = \frac{2}{3}$ bo'lsa $ctg(x-y) = ?$

A) -1 B) $-2\sqrt{2}$ C) 0 D) $\frac{1}{2}$

4809. $\frac{\cos 18^\circ \cos 28^\circ + \cos 108^\circ \sin 208^\circ}{\sin 34^\circ \sin 146^\circ + \sin 236^\circ \sin 304^\circ}$ ni soddalashtiring.

A) $\cos 10^\circ$ B) $ctg10^\circ$ C) $\sin 10^\circ$ D) $ctg64^\circ$

4810. $\frac{\sin 56^\circ \sin 124^\circ - \sin 34^\circ \cos 236^\circ}{\cos 28^\circ \sin 88^\circ + \sin 178^\circ \cos 242^\circ}$ ni soddalashtiring.

A) $-\frac{\sqrt{2}}{3}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{3}}{2}$ D) $\frac{2}{\sqrt{3}}$

SINUSLAR YIG'INDISI VA AYIRMASI. KOSINUSLAR YIG'INDISI VA AYIRMASI

✓ $(\sin(\alpha+\frac{\pi}{12}) + \sin(\alpha-\frac{\pi}{12}))\sin\frac{\pi}{12}$ ni soddalashtiring.

A) $\frac{1}{2}\sin\alpha$ B) $\sin\alpha$ C) $\frac{1}{2}\cos\alpha$ D) $\frac{1}{2}\sin 2\alpha$

Yechilishi: Formulalar:

$$\sin\alpha + \sin\beta = 2\sin\frac{\alpha+\beta}{2}\cdot\cos\frac{\alpha-\beta}{2}$$

$$\sin\alpha - \sin\beta = 2\sin\frac{\alpha-\beta}{2}\cdot\cos\frac{\alpha+\beta}{2}$$

$$\cos\alpha + \cos\beta = 2\cos\frac{\alpha+\beta}{2}\cdot\cos\frac{\alpha-\beta}{2}$$

$$\cos\alpha - \cos\beta = -2\sin\frac{\alpha+\beta}{2}\cdot\sin\frac{\alpha-\beta}{2}$$

$$tg\alpha + tg\beta = \frac{\sin(\alpha+\beta)}{\cos\alpha\cdot\cos\beta} \quad tg\alpha - tg\beta = \frac{\sin(\alpha-\beta)}{\cos\alpha\cdot\cos\beta}$$

Javob: (A)

4811. $\cos 105^\circ + \cos 75^\circ$ ni hisoblang.

A) -1 B) 0 C) 1 D) $\frac{1}{2}$

4812. $\sin 105^\circ - \sin 75^\circ$ ni hisoblang.

A) 0 B) $\frac{\sqrt{2}}{2}$ C) $\sqrt{2}$ D) $-\frac{1}{2}$

4813. $\cos\frac{11\pi}{12} + \cos\frac{5\pi}{12}$ ni hisoblang.

A) -1 B) $\frac{1}{2}$ C) $\frac{1}{\sqrt{2}}$ D) $-\frac{\sqrt{2}}{2}$

4814. $\cos\frac{11\pi}{12} - \cos\frac{5\pi}{12}$ ni hisoblang.

A) $-\frac{\sqrt{3}}{2}$ B) $\frac{\sqrt{3}}{2}$ C) $-\frac{\sqrt{6}}{2}$ D) $\frac{1}{2}$

4815. $\sin\frac{7\pi}{12} - \cos\frac{\pi}{12}$ ni hisoblang.

A) $-\frac{1}{2}$ B) 0 C) $\frac{\sqrt{2}}{2}$ D) 1

4816. $\sin 105^\circ + \sin 165^\circ$ ni hisoblang.

A) $\frac{\sqrt{3}}{2}$ B) $\frac{1}{2}$ C) 1 D) $\frac{\sqrt{6}}{2}$

4817. $\sin\frac{\pi}{10} + \sin\frac{\pi}{12}$ ni ko'paytma ko'rinishida yozing.

A) $2\sin\frac{11\pi}{60}\cos\frac{\pi}{60}$ B) $2\sin\frac{11\pi}{120}\cos\frac{\pi}{120}$

C) $-2\sin\frac{11\pi}{120}\sin\frac{\pi}{120}$ D) $2\cos\frac{11\pi}{120}\sin\frac{\pi}{120}$

4818. $\sin 46^\circ + \sin 50^\circ$ ni ko'paytma ko'rinishida yozing.

A) $-2\sin 48^\circ \cos 2^\circ$ B) $2\cos 48^\circ \sin 2^\circ$

C) $2\sin 48^\circ \cos 2^\circ$ D) $-2\sin 2^\circ \cos 48^\circ$

4819. $\sin\frac{\pi}{10} - \cos\frac{\pi}{5}$ ni ko'paytma ko'rinishida yozing.

A) $-2\sin\frac{\pi}{10}\cos\frac{\pi}{5}$ B) $2\sin\frac{\pi}{5}\cos\frac{\pi}{5}$

C) $-2\sin(-\frac{\pi}{10})\cos\frac{\pi}{5}$ D) $2\sin\frac{\pi}{5}\cos\frac{2\pi}{5}$

4820. $\cos\frac{\pi}{8} - \cos\frac{\pi}{18}$ ni ko'paytma ko'rinishida yozing.

A) $2\sin\frac{13\pi}{144}\sin\frac{5\pi}{144}$ B) $2\sin(-\frac{11\pi}{144})\sin\frac{5\pi}{144}$

C) $-2\sin\frac{13\pi}{144}\sin\frac{5\pi}{144}$ D) $-2\sin\frac{13\pi}{72}\sin\frac{5\pi}{72}$

4821. $tg\frac{5\pi}{24} - tg\frac{7\pi}{24}$ ni ko'paytma ko'rinishida yozing.

A) $-\frac{\sin\frac{\pi}{12}}{\cos\frac{5\pi}{24}\cdot\cos\frac{7\pi}{24}}$ B) $\frac{\sin\frac{\pi}{6}}{\cos\frac{5\pi}{24}\cdot\cos\frac{7\pi}{4}}$

C) $-\frac{\sin\frac{\pi}{6}}{\cos\frac{5\pi}{24}\cdot\cos\frac{7\pi}{4}}$ D) $\frac{\sin\frac{\pi}{12}}{\cos\frac{5\pi}{24}\cdot\cos\frac{7\pi}{4}}$

4822. $tg12^\circ + ctg12^\circ$ ni ko'paytma ko'rinishida yozing.

A) $\frac{-1}{\cos 12^\circ \cos 78^\circ}$ B) $\frac{1}{\cos 12^\circ \cos 78^\circ}$

C) $\frac{1}{\cos 12^\circ \sin 78^\circ}$ D) $\frac{1}{\sin 12^\circ \cos 78^\circ}$

4823. $tg267^\circ + tg93^\circ$ ni hisoblang.

A) 0 B) $\frac{1}{\sqrt{3}}$ C) 1 D) $\sqrt{3}$

4824. $tg\frac{5\pi}{12} + tg\frac{7\pi}{12}$ ni hisoblang.

A) 1 B) 0 C) $\frac{1}{\sqrt{3}}$ D) $\sqrt{3}$

4825. $\sqrt{3} + tga$ ni ko'paytma ko'rinishida yozing.

A) $\frac{2\sin\left(\frac{\pi}{3}+a\right)}{\sin a}$ B) $\frac{2\sin\left(\frac{\pi}{3}-a\right)}{\cos a}$

C) $\frac{\sin\left(\frac{\pi}{3}-a\right)}{\cos a}$ D) $\frac{2\sin\left(\frac{\pi}{3}+a\right)}{\cos a}$

4826. $\cos(a+b) - \cos(a-b)$ ni ko'paytma ko'rinishida yozing.

A) $-2\sin a\sin b$ B) $2\sin a\sin b$

C) $2\sin a\cos b$ D) $-2\sin a\cos b$

4827. $\frac{1}{2} + \cos a$ ni ko'paytma ko'rinishida yozing.

A) $-2\cos\left(\frac{\pi}{6}+\frac{a}{2}\right)\sin\left(\frac{\pi}{6}-\frac{a}{2}\right)$

B) $2\cos\left(\frac{\pi}{6}+\frac{a}{2}\right)\cos\left(\frac{\pi}{6}-\frac{a}{2}\right)$

C) $2\cos\left(\frac{\pi}{3}-\frac{a}{2}\right)\cos\left(\frac{\pi}{3}+\frac{a}{2}\right)$

D) $2\cos\left(\frac{\pi}{6}-a\right)\cos\left(\frac{\pi}{6}+a\right)$

4828. $\sin x + \sqrt{3}\cos x$ ni ko'paytma ko'rinishida yozing.

A) $2\cos\left(\frac{\pi}{6}-x\right)$ B) $\cos\left(\frac{\pi}{6}+x\right)$

C) $2\cos\left(\frac{\pi}{6}+x\right)$ D) $\cos\left(\frac{\pi}{6}-x\right)$

4829. $\sqrt{3}\sin x-\cos x$ ni ko'paytma ko'rinishida yozing.

A) $\sin\left(x-\frac{\pi}{3}\right)$ B) $2\cos\left(x-\frac{\pi}{3}\right)$

C) $2\cos\left(x-\frac{\pi}{3}\right)$ D) $\sin\left(x+\frac{\pi}{3}\right)$

4830. $\sin 10^\circ+\sin 50^\circ-\cos 20^\circ$ ni hisoblang.

A) -1 B) $\frac{1}{2}$ C) 1 D) 0

4831. $\sin 75^\circ-\sin 15^\circ$ ni hisoblang.

A) $\frac{\sqrt{3}}{2}$ B) $\frac{1}{\sqrt{2}}$ C) 0 D) 1

4832. $\frac{\sin 35^\circ+\cos 65^\circ}{2\cos 5^\circ}$ ni hisoblang.

A) 2 B) $\frac{1}{2}$ C) 1 D) $-\frac{1}{2}$

4833. $\frac{\cos a-\cos 3a}{\sin a}$ ni soddalashtiring.

A) $\cos 2a$ B) $2\sin 2a$

C) $2\cos 2a$ D) $\sin 2a$

4834. $\frac{\cos 6a-\cos 4a}{\sin 5a}$ ni soddalashtiring.

A) $2\cos a$ B) $2\sin 2a$ C) $-2\sin a$ D) $-2\sin 2a$

4835. $\frac{\sin a}{\cos a-\cos 3a}$ ni soddalashtiring.

A) $-\frac{1}{2\sin 2a}$ B) $\sin 2a$ C) $-2\sin a$ D) $\frac{1}{2\sin 2a}$

4836. $\frac{\cos 4a}{\sin 5a-\sin 3a}$ ni soddalashtiring.

A) $-2\sin a$ B) $\sin\frac{a}{2}$ C) $\frac{1}{2\sin a}$ D) $\sin 2a$

4837. $\frac{\sin 4a-\sin 6a}{\cos 5a}$ ni soddalashtiring.

A) $-2\sin a$ B) $\sin 2a$ C) $-\sin 2a$ D) $\cos 2a$

4838. $\frac{2\left(\cos\frac{\pi}{7}+\cos\frac{2\pi}{7}+\cos\frac{5\pi}{7}+\cos\frac{6\pi}{7}\right)}{3\left(\cos\frac{3\pi}{7}+\cos\frac{4\pi}{7}\right)}$ ni hisoblang.

A) 0 B) $-\frac{1}{2}$ C) $\sqrt{2}$ D) 1

4839. $\frac{2(\cos a+\cos 3a)}{2\sin 2a+\sin 4a}$ ni soddalashtiring.

A) $\cos 2a\cos a$ B) $ctg2a\cdot\cos^{-1}a$

C) $\sin 2a\sin a$ D) $ctga\cos a$

4840. $\frac{1+\sin a-\cos 2a-\sin 3a}{2\sin^2 a+\sin a-1}$ ni soddalashtiring.

A) $2\sin a$ B) $\sin 2a$ C) $-2\sin a$ D) $2\cos a$

4841. $\cos^3 a\sin a-\sin^3 a\cos a$ ni soddalashtiring.

A) $\frac{1}{4}\sin 4a$ B) $\frac{1}{2}\sin 4a$

C) $4\sin 4a$ D) $4\sin 2a$

4842. $\frac{\sin a+\sin 2a}{1+\cos a+\cos 2a}$ ni soddalashtiring.

A) $tga\sin a$ B) $2ctga$ C) $ctga$ D) tga

4843. $\frac{\sin 2a-\sin 2a\cos 2a}{4\cos a}$ ni soddalashtiring.

A) $\sin^3 a$ B) $-\sin^3 a$ C) $\sin^2 a$ D) $\sin 3a$

4844. $\frac{2\cos^2 2a}{\sin 4a\cos 4a+\sin 4a}$ ni soddalashtiring.

A) $\sin 4a$ B) $\frac{1}{\sin 4a}$

C) $-\sin 4a$ D) $-\frac{1}{\sin 4a}$

4845. $\frac{\cos 2a+\sin 2a\cos 2a}{2\sin^2 a-1}$ ni soddalashtiring.

A) $(\sin a+\cos a)^2$ B) $-2\sin^2 a$

C) 1 D) $-(\sin a+\cos a)^2$

4846. $\frac{\cos a-2\sin 3a-\cos 5a}{\sin 5a-2\cos 3a-\sin a}$ ni soddalashtiring.

A) $tg3a$ B) $-ctg3a$ C) $-tg3a$ D) $ctg3a$

4847. $\frac{1-\cos a+\cos 2a}{\sin a-\sin 2a}$ ni soddalashtiring.

A) tga B) $-ctga$ C) $\cos 2a$ D) $ctg2a$

✓ Agar $\sqrt{1-\cos^2 x}-\sqrt{1+\sin^2 x}=k$ bo'lsa, $\sqrt{1-\cos^2 x}+\sqrt{1+\sin^2 x}$ ni toping.

A) $-k$ B) $2k$ C) $-\frac{1}{k}$ D) $\frac{1}{k}$

Yechilishi: Ikkita tomonini ko'paytiring :

$$\sqrt{1-\cos^2 x}-\sqrt{1+\sin^2 x}=k$$
$$\times$$
$$\sqrt{1-\cos^2 x}+\sqrt{1+\sin^2 x}=a$$

$$\left(\sqrt{1-\cos^2 x}-\sqrt{1+\sin^2 x}\right)^2=ak$$
$$1-\cos^2 x-(1+\sin^2 x)=ak$$
$$1-\cos^2 x-1-\sin^2 x=ak$$
$$-1=ak$$
$$-\frac{1}{k}=a$$

Javob: (C)

4848. Agar $\sqrt{1+\cos^2 x}-\sqrt{1-\sin^2 x}=n$ bo'lsa, $\sqrt{1+\cos^2 x}+\sqrt{1-\sin^2 x}$ ni toping.

A) $\frac{1}{n}$ B) $-\frac{1}{n}$ C) $2n$ D) $-n$

4849. Agar $\sqrt{2-\cos^2 x}-\sqrt{3+\sin^2 x}=b$ bo'lsa, $\sqrt{2-\cos^2 x}+\sqrt{3+\sin^2 x}$ ni toping.

A) $\frac{1}{b}$ B) $-\frac{2}{b}$ C) $2b$ D) $-b$

✓ $tg1^\circ \cdot tg2^\circ \cdot \ldots \cdot tg88^\circ \cdot tg89^\circ$ ni hisoblang.

A) 3 B) 0 C) 4 D) 1

Yechilishi: **J: (D)**

$tg89^\circ = tg(90^\circ - 1) = ctg1^\circ$ $tg88^\circ = tg(90^\circ - 2) = ctg2^\circ$

$tg1^\circ tg2^\circ \ldots ctg2^\circ ctg1^\circ = tg1^\circ \cdot tg2^\circ \cdot \ldots \cdot ctg2^\circ \cdot ctg1^\circ = 1$

4850. $tg4^\circ \cdot tg5^\circ \cdot \ldots \cdot tg85^\circ \cdot tg86^\circ$ ni hisoblang.

A) 1 B) 3 C) 2 D) 0

4851. $ctg1^\circ \cdot ctg2^\circ \cdot \ldots \cdot ctg88^\circ \cdot ctg89^\circ$ ni hisoblang.

A) 1 B) 3 C) 2 D) 0

4852. $ctg15^\circ \cdot ctg20^\circ \cdot \ldots \cdot ctg95^\circ \cdot ctg100^\circ$ ni hisoblang.

A) 1 B) 3 C) 2 D) 0

4853. $tg137^\circ \cdot tg138^\circ \cdot \ldots \cdot tg192^\circ \cdot tg193^\circ$ ni hisoblang.

A) 1 B) 3 C) 2 D) 0

TRIGONOMETRIK TAQQOSLASHLAR

✓ Ushbu $x = \cos\frac{11\pi}{12}$; $y = \cos(-\frac{\pi}{3})$; $z = \sin\frac{11\pi}{12}$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli ?

A) $x < y < z$ B) $x < z < y$ C) $y < z < x$ D) $z < y < x$

Yechilishi:

Formula:	misol:	Formula:	misol:
$\alpha > \beta$	$16^\circ > 9^\circ$	$\alpha > \beta$	$16^\circ > 9^\circ$
$\cos\alpha < \cos\beta$	$\cos 16^\circ < \cos 9^\circ$	$\sin\alpha > \sin\beta$	$\sin 16^\circ > \sin 9^\circ$

$y = \cos(-\frac{\pi}{3}) = \cos\frac{\pi}{3}$ $z = \sin\frac{11\pi}{12} = \cos(\frac{\pi}{2} - \frac{11\pi}{12}) = \cos(-\frac{5\pi}{12})$

$= \cos(-\frac{5\pi}{12}) = \cos\frac{5\pi}{12}$

$x = \cos\frac{11\pi}{12}$; $y = \cos\frac{\pi}{3}$; $z = \cos\frac{5\pi}{12}$

$\frac{\pi}{3} < \frac{5\pi}{12} < \frac{11\pi}{12}$

$\cos\frac{\pi}{3} > \cos\frac{5\pi}{12} > \cos\frac{11\pi}{12}$ **Javob: (B**

$y > z > x$

4854. Quyidagi sonlarning eng kattasini toping.

A) $\sin 170^\circ$ B) $\sin 100^\circ$ C) $\sin(-250^\circ)$ D) $\sin 20^\circ$

4855. Quyidagi sonlardan qaysi birining qiymati manfiy?

A) $\sin 140^\circ - \sin 150^\circ$ B) $\cos 10^\circ - \cos 50^\circ$

C) $tg87^\circ - tg85^\circ$ D) $ctg45^\circ - ctg40^\circ$

4856. $p = \sin 189^\circ$; $q = \cos 42^\circ$; $r = \cos 88^\circ$ sonlarni kamayish tartibida yozing.

A) $p > r > q$ B) $q > r > p$ C) $q > p = r$ D) $q > p > r$

4857. $m = \cos 75^\circ$; $m = \sin 50^\circ$; $p = \sin 45^\circ$; $q = \cos 85^\circ$ sonlarni o'sish tartibida yozing.

A) $q < n < p < m$ B) $q < m < p < n$

C) $m < n < p < q$ D) $q < m < n < p$

4858. $x = \cos\frac{10\pi}{7}$, $y = \cos\frac{6\pi}{7}$, $z = \sin\frac{5\pi}{7}$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli ?

A) $y < x < z$ B) $x < z < y$ C) $y < z < x$ D) $z < y < x$

4859. $x = tg\frac{5\pi}{7}$, $y = \sin\frac{\pi}{6}$, $z = tg\frac{3\pi}{7}$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli ?

A) $z > y > x$ B) $x > z > y$ C) $y > z > x$ D) $z > y > x$

4860. $x = tg\frac{5\pi}{6}$, $y = \cos\frac{2\pi}{5}$, $z = tg(-\frac{\pi}{8})$ sonlar uchun quyidagi munosabatlardan qaysi biri o'rinli ?

A) $x > y > z$ B) $x > z > y$ C) $y > z > x$ D) $z > y > x$

KO'PAYTMA FORMULALARI

✓ $\sin 40^\circ \cdot \cos 50^\circ$ ni yig'indiga aylantiring.

A) $1 - \frac{\sin 10^\circ}{2}$ B) $\frac{\sin 10^\circ}{2} - \frac{1}{2}$

C) $\frac{1}{2} - \frac{\sin 10^\circ}{2}$ D) $\frac{\sin 10^\circ}{2} + 1$

Yechilishi:

$\sin\alpha \cdot \cos\beta = \frac{1}{2}[\sin(\alpha+\beta) + \sin(\alpha-\beta)]$

$\cos\alpha \cdot \cos\beta = \frac{1}{2}[\cos(\alpha+\beta) + \cos(\alpha-\beta)]$

$\sin\alpha \cdot \sin\beta = \frac{1}{2}[\cos(\alpha-\beta) - \cos(\alpha+\beta)]$

$\sin 40^\circ \cdot \cos 50^\circ = \frac{1}{2}[\sin(40^\circ + 50^\circ) + \sin(40^\circ - 50^\circ)] =$ **J: (C)**

$= \frac{1}{2}[\sin 90^\circ - \sin 10^\circ] = \frac{1}{2}[1 - \sin 10^\circ]$

4861. $\sin 80^\circ \cdot \cos 10^\circ$ ni yig'indiga aylantiring.

A) $1 - \frac{\sin 70^\circ}{2}$ B) $\frac{\sin 70^\circ}{2} - \frac{1}{2}$

C) $\frac{1}{2} + \frac{\sin 70^\circ}{2}$ D) $\frac{\sin 70^\circ}{2} + 1$

4862. $\sin 20^\circ \cdot \cos 40^\circ$ ni yig'indiga aylantiring.

A) $\frac{\sqrt{3}}{4} - \frac{1}{2}\sin 20^\circ$ B) $\frac{\sqrt{3}}{2} - \frac{1}{2}\sin 20^\circ$

C) $\frac{\sqrt{3}}{2} + \frac{1}{2}\sin 20^\circ$ D) $\frac{\sqrt{3}}{2}\sin 20^\circ + 1$

4863. $\sin 65^\circ \cdot \cos 5^\circ$ ni yig'indiga aylantiring.

A) $\frac{\sqrt{3}}{2}\sin 70^\circ + \frac{1}{2}$ B) $\frac{1}{2}\sin 70^\circ + \frac{\sqrt{3}}{4}$

C) $\frac{1}{2}\sin 70^\circ + \frac{\sqrt{3}}{2}$ D) $\sin 70^\circ + \frac{1}{2}$

4864. $\sin 10^\circ \cdot \cos 20^\circ$ ni yig'indiga aylantiring.

A) $\frac{1}{4} - \frac{1}{2}\sin 10^\circ$ B) $\frac{1}{4} + \frac{1}{2}\sin 10^\circ$

C) $\frac{1}{4} + \sin 10^\circ$ D) $1 + \sin 10^\circ$

4865. $\sin 15^\circ \cdot \cos 75^\circ$ ni yig'indiga aylantiring.

A) $\frac{2-\sqrt{3}}{4}$ B) $1+\frac{\sqrt{3}}{2}$ C) $\frac{\sqrt{3}}{4}-1$ D) $\frac{\sqrt{3}}{2}-2$

4866. $\cos 25^\circ \cdot \cos 35^\circ$ ni yig'indiga aylantiring.

A) $\frac{1}{4}-\frac{\cos 10^\circ}{2}$ B) $\frac{\sqrt{3}}{2}+\frac{1}{2}\sin 10^\circ$

C) $\frac{\sqrt{3}}{4}+\frac{1}{2}\sin 10^\circ$ D) $\frac{1}{4}+\frac{\cos 10^\circ}{2}$

4867. $\sin 5^\circ \cdot \cos 35^\circ$ ni yig'indiga aylantiring.

A) $\frac{1}{2}\sin 40^\circ+\frac{1}{4}$ B) $\frac{1}{2}\sin 40^\circ-\frac{1}{4}$

C) $-\frac{1}{4}+\frac{1}{2}\sin 40^\circ$ D) $2\sin 40^\circ-\frac{1}{2}\sin 10^\circ$

4868. $2\sin\left(\frac{\pi}{4}+2a\right)\sin\left(\frac{\pi}{4}-2a\right)$ ni soddalashtiring.

A) $2\cos 2a$ B) $-\cos 4a$ C) $2\cos 4a$ D) $\cos 4a$

4869. $2\cos\left(\frac{\pi}{4}+2a\right)\cos\left(\frac{\pi}{4}-2a\right)$ ni soddalashtiring.

A) $\cos 4a$ B) $2\cos 2a$ C) $-2\cos 2a$ D) $2\cos 4a$

4870. $\frac{4\cdot\cos 50^\circ \cos 40^\circ}{\cos 10^\circ}$ ni hisoblang.

A) 2 B) $\frac{1}{2}$ C) 1 D) 0

4871. $\frac{4\sin 40^\circ \cdot \sin 50^\circ}{\cos 10^\circ}$ ni hisoblang.

A) 2 **B)** $\frac{1}{2}$ C) 1 D) 0

✓ $\sin 20^\circ \cdot \sin 40^\circ \cdot \sin 80^\circ$ ni yig'indiga aylantiring.

A) $\frac{\sqrt{3}}{8}$ B) $-\frac{\sqrt{3}}{8}$ C) $\frac{\sqrt{3}}{2}$ D) $-\frac{\sqrt{3}}{4}$

Yechilishi: Formulasi:

$$\sin\alpha\cdot\sin\beta=\frac{1}{2}\left[\cos(\alpha-\beta)-\cos(\alpha+\beta)\right]$$

$$\sin 20^\circ\cdot\sin 40^\circ\cdot\sin 80^\circ=\frac{1}{2}(\cos(20^\circ-40^\circ)-\cos(20^\circ+40^\circ))\cdot\sin 80^\circ=$$

$$=\frac{1}{2}\left[\cos 20^\circ-\cos 60^\circ\right]\cdot\sin 80^\circ=\frac{1}{2}\cdot\sin 80^\circ\cdot\left[\cos 20^\circ-\frac{1}{2}\right]=$$

$$=\frac{1}{2}\sin 80^\circ\cdot\cos 20^\circ-\frac{1}{4}\cdot\sin 80^\circ=\frac{1}{2}\cdot\frac{1}{2}(\sin 100+\sin 60)-$$

$$-\frac{1}{4}\cdot\sin 80=\frac{1}{4}\cdot\sin 80^\circ-\frac{1}{4}\sin 100^\circ-\frac{\sqrt{3}}{8}=$$

$$=\frac{1}{4}\cdot\sin 80^\circ-\frac{1}{4}\sin(\pi-80^\circ)-\frac{\sqrt{3}}{8}=$$

$$=\frac{1}{4}\cdot\sin 80^\circ-\frac{1}{4}\sin 80^\circ-\frac{\sqrt{3}}{8}=-\frac{\sqrt{3}}{8}$$

Javob: (B)

4872. $\cos 55^\circ \cdot \cos 65^\circ \cdot \cos 175^\circ$ ni hisoblang.

A) $\frac{\sqrt{6}+\sqrt{2}}{16}$ B) $\frac{\sqrt{6}-\sqrt{2}}{16}$

C) 0,5 D) $-\frac{\sqrt{6}+\sqrt{2}}{16}$

4873. $\cos 5^\circ \cdot \cos 55^\circ \cdot \cos 65^\circ$ ni hisoblang.

A) $\frac{\sqrt{3}+\sqrt{2}}{16}$ B) $\frac{1}{2}+\frac{\sqrt{3}}{6}$

C) $\frac{\sqrt{6}-\sqrt{2}}{16}$ D) $\frac{\sqrt{6}+\sqrt{2}}{16}$

4874. $\cos 30^\circ \cdot \sin 75^\circ - \cos 60^\circ - \sin 15^\circ$ ni hisoblang.

A) $\frac{5\sqrt{2}-\sqrt{6}+4}{8}$ B) $\frac{5\sqrt{2}-\sqrt{6}-4}{8}$

C) $\frac{5\sqrt{2}+\sqrt{6}-4}{8}$ D) $\frac{5\sqrt{2}+\sqrt{6}+4}{8}$

YARIM BURCHAK FORMULALARI

✓ $\sin\frac{\pi}{12}$ ni hisoblang.

A) $\sqrt{\frac{2-\sqrt{3}}{4}}$ B) $\sqrt{\frac{2+\sqrt{3}}{4}}$

C) $2\sqrt{2-\sqrt{3}}$ D) $\frac{\sqrt{2}+\sqrt{3}}{2}$

Yechilishi: Formulasi:

$$\sin\frac{\alpha}{2}=\pm\sqrt{\frac{1-\cos\alpha}{2}}\quad \cos\frac{\alpha}{2}=\pm\sqrt{\frac{1+\cos\alpha}{2}}\quad tg\frac{\alpha}{2}=\pm\sqrt{\frac{1-\cos\alpha}{1+\cos\alpha}}$$

$$\sin\frac{\pi}{12}=+\sqrt{\frac{1-\cos 2\cdot\frac{\pi}{12}}{2}}=\sqrt{\frac{1-\cos\frac{\pi}{6}}{2}}=\sqrt{\frac{1-\frac{\sqrt{3}}{2}}{2}}=\sqrt{\frac{2-\sqrt{3}}{4}}=$$

$$=\frac{\sqrt{2-\sqrt{3}}}{2}\qquad \textbf{Javob: (A)}$$

Quyidagi formulalarni tushunib olish lozim:

$$\sin^2\alpha=\frac{1-\cos 2\alpha}{2}\Leftrightarrow \sin^2\frac{\alpha}{2}=\frac{1-\cos\alpha}{2}$$

$$\cos^2\alpha=\frac{1+\cos 2\alpha}{2}\Leftrightarrow \cos^2\frac{\alpha}{2}=\frac{1+\cos\alpha}{2}$$

$$tg^2\alpha=\frac{1-\cos 2\alpha}{1+\cos 2\alpha}\Leftrightarrow tg^2\frac{\alpha}{2}=\frac{1-\cos\alpha}{1+\cos\alpha}$$

4875. $\cos\frac{\pi}{12}$ ni hisoblang.

A) $\sqrt{\frac{2-\sqrt{3}}{4}}$ B) $2-\sqrt{2}$ C) $\sqrt{\frac{2+\sqrt{3}}{4}}$ D) $\frac{\sqrt{3}}{2}$

4876. $\cos\frac{5\pi}{12}$ ni hisoblang.

A) $-\frac{\sqrt{\sqrt{3}+2}}{2}$ B) 0 C) $\frac{\sqrt{\sqrt{2}-2}}{2}$ D) $\sqrt{\frac{2-\sqrt{3}}{4}}$

4877. $\sin 105^\circ + \sin 75^\circ$ ni hisoblang.

A) $\sqrt{2-\sqrt{3}}$ B) $\sqrt{2+\sqrt{3}}$ C) $2\sqrt{2+\sqrt{3}}$ D) $\sqrt{\frac{2-\sqrt{3}}{4}}$

4878. $\sin 112{,}5^\circ$ ni hisoblang.

A) $-2\sqrt{\frac{2-\sqrt{2}}{4}}$ B) $\sqrt{\frac{2-\sqrt{2}}{4}}$

C) $-\sqrt{\frac{2-\sqrt{2}}{4}}$ D) $\sqrt{\frac{2+\sqrt{2}}{4}}$

4879. $\sin(202^\circ 30')$ ni hisoblang.

A) $-\sqrt{\frac{2-\sqrt{2}}{4}}$ B) $\frac{\sqrt{\sqrt{2}-2}}{2}$

C) $\sqrt{\frac{2-\sqrt{2}}{4}}$ D) $-\frac{\sqrt{2+\sqrt{2}}}{2}$

4880. $\sin\frac{5\pi}{12}$ ni hisoblang.

A) $-\frac{\sqrt{2+\sqrt{3}}}{4}$ B) $\sqrt{\frac{2+\sqrt{3}}{4}}$

C) $\frac{\sqrt{2-\sqrt{3}}}{2}$ D) $2\sqrt{2+\sqrt{2}}$

4881. $tg\frac{\pi}{12}$ ni hisoblang.

A) $2+\sqrt{3}$ B) $\sqrt{3}$ C) $2-\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

4882. $ctg\frac{\pi}{12}$ ni hisoblang.

A) $2-\sqrt{3}$ B) $2+\sqrt{3}$ C) $\frac{1}{\sqrt{3}}$ D) $\sqrt{\frac{2-\sqrt{3}}{4}}$

4883. $tg(202^\circ 30')$ ni hisoblang.

A) $1-\sqrt{2}$ B) $\sqrt{3}$ C) $\frac{1}{\sqrt{3}}$ D) $\sqrt{2}-1$

4884. $ctg(202^\circ 30')$ ni hisoblang.

A) $\sqrt{2}+1$ B) -1 C) 0 D) $\sqrt{2}-1$

4885. $tg112{,}5^\circ$ ni hisoblang.

A) 1 B) $\sqrt{2}-1$ C) $-\sqrt{2}-1$ D) $\frac{2+\sqrt{3}}{2}$

4886. $\sin 195^\circ$ ni hisoblang.

A) 0 B) $-\frac{\sqrt{2-\sqrt{3}}}{2}$

C) $\frac{\sqrt{2-\sqrt{3}}}{2}$ D) $\frac{\sqrt{2-\sqrt{3}}}{2}$

4887. $tg555^\circ$ ni toping.

A) $-\frac{1}{2}$ B) $2+\sqrt{3}$ C) $\sqrt{2}+1$ D) $-\sqrt{3}+2$

4888. $\cos(22^\circ 30')$ ni hisoblang.

A) $\sqrt{\frac{2+\sqrt{2}}{4}}$ B) $\sqrt{\frac{2-\sqrt{2}}{2}}$ C) $\sqrt{\frac{2+\sqrt{2}}{2}}$ D) 1

4889. $\cos 2a=\frac{1}{2}$ bo'lsa, $\cos^2 a$ ni hisoblang.

A) $-\frac{3}{4}$ B) $1{,}5$ C) $\frac{1}{2}$ D) $\frac{3}{4}$

4890. $8\cos 30^\circ + tg^2 15^\circ$ ni hisoblang.

A) 0 B) 7 C) 1 D) -5

4891. $4ctg30^\circ + tg^2 15^\circ$ ni hisoblang.

A) 7 B) 0 C) $\frac{1}{\sqrt{3}}$ D) $\sqrt{3}$

4892. $\cos a=-\frac{1}{2}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa, $\sin\left(\frac{\pi}{2}+\frac{a}{2}\right)$ ni hisoblang.

A) 1 B) $-\frac{1}{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{1}{2}$

4893. $\cos a=\frac{1}{2}\sqrt{2+\sqrt{3}}$ va $0<a<\frac{\pi}{2}$ bo'lsa, a ni toping.

A) $\frac{\pi}{12}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{24}$ D) $\frac{\pi}{4}$

4894. $\cos a=-\frac{1}{2}$ va $\pi<a<\frac{3\pi}{2}$ bo'lsa $\cos\left(\frac{\pi}{2}+\frac{a}{2}\right)$ ni hisoblang.

A) $\frac{1}{2}$ B) 0 C) $-\frac{1}{2}$ D) $-\frac{\sqrt{3}}{2}$

4895. $\cos 15^\circ + \sin 15^\circ = \frac{x}{4\cos 15^\circ}$ bo'lsa, x ni toping.

A) $3+\sqrt{3}$ B) $\sqrt{3}+2$ C) $\sqrt{3}+4$ D) $1+\sqrt{3}$

4896. $\cos 15^\circ - \sin 15^\circ = \frac{x}{4\cos 15^\circ}$ bo'lsa, x ni toping.

A) $3+\sqrt{3}$ B) $\sqrt{3}+2$ C) $\sqrt{3}+4$ D) $1+\sqrt{3}$

4897. $\cos\alpha=\frac{7}{18}$, *va* $0<\alpha<\frac{\pi}{2}$ bo'lsa, $6\cos\frac{\alpha}{2}$ ni toping.

A) 3 B) 5 C) 6 D) 4

4898. $\sin\alpha=-0{,}8$, *va* $180^\circ<\alpha<270^\circ$ bo'lsa, $tg\frac{\alpha}{2}$ ni toping.

A) 2 B) 1 C) -2 D) $1{,}5$

4899. $\sqrt{\frac{1+\sin(\frac{3\pi}{2}+\alpha)}{1+\sin(\frac{\pi}{2}+\alpha)}}$ ni soddalashtiring.

A) $tg\frac{\alpha}{2}$ B) $ctg\frac{\alpha}{2}$ C) $-tg\frac{\alpha}{2}$ D) $-ctg\frac{\alpha}{2}$

4900. $\frac{\cos^2 x+\cos x}{2\cos^2\frac{x}{2}}+1$ ni soddalashtiring.

A) $2\cos^2\frac{x}{2}$ B) $2\sin^2\frac{x}{2}$ C) $2\cos\frac{x}{2}$ D) $-2\sin^2\frac{x}{2}$

4901. $\dfrac{\sin^4 x+2\cos x\cdot\sin x-\cos^4 x}{2\cos^2 x-1}$ ni soddalashtiring.

A) $1-tg2x$ B) $ctg2x-1$
C) $tg2x-1$ D) $tgx+1$

ARKSINUS (arcsin), ARKKOSINUS (arccos), ARKTANGENS (arctg) va ARKKOTANGENS (arcctg)

✓ Quyidagi ifodalardan qaysi biri ma'noga ega:
1) $\arccos 5$ 2) $\arccos(\sqrt{6}-3)$ 3) $\arcsin(1-\sqrt{5})$
4) $\arcsin(\sqrt{8}-2)$
A) 2;3; 4 B) 3; 4 C) 2;4 D) 1; 2
Yechilishi: ifoda ma'noga ega bo'lishi uchun:
$\left.\begin{matrix}\arcsin b\\ \arccos b\end{matrix}\right\} -1\le b\le 1$ 1) $\arccos 5$ 2) $\arccos(\sqrt{6}-3)$
3) $\arcsin(1-\sqrt{5})$ 4) $\arcsin(\sqrt{8}-2)$
Javob: (C)

4902. Quyidagi ifodalardan qaysi biri ma'noga ega:
1) $\arcsin(-2)$ 2) $\arccos(\sqrt{7}-2)$ 3) $tg\left(2\arccos\dfrac{\sqrt{2}}{2}\right)$
4) $\cos(\arccos 5)$
A) 1; 2 B) 2 C) 3; 4 D) 2; 3

4903. Quyidagi ifodalardan qaysi biri ma'noga ega:
1) $\arccos\sqrt{13}$ 2) $\arcsin(2-\sqrt{10})$ 3) $tg\left(3\arccos\dfrac{1}{2}\right)$
4) $\arccos(\sqrt{17}-4)$
A) 1; 2 B) 2; 4 C) 3; 4 D) 1; 3

4904. Ma'noga ega ifodalarni ko'rsating.
1) $\arcsin(\log_2 5)$ 2) $\arccos\dfrac{\pi}{\sqrt{17}}$ 3) $\arccos\dfrac{a^2+b^2}{a^2+b^2+c^2}$
4) $\arcsin\dfrac{a^2+b^2+\sqrt{2}}{a^2+b^2+1}$
A) 2;3; 4 B) 3; 4 C) 2; 3 D) 1; 2

✓ $\arccos\dfrac{\sqrt{2}}{2}$ ni hisoblang.

A) $\dfrac{\pi}{3}$ B) $\dfrac{\pi}{4}$ C) $\dfrac{\pi}{2}$ D) 0

Yechilishi: Formula
$\left.\begin{matrix}\arcsin b=x\\ arctgb=x\end{matrix}\right\} -\dfrac{\pi}{2}\le x\le\dfrac{\pi}{2}$ $\left.\begin{matrix}\arccos b=x\\ arcctgb=x\end{matrix}\right\} 0\le x\le\pi$

$\arccos b=\alpha$, $\cos\alpha=b$ | $\arccos\dfrac{\sqrt{2}}{2}=?$, $\cos?=\dfrac{\sqrt{2}}{2}$, $?=45^\circ$

Javob: (B)

IZOH: Qolgan $\arcsin b$, $arctgb$, $arcctgb$ lar ham shu kabi topiladi:

$\arcsin b=\alpha$, $\sin\alpha=b$ | $\arcsin\dfrac{\sqrt{2}}{2}=?$, $\sin?=\dfrac{\sqrt{2}}{2}$, $?=45^\circ$

$arctgb=\alpha$, $tg\alpha=b$ | $arctg\dfrac{\sqrt{3}}{3}=?$, $tg?=\dfrac{\sqrt{3}}{3}$, $?=30^\circ$

$arcctgb=\alpha$, $ctg\alpha=b$ | $arcctg0=?$, $ctg?=0$, $?=90^\circ$

4905. $\arccos 0$ ni hisoblang.

A) 0 B) π C) $\dfrac{\pi}{6}$ D) $\dfrac{\pi}{2}$

4906. $arctg1$ ni hisoblang.

A) $\dfrac{\pi}{2}$ B) 0 C) $\dfrac{\pi}{4}$ D) $-\dfrac{\pi}{4}$

4907. $\arccos 1$ ni hisoblang.

A) π B) $\dfrac{\pi}{2}$ C) $\dfrac{\pi}{3}$ D) 0

4908. $\arcsin\dfrac{\sqrt{3}}{2}$ ni hisoblang.

A) $\dfrac{\pi}{3}$ B) 0 C) $-\dfrac{\pi}{4}$ D) $-\dfrac{\pi}{3}$

4909. $\arcsin\dfrac{1}{2}$ ni hisoblang.

A) 0 B) $\dfrac{\pi}{6}$ C) $\dfrac{\pi}{3}$ D) $\dfrac{\pi}{4}$

4910. $\arccos\dfrac{1}{2}$ ni hisoblang.

A) $\dfrac{\pi}{3}$ B) 0 C) $\dfrac{\pi}{6}$ D) $\dfrac{\pi}{4}$

4911. $arctg\sqrt{3}$ ni hisoblang.

A) $\dfrac{\pi}{3}$ B) $\dfrac{\pi}{6}$ C) $\dfrac{\pi}{2}$ D) $\dfrac{\pi}{4}$

✓ $\arccos\left(-\dfrac{\sqrt{3}}{2}\right)$ ni hisoblang.

A) $\dfrac{5\pi}{6}$ B) $-\dfrac{\pi}{6}$ C) $-\dfrac{7\pi}{6}$ D) $\dfrac{\pi}{6}$

Yechilishi: Formula
$\left.\begin{matrix}\arcsin(-b)\\ arctg(-b)\end{matrix}\right\}=\begin{cases}-\arcsin b\\ -arctgb\end{cases}$ $\left.\begin{matrix}\arccos(-b)\\ arcctg(-b)\end{matrix}\right\}=\begin{cases}\pi-\arccos b\\ \pi-arcctgb\end{cases}$

$\arccos(-b)=\alpha$, $\pi-\arccos b=\alpha$ | $\arccos\left(-\dfrac{\sqrt{3}}{2}\right)=?$, $\pi-\arccos\dfrac{\sqrt{3}}{2}=?$, $\pi-\dfrac{\pi}{6}=\dfrac{5\pi}{6}=?$, $?=\dfrac{5\pi}{6}=150^\circ$

Javob: (A)

4912. $\arccos\left(-\frac{\sqrt{2}}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{4}$ B) $-\frac{3\pi}{4}$ C) $-\frac{\pi}{4}$ D) $\frac{3\pi}{4}$

4913. $\arccos\frac{\sqrt{3}}{2}$ ni hisoblang.

A) $\frac{\pi}{6}$ B) $\frac{\pi}{2}$ C) $-\frac{\pi}{3}$ D) $\frac{\pi}{3}$

4914. $\arccos(-1)$ ni hisoblang.

A) $\frac{\pi}{2}$ B) π C) $-\pi$ D) $\frac{\pi}{4}$

4915. $2\arccos 0+3\arccos 1$ ni hisoblang.

A) $\frac{\pi}{2}$ B) 2π C) π D) 0

4916. $3\arccos(-1)-2\arccos 0$ ni hisoblang.

A) π B) 2π C) $\frac{3\pi}{2}$ D) $\frac{\pi}{2}$

4917. $12\arccos\frac{\sqrt{3}}{2}-3\arccos\left(-\frac{1}{2}\right)$ ni hisoblang.

A) 2π B) $\frac{3\pi}{2}$ C) 0 D) -2π

4918. $4\arccos\left(-\frac{\sqrt{2}}{2}\right)+6\arccos\left(-\frac{\sqrt{3}}{2}\right)$ ni hisoblang.

A) 6π B) $\frac{7\pi}{2}$ C) 0 D) 8π

4919. $arctg0$ ni hisoblang.

A) 0 B) π C) $\frac{\pi}{3}$ D) $\frac{\pi}{2}$

4920. $arctg(-1)$ ni hisoblang.

A) $\frac{\pi}{2}$ B) $-\frac{\pi}{4}$ C) $\frac{\pi}{4}$ D) 0

4921. $arctg\left(-\frac{\sqrt{3}}{3}\right)$ ni hisoblang.

A) $\frac{\pi}{6}$ B) $\frac{\pi}{3}$ C) $-\frac{\pi}{3}$ D) $-\frac{\pi}{6}$

4922. $arctg\frac{1}{\sqrt{3}}$ ni hisoblang.

A) $\frac{\pi}{3}$ B) $\frac{\pi}{2}$ C) π D) $\frac{\pi}{6}$

4923. $6arctg\sqrt{3}-4\arcsin\left(-\frac{1}{\sqrt{2}}\right)$ ni hisoblang.

A) 3π B) π C) $\frac{\pi}{2}$ D) $\frac{\pi}{6}$

4924. $2arctg1+3\arcsin\left(-\frac{1}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{2}$ B) 0 C) $\frac{\pi}{6}$ D) $\frac{\pi}{3}$

4925. $3arctg\left(-\frac{1}{\sqrt{3}}\right)+2\arccos\left(-\frac{\sqrt{3}}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{6}$ B) $-\frac{13\pi}{6}$ C) $-\frac{7\pi}{6}$ D) $\frac{7\pi}{6}$

4926. $5arctg(-\sqrt{3})-3\arccos\left(-\frac{\sqrt{2}}{2}\right)$ ni hisoblang.

A) $-\frac{47\pi}{12}$ B) $\frac{47\pi}{6}$ C) $\frac{34\pi}{6}$ D) $\frac{34\pi}{12}$

4927. $\arcsin 0$ ni hisoblang.

A) $\frac{\pi}{2}$ B) 0 C) $-\frac{\pi}{2}$ D) $\frac{\pi}{4}$

4928. $\arcsin 1$ ni hisoblang.

A) $\frac{\pi}{3}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{2}$ D) 0

4929. $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{4}$ B) $\frac{\pi}{2}$ C) $\frac{3\pi}{4}$ D) $-\frac{\pi}{4}$

4930. $\arcsin\left(-\frac{\sqrt{3}}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{3}$ B) $\frac{\pi}{6}$ C) $-\frac{\pi}{3}$ D) $\frac{\pi}{4}$

4931. $\arcsin\left(-\frac{1}{2}\right)$ ni hisoblang.

A) $\frac{\pi}{6}$ B) $-\frac{\pi}{6}$ C) $\frac{\pi}{4}$ D) $\frac{5\pi}{6}$

4932. $\arcsin(-1)$ ni hisoblang.

A) $-\frac{\pi}{2}$ B) $-\pi$ C) 0 D) $\frac{\pi}{2}$

4933. $\arcsin 1-\arcsin(-1)$ ni hisoblang.

A) 0 B) π C) $-\pi$ D) 2π

4934. $\arcsin\frac{1}{\sqrt{2}}+\arcsin\left(-\frac{1}{\sqrt{2}}\right)$ ni hisoblang.

A) $\frac{\pi}{2}$ B) $-\frac{\pi}{2}$ C) 0 D) $\frac{\pi}{4}$

4935. $\arcsin\frac{1}{2}+\arcsin 0,5\sqrt{3}$ ni hisoblang.

A) $\frac{\pi}{2}$ B) $\frac{\pi}{6}$ C) $\frac{2\pi}{3}$ D) $-\frac{\pi}{6}$

4936. $\arcsin\left(-\frac{\sqrt{3}}{2}\right)+\arcsin\left(-\frac{1}{2}\right)$ ni hisoblang.

A) $-\frac{\pi}{2}$ B) 0 C) $\frac{\pi}{6}$ D) $\frac{\pi}{3}$

✓ $\cos(\arccos\frac{3}{5})$ ni hisoblang.

A) $\frac{4}{5}$ B) $\frac{3}{5}$ C) $\frac{2}{3}$ D) $\frac{3}{7}$

Yechilishi: Formulalar:

$\cos(\arccos b)=b$; $\arccos(\cos b)=b$	$\sin(\arcsin b)=b$; $\arcsin(\sin b)=b$
$\cos(\arcsin b)=\sqrt{1-b^2}$	$\sin(\arccos b)=\sqrt{1-b^2}$

$tg(\operatorname{arc}tgb)=b$; $\operatorname{arc}tg(tgb)=b$ $tg(\operatorname{arc}ctgb)=\frac{1}{b}$	$ctg(\operatorname{arc}ctgb)=b$ $\operatorname{arc}ctg(ctgb)=b$ $ctg(\operatorname{arc}tgb)=\frac{1}{b}$

$\cos(\arccos b)=b$ | $\cos(\arccos\frac{3}{5})=\frac{3}{5}$ **Javob: (B)**

4937. $\sin\left(\arcsin\frac{1}{7}\right)$ ni hisoblang.

A) $\frac{4\sqrt{3}}{7}$ B) $\frac{1}{7}$ C) $\frac{3}{7}$ D) $\frac{2}{7}$

4938. $\operatorname{arc}ctg(ctg\sqrt{2})$ ni hisoblang.

A) 8 B) $\frac{1}{\sqrt{2}}$ C) $\sqrt{5}$ D) $\sqrt{2}$

4939. $\sin(\arccos\frac{5}{13})$ ni hisoblang.

A) $\frac{5}{13}$ B) $-\frac{5}{13}$ C) 0 D) $\frac{12}{13}$

4940. $4tg(\operatorname{arc}ctg0,5)$ ni hisoblang.

A) 8 B) 2 C) $\frac{1}{4}$ D) $\frac{1}{2}$

4941. $4\cos(\arccos 0,4)+\operatorname{arc}tg(tg0,1)$ ni hisoblang.

A) 0,26 B) 1,7 C) 1,6 D) 1,8

4942. $2\arccos(\cos 0,2)+3\cos(\arcsin\frac{2\sqrt{2}}{3})$ ni hisoblang.

A) 1,6 B) 3,4 C) 1,4 D) 2,4

4943. $\arccos(\cos(-0,5))$ ni hisoblang.

A) 8 B) -0,5 C) $\frac{1}{4}$ D) $\frac{1}{2}$

4944. $\cos\left(\frac{3\pi}{2}-\arcsin\frac{1}{3}\right)$ ni hisoblang.

A) 0,8 B) -0,5 C) $\frac{1}{3}$ D) $-\frac{1}{3}$

4945. $\sin(\arcsin(-0,2))+\cos(\pi+\arccos\frac{3}{4})$ ni hisoblang.

A) 0,95 B) 0,55 C) -0,95 D) 0,77

4946. $\sin(\pi-\arcsin\frac{3}{4})+\cos(\arcsin(-0,8))$ ni hisoblang.

A) 1,35 B) 1,36 C) $\frac{5}{4}$ D) $\frac{3}{20}$

4947. $\dfrac{\sin\left(\pi+\arcsin\frac{\sqrt{3}}{2}\right)}{\sin\left(0,5\pi+\arcsin\frac{\sqrt{3}}{2}\right)}$ ni hisoblang.

A) $\sqrt{2}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{\sqrt{3}}{4}$

4948. $\sin\left(\frac{\pi}{2}-\arccos\frac{3}{5}\right)$ ni hisoblang.

A) 0,8 B) 0,7 C) 0,6 D) 0,4

4949. $\sin\left(2\arcsin\frac{1}{3}\right)$ ni hisoblang.

A) $\frac{4\sqrt{2}}{9}$ B) $\frac{2\sqrt{2}}{9}$ C) $\frac{2\sqrt{2}}{3}$ D) $\frac{4\sqrt{2}}{3}$

4950. $\sin\left(2\arccos\frac{1}{3}\right)$ ni hisoblang.

A) $\frac{2\sqrt{2}}{9}$ B) $\frac{4\sqrt{2}}{9}$ C) $\frac{2\sqrt{2}}{3}$ D) 0

4951. $\cos\left(2\arcsin\frac{1}{3}\right)$ ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{1}{3}$ C) $-\frac{2}{3}$ D) $\frac{7}{9}$

4952. $\cos\left(2\arccos\frac{1}{3}\right)$ ni hisoblang.

A) 0,8 B) 0,7 C) $-\frac{7}{9}$ D) $\frac{2}{9}$

4953. $\sin\left(\frac{1}{2}\arccos\frac{1}{9}\right)$ ni hisoblang.

A) $\frac{4}{9}$ B) $\frac{2}{3}$ C) $\frac{8}{9}$ D) $\frac{2}{9}$

4954. $\sin\left(\arcsin\frac{\sqrt{2}}{2}-\arccos\frac{\sqrt{3}}{2}\right)$ ni hisoblang.

A) 1 B) $\frac{\sqrt{2+\sqrt{3}}}{2}$ C) 0 D) $\frac{\sqrt{2-\sqrt{3}}}{2}$

4955. $\sin\left(\arcsin\frac{15}{17}+\arccos(-\frac{12}{13})\right)$ ni hisoblang.

A) $-\frac{140}{221}$ B) $\frac{220}{221}$ C) 0 D) $\frac{140}{221}$

4956. $\cos\left(\arccos\frac{3}{5}-\arcsin\frac{12}{13}\right)$ ni hisoblang.

A) $\frac{63}{65}$ B) $\frac{63}{130}$ C) 1 D) $-\frac{63}{65}$

4957. $\cos\left(\arcsin\frac{5}{13}+\arccos\frac{3}{5}\right)$ ni hisoblang.

A) $\frac{8}{65}$ B) $\frac{63}{65}$ C) $\frac{16}{65}$ D) $\frac{63}{130}$

✓ $arctg(5x-1)=\frac{\pi}{4}$ tenglamani yeching.

A) $\frac{5}{2}$ B) 0 C) $\frac{2}{5}$ D) $\frac{1}{5}$

Yechilishi: Ikkita tomonini *tg* (tangenslaymiz):

$arctg(5x-1)=\frac{\pi}{4}$

$tg(arctg(5x-1))=tg\frac{\pi}{4}$ **Javob: (C)**

$5x-1=1$

$x=\frac{2}{5}$

4958. $\arcsin\left(\frac{x}{2}-3\right)=\frac{\pi}{6}$ tenglamani yeching.

A) 7 B) 6 C) −7 D) 1

4959. $\arccos(2x-3)=\frac{\pi}{3}$ tenglamani yeching.

A) $-\frac{7}{4}$ B) $\frac{4}{7}$ C) $\frac{7}{4}$ D) $\frac{-4}{7}$

4960. $arctg(3-5x)=-\frac{\pi}{3}$ tenglamani yeching.

A) $\frac{3+\sqrt{3}}{5}$ B) $\frac{3-\sqrt{3}}{5}$ C) $\frac{\sqrt{3}}{5}$ D) $-\frac{3+\sqrt{3}}{5}$

4961. $\arcsin(3-5x)=\frac{\pi}{2}$ tenglamani yeching.

A) $-\frac{5}{2}$ B) $\frac{5}{2}$ C) $\frac{2}{5}$ D) $-\frac{2}{5}$

4962. $\arccos(x+5)=\frac{\pi}{4}$ tenglamani yeching.

A) $\frac{\sqrt{2}+10}{2}$ B) $\frac{\sqrt{2}-10}{2}$

C) $\frac{10-\sqrt{2}}{2}$ D) $\frac{\sqrt{2}+5}{2}$

4963. $arctg\left(\frac{x}{3}+4\right)=\frac{\pi}{3}$ tenglamani yeching.

A) $-3\sqrt{3}+12$ B) $3\sqrt{3}+12$

C) $3\sqrt{3}-12$ D) $\sqrt{3}+4$

4964. $\arcsin(3x-2)=0$ tenglamani yeching.

A) $\frac{3}{2}$ B) $\frac{2}{3}$ C) $-\frac{3}{2}$ D) $-\frac{2}{3}$

4965. $arctg\left(\frac{x+1}{8}\right)=0$ tenglamani yeching.

A) 0 B) −1 C) 1 D) 2

4966. $arctg(3+x)=-\frac{\pi}{4}$ tenglamani yeching.

A) 1 B) 1 C) −4 D) 0

4967. $\arccos\frac{x+1}{3}=\frac{2\pi}{3}$ tenglamani yeching.

A) −2,5 B) $\frac{10}{4}$ C) $\frac{4}{10}$ D) 0,4

4968. $\arcsin\left(\frac{x}{12}+36\right)=0$ tenglamani yeching.

A) −432 B) 3 C) −3 D) 342

4969. $\arccos\frac{2x+1}{4}=\frac{\pi}{2}$ tenglamani yeching.

A) $-\frac{1}{2}$ B) $\frac{1}{2}$ C) $\frac{\sqrt{2}}{2}$ D) $\frac{\sqrt{3}}{2}$

4970. $\arccos\frac{x^2+1}{3}=0$ tenglamani yeching.

A) $-\frac{\sqrt{2}}{2}$ B) $\sqrt{2}$ C) $\frac{\sqrt{2}}{2}$ D) $\pm\sqrt{2}$

4971. $\arcsin(3-2x)=-\frac{\pi}{4}$ tenglamani yeching.

A) $-\frac{6+\sqrt{2}}{4}$ B) $\frac{6-\sqrt{2}}{4}$

C) $\frac{6+\sqrt{2}}{4}$ D) $\frac{6+\sqrt{2}}{2}$

4972. $\arccos(x^2-3)=\pi$ tenglamani yeching.

A) $-\frac{\sqrt{2}}{2}$ B) $\sqrt{2}$ C) $\frac{\sqrt{2}}{2}$ D) $\pm\sqrt{2}$

4973. $\arcsin(4x+11)=\frac{5\pi}{6}$ tenglamani yeching.

A) $-\frac{21}{8}$ B) $\frac{21}{8}$ C) $-\frac{21}{4}$ D) $\varnothing$

4974. $arctg(x+5)=\frac{\pi}{2}$ tenglamani yeching.

A) −5 B) 5 C) $\frac{1}{5}$ D) $\varnothing$

✓ $\arcsin\left(\sin\frac{6\pi}{7}\right)$ ni hisoblang.

A) $\frac{\pi}{7}$ B) $\frac{6\pi}{7}$ C) $\frac{\pi}{2}$ D) 0

Yechilishi: Formula

$\left.\begin{matrix}\arcsin b=x\\ arctgb=x\end{matrix}\right\}-\frac{\pi}{2}\le x\le\frac{\pi}{2}$ $\qquad$ $\left.\begin{matrix}\arccos b=x\\ arcctgb=x\end{matrix}\right\}0\le x\le\pi$

$\arcsin\left(\sin\frac{6\pi}{7}\right)=\frac{6\pi}{7}$ *xato chunki:* $\frac{6\pi}{7}\notin\left[-\frac{\pi}{2};\frac{\pi}{2}\right]$

$\arcsin\left(\sin\frac{6\pi}{7}\right)=\arcsin\left(\sin(\pi-\frac{\pi}{7})\right)=\arcsin\left(\sin\frac{\pi}{7}\right)=\frac{\pi}{7}$

to'g'ri $\qquad \frac{\pi}{7}\in\left[-\frac{\pi}{2};\frac{\pi}{2}\right]$

Javob: (A)

IZOH: Qolgan arcsin*b*, arctg*b*, arcctg*b* lar ham shu kabi oraliqqa tushushiga qarab topiladi.

4975. $\arcsin\left(\sin\frac{5\pi}{8}\right)$ ni hisoblang.

A) $\frac{\pi}{8}$ B) 0 C) $\frac{3\pi}{8}$ D) $\frac{5\pi}{8}$

4976. $\arccos\left(\cos\frac{9\pi}{5}\right)$ ni hisoblang.

A) π B) $\frac{2\pi}{5}$ C) $\frac{9\pi}{3}$ D) $\frac{\pi}{5}$

4977. $\arccos\left(\cos\frac{8\pi}{7}\right)$ ni hisoblang.

A) 0 B) $\frac{8\pi}{7}$ C) $\frac{\pi}{7}$ D) $\frac{6\pi}{7}$

4978. $\arccos\left(\cos\frac{4\pi}{3}\right)$ ni hisoblang.

A) $\frac{2\pi}{3}$ B) $\frac{\pi}{3}$ C) $-\frac{\pi}{4}$ D) $-\frac{\pi}{3}$

4979. $\operatorname{arc}tg\left(tg\frac{7\pi}{8}\right)$ ni hisoblang.

A) $-\frac{\pi}{8}$ B) 0 C) $\frac{\pi}{6}$ D) $\frac{\pi}{8}$

4980. $\arcsin\left(\sin\frac{11\pi}{9}\right)+\arccos\left(\cos\frac{9\pi}{7}\right)$ ni hisoblang.

A) 1 B) $\frac{31\pi}{63}$ C) $\frac{4\pi}{65}$ D) $\frac{5\pi}{63}$

4981. $\arccos(\cos 4)$ ni hisoblang.

A) $2\pi-4$ B) $\pi-4$ C) $\frac{\pi}{2}-4$ D) $4-\pi$

4982. $\arcsin(\sin 5)$ ni hisoblang.

A) $5-2\pi$ B) $5-\pi$ C) $\frac{5-2\pi}{2}$ D) $2\pi-5$

✓ $tg(\arccos\frac{3}{5})$ ni hisoblang.

A) $\frac{4}{5}$ B) $\frac{3}{5}$ C) $\frac{4}{3}$ D) $\frac{3}{7}$

Yechilishi: Formulalar:

$tg(\arccos b)=\frac{\sqrt{1-b^2}}{b}$; $\quad tg(\arcsin b)=\frac{b}{\sqrt{1-b^2}}$;

$\sin(\operatorname{arc}tg\, b)=\frac{b}{\sqrt{1+b^2}}$; $\quad \cos(\operatorname{arc}tg\, b)=\frac{1}{\sqrt{1+b^2}}$

$ctg(\arccos b)=\frac{b}{\sqrt{1-b^2}}$; $\quad ctg(\arcsin b)=\frac{\sqrt{1-b^2}}{b}$;

$\cos(\operatorname{arc}ctgb)=\frac{b}{\sqrt{1+b^2}}$; $\quad \sin(\operatorname{arc}ctgb)=\frac{1}{\sqrt{1+b^2}}$;

$$tg(\arccos\frac{3}{5})=\frac{\sqrt{1-\left(\frac{3}{5}\right)^2}}{\frac{3}{5}}=\frac{4}{3}$$ **Javob: (C)**

4983. $tg\left(\arcsin\frac{1}{\sqrt{10}}\right)$ ni hisoblang.

A) $\frac{1}{6}$ B) $\frac{1}{3}$ C) $\frac{3}{7}$ D) 3

4984. $ctg(\arccos\frac{3}{\sqrt{10}})$ ni hisoblang.

A) 6 B) $\frac{1}{3}$ C) $\sqrt{3}$ D) 3

4985. $tg\left(\pi-\arcsin\frac{4}{5}\right)$ ni hisoblang.

A) 0,8 B) –0,5 C) $\frac{1}{3}$ D) $-\frac{4}{3}$

4986. $ctg\left(\arccos(-\frac{1}{3})-\pi\right)$ ni hisoblang.

A) 0,5 B) 0,7 C) $-\frac{\sqrt{2}}{4}$ D) $\frac{\sqrt{2}}{4}$

4987. $tg(2\arcsin\frac{3}{4})$ ni hisoblang.

A) $3\sqrt{7}$ B) $-\sqrt{7}$ C) 0 D) $-3\sqrt{7}$

4988. $5tg(\frac{1}{2}\arcsin\frac{5}{13})$ ni hisoblang.

A) 1 B) 10 C) $\frac{1}{25}$ D) $\frac{1}{5}$

4989. $\cos\left(arcctg(-\frac{1}{5})\right)$ ni hisoblang.

A) $-\frac{\sqrt{6}}{9}$ B) $-\frac{\sqrt{26}}{26}$ C) $\frac{3\sqrt{26}}{26}$ D) $-\frac{\sqrt{26}}{13}$

4990. $tg(\operatorname{arc}tg\,3+\operatorname{arc}tg\,7)$ ni hisoblang.

A) 0,5 B) 0,25 C) –0,5 D) 0

4991. $tg\left(\arcsin\frac{\sqrt{3}}{2}+arctg\sqrt{3}\right)$ ni hisoblang.

A) 3 B) $-\sqrt{3}$ C) $-\sqrt{3}/2$ D) –1

4992. $tg\left(\operatorname{arc}tg\,2+\arccos\frac{12}{13}\right)$ ni hisoblang.

A) $\frac{29}{2}$ B) $\frac{2}{13}$ C) $\frac{1}{2}$ D) $\frac{19}{22}$

4993. $\operatorname{arc}tg\frac{1}{2}+\operatorname{arc}tg\frac{1}{3}$ ni hisoblang.

A) 1 B) $arctg\frac{5}{6}$ C) $\frac{\pi}{4}$ D) $arctg\frac{1}{6}$

4994. $\operatorname{arc}ctg\,3-\operatorname{arc}tg\,2$ ni hisoblang.

A) $\frac{\pi}{4}$ B) $-\frac{\pi}{4}$ C) $\frac{\pi}{6}$ D) 0

4995. $\operatorname{arc}tg\,3-\arcsin\frac{\sqrt{5}}{5}$ ni hisoblang.

A) 1 B) 0 C) $\frac{\pi}{2}$ D) $\frac{\pi}{4}$

4996. $\arcsin\frac{4}{5}+\arccos\frac{1}{\sqrt{50}}$ ni hisoblang.

A) $\frac{\pi}{6}$ B) $\frac{3\pi}{4}$ C) 0 D) $\frac{\pi}{4}$

TRIGONOMETRIK TENGLAMALAR

✓ $\cos x=\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $\pm\frac{\pi}{4}+2\pi k$ B) $\frac{\pi}{4}+2\pi k$

C) $\pm\frac{\pi}{4}+\pi k$ D) $\pm\frac{\pi}{4}-2\pi k$

Yechilishi:

I

$\sin x=a,\ |a|\le 1$

$x=(-1)^n \arcsin a+\pi n,\ n\in Z.$

$\sin^2 x=a,\ 0\le a\le 1$

$x=\pm\arcsin\sqrt{a}+\pi n,\ n\in Z$

Xususiy hollar:

$\sin x=0$

$x=\pi n$

$\sin x=1$

$x=\frac{\pi}{2}+2\pi n$

$\sin x=-1$

$x=-\frac{\pi}{2}+2\pi n$

II

$\cos x=a,\ |a|\le 1$

$x=\pm\arccos a+2\pi n,\ n\in Z.$

$\cos^2 x=a,\ 0\le a\le 1$

$x=\pm\arccos\sqrt{a}+\pi n,\ n\in Z.$

Xususiy hollar:

$\cos x=0$

$x=\frac{\pi}{2}+\pi n$

$\cos x=1$

$x=2\pi n$

$\cos x=-1$

$x=\pi+2\pi n$

III

$tgx=a,\ a\in R$

$x=\operatorname{arctg} a+\pi n,\ n\in Z$

$tg^2 x=a,\ 0\le a<+\infty$

$x=\pm\operatorname{arctg}\sqrt{a}+\pi n\ \ n\in Z.$

IV

$ctgx=a,\ a\in R$

$x=\operatorname{arcctg} a+\pi n,\ n\in Z$

$ctg^2 x=a,\ 0\le a<+\infty$

$x=\pm\operatorname{arcctg}\sqrt{a}+\pi n,\ \ n\in Z$

$\cos x=\frac{\sqrt{2}}{2}$

$x=\pm\arccos\frac{\sqrt{2}}{2}+2\pi n,$

$x=\pm\frac{\pi}{4}+2\pi k$

$\Leftarrow$ $\cos x=a,\ |a|\le 1$

$x=\pm\arccos a+2\pi n,\ n\in Z.$

4997. $\cos x=\frac{1}{2}$ tenglamani yeching.

A) $\frac{\pi}{3}+2\pi k$ B) $\pm\frac{\pi}{3}+\pi k$

C) $\pm\frac{\pi}{3}-2\pi k$ D) $\pm\frac{\pi}{3}+2\pi k$

4998. $\cos x=-\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $\pm\frac{\pi}{6}+2\pi k$ B) $\pm\frac{5\pi}{6}+2\pi k$

C) $-\frac{\pi}{6}+2\pi k$ D) $\frac{5\pi}{6}+2\pi k$

4999. $\cos x=-\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $\pm\frac{3\pi}{4}+\pi k$ B) $-\frac{\pi}{4}+2\pi k$

C) $\pm\frac{3\pi}{4}+2\pi k$ D) $\frac{3\pi}{4}+2\pi k$

5000. $\cos x=\frac{1}{3}$ tenglamani yeching.

A) $\pm\arccos\frac{1}{3}+2\pi k$ B) $\pm\arccos\frac{1}{3}-2\pi k$

C) $\arccos\frac{1}{3}+2\pi k$ D) yechim yo'q

5001. $\cos x=\frac{3}{4}$ tenglamani yeching.

A) $\pm\arccos\frac{3}{4}+\pi k$ B) $\pm\arccos\frac{3}{4}+2\pi k$

C) $\pm\arccos\frac{3}{4}-2\pi k$ D) $\arccos\frac{3}{4}+2\pi k$

5002. $\sin x=\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $(-1)^k\frac{\pi}{6}+\pi k$ B) $(-1)^k\frac{\pi}{3}+2\pi k$

C) $(-1)^k\frac{\pi}{3}+\pi k$ D) $\frac{\pi}{3}+\pi k$

5003. $\sin x=\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $(-1)^{k+1}\frac{\pi}{4}+\pi k$ B) $(-1)^k\frac{\pi}{4}+\pi k$

C) $\frac{\pi}{4}+\pi k$ D) $(-1)^k\frac{\pi}{4}+2\pi k$

5004. $\sin x=-\frac{1}{\sqrt{2}}$ tenglamani yeching.

A) $(-1)^k\frac{\pi}{4}+\pi k$ B) $(-1)^k\frac{\pi}{4}+2\pi k$

C) $-\frac{\pi}{4}+\pi k$ D) $(-1)^{k+1}\frac{\pi}{4}+\pi k$

5005. $\sin x=-\frac{1}{2}$ tenglamani yeching.

A) $(-1)^{k+1}\frac{\pi}{6}+\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $(-1)^k\frac{\pi}{6}+\pi k$ D) $-\frac{\pi}{6}+\pi k$

5006. $\sin x=\frac{3}{4}$ tenglamani yeching.

A) $(-1)^{k+1}\arcsin\frac{3}{4}+\pi k$ B) $(-1)^k\arcsin\frac{3}{4}+2\pi k$

C) $(-1)^k\arcsin\frac{3}{4}+\pi k$ D) $\arcsin\frac{3}{4}+\pi k$

5007. $\cos x=-0,3$ tenglamani yeching.

A) $-\arccos 0,3+2\pi k$ B) $\pm\arccos(-0,3)+\pi k$

C) $\pm\arccos(-0,3)-2\pi k$ D) $\pm\arccos(-0,3)+2\pi k$

5008. $tgx=\frac{1}{\sqrt{3}}$ tenglamani yeching.

A) $\frac{\pi}{6}+2\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $\frac{\pi}{3}+\pi k$ D) $\frac{\pi}{3}+2\pi k$

5009. $tgx=\sqrt{3}$ tenglamani yeching.

A) $\frac{\pi}{6}+2\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $\frac{\pi}{3}+\pi k$ D) $\frac{\pi}{3}+2\pi k$

5010. $tgx=-\sqrt{3}$ tenglamani yeching.

A) $-\frac{\pi}{6}+\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $-\frac{\pi}{3}+\pi k$ D) $\frac{\pi}{3}+\pi k$

5011. $tgx=4$ tenglamani yeching.

A) $arctg4+\pi k$ B) $arctg4+2\pi k$

C) $\pm arctg4+\pi k$ D) $-arctg4+2\pi k$

5012. $tgx=-5$ tenglamani yeching.

A) $arctg(-5)+\pi k$ B) $arctg5+2\pi k$

C) $-arcctg0,5+\pi k$ D) $-arctg5+2\pi k$

5013. $\cos x=-0,2$ tenglamani yeching.

A) $\arccos(-0,2)+2\pi k$ B) $\pm\arccos(-0,2)-2\pi k$

C) $\pm\arccos(-0,2)+\pi k$ D) $\pm\arccos(-0,2)+2\pi k$

✓ $\cos 3x=\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $\pm\frac{\pi}{4}+2\pi k$ B) $\pm\frac{\pi}{12}+\frac{2\pi k}{3}$

C) $\pm\frac{\pi}{4}+\pi k$ D) $\pm\frac{\pi}{4}-2\pi k$

Yechilishi:

$$cos3x=\frac{\sqrt{2}}{2}$$

$$3x=\pm\, arccos\frac{\sqrt{2}}{2}+2\pi n, \quad \Leftarrow \boxed{\begin{array}{l} cosx=a, \quad |a|\le 1 \\ x=\pm\, arccosa+2\pi n,\ n\in Z. \end{array}}$$

$$3x=\pm\frac{\pi}{4}+2\pi k$$

$$x=\pm\frac{\pi}{12}+\frac{2\pi k}{3}$$

Javob: (B)

5014. $\cos 4x=1$ tenglamani yeching.

A) $\frac{\pi k}{2}$ B) $\pm\frac{\pi k}{2}$ C) $-\frac{\pi k}{2}$ D) πk

5015. $\cos 2x=\frac{1}{2}$ tenglamani yeching.

A) $\frac{\pi}{6}+\pi k$ B) $\pm\frac{\pi}{6}+\pi k$

C) $\pm\frac{\pi}{6}+2\pi k$ D) $\pm\frac{\pi}{3}+2\pi k$

5016. $\cos 2x=-1$ tenglamani yeching.

A) $\pm\frac{\pi}{2}+\pi k$ B) $\frac{\pi}{2}+2\pi k$

C) $\frac{\pi}{2}+\pi k$ D) $-\frac{\pi}{2}+\pi k$

5017. $\sqrt{2}\cos\frac{x}{4}=-1$ tenglamani yeching.

A) $\pm 3\pi+8\pi k$ B) $\pm 3\pi+4\pi k$

C) $3\pi+8\pi k$ D) $-3\pi+8\pi k$

5018. $2\cos\frac{x}{3}=\sqrt{3}$ tenglamani yeching.

A) $\frac{\pi}{2}+6\pi k$ B) $\frac{\pi}{2}+3\pi k$

C) $\pm\frac{\pi}{2}+3\pi k$ D) $\pm\frac{\pi}{2}+6\pi k$

5019. $sin3x=\frac{1}{2}$ tenglamani yeching.

A) $(-1)^k\frac{\pi}{18}+\frac{\pi k}{3}$ B) $(-1)^k\frac{\pi}{6}+\pi k$

C) $(-1)^k\frac{\pi}{18}+\pi k$ D) $(-1)^{k+1}\frac{\pi}{18}+\frac{\pi k}{3}$

5020. $\sin\frac{x}{14}=\frac{1}{\sqrt{2}}$ tenglamani yeching.

A) $(-1)^k\frac{\pi}{2}+14\pi k$ B) $(-1)^{k+1}\frac{7\pi}{2}+14\pi k$

C) $(-1)^k\frac{7\pi}{2}+14\pi k$ D) $(-1)^k\frac{7\pi}{2}+7\pi k$

5021. $\sin 3x=1$ tenglamani yeching.

A) $(-1)^{k+1}\frac{\pi}{6}+\frac{\pi}{3}k$ B) $(-1)^k\frac{\pi}{6}+\frac{2\pi}{3}k$

C) $\frac{\pi}{6}+\frac{\pi}{3}k$ D) $\frac{\pi}{6}+\frac{2\pi}{3}k$

5022. $\sin 2x=-1$ tenglamani yeching.

A) $-\frac{\pi}{4}+\pi k$ B) $\frac{\pi}{4}+\frac{\pi}{2}k$

C) $-\frac{\pi}{2}+2\pi k$ D) $\frac{3\pi}{4}+\pi k$

5023. $\sqrt{2}\sin\frac{x}{3}=-1$ tenglamani yeching.

A) $(-1)^{k+1}\frac{3\pi}{4}+\frac{\pi}{3}k$ B) $(-1)^k\frac{3\pi}{4}+3\pi k$

C) $(-1)^{k+1}\frac{3\pi}{4}+3\pi k$ D) $(-1)^{k+1}\frac{\pi}{12}+\frac{\pi}{3}k$

5024. $2\sin\frac{x}{2}=\sqrt{3}$ tenglamani yeching.

A) $(-1)^k\frac{2\pi}{3}+\pi k$ B) $(-1)^k\frac{2\pi}{3}+2\pi k$

C) $(-1)^{k+1}\frac{2\pi}{3}+2\pi k$ D) $(-1)^k\frac{\pi}{3}+\pi k$

5025. $\sin 4x\cos 2x=\cos 4x\sin 2x$ tenglamani yeching.

A) πk B) $\frac{\pi k}{2}$ C) $-\frac{\pi}{4}k$ D) $\frac{\pi k}{4}$

5026. $\cos 2x\sin 3x=\sin 2x\cos 3x$ tenglamani yeching.

A) $\frac{\pi k}{2}$ B) πk C) $-\frac{\pi}{2}k$ D) $-\pi k$

5027. $\cos x\cos 3x=\sin 3x\sin x$ tenglamani yeching.

A) $\frac{\pi}{8}+\frac{\pi k}{4}$ B) $\pm\frac{\pi}{8}+\frac{\pi k}{4}$

C) $\pm\frac{\pi}{8}+\frac{\pi k}{8}$ D) $-\frac{\pi}{8}+\frac{\pi k}{4}$

5028. $\cos 2x\cos x+\sin 2x\sin x=0$ tenglamani yeching.

A) $\pm\frac{\pi}{2}+\pi k$ B) $\frac{\pi}{2}+\frac{\pi k}{2}$

C) $\frac{\pi}{2}+\pi k$ D) $\pm\frac{\pi}{2}+\frac{\pi k}{2}$

5029. $\cos\frac{x}{4}=\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $\pm\pi+8\pi k$ B) $\pm\frac{\pi}{4}+2\pi k$

C) $\pm\pi+4\pi k$ D) $\pi+8\pi k$

5030. $tg2x=0$ tenglamani yeching.

A) πk B) $2\pi k$ C) $\frac{\pi k}{2}$ D) $\frac{\pi k}{3}$

5031. $tg3x=0$ tenglamani yeching.

A) πk B) $3\pi k$ C) $\frac{3\pi k}{2}$ D) $\frac{\pi k}{3}$

✓ $\cos\left(2x+\frac{\pi}{6}\right)=-\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $\frac{7\pi}{24}+\pi k;\ -\frac{11\pi}{24}+\pi k$ B) $\pm\frac{\pi}{12}+\frac{2\pi k}{3}$

C) $\pm\frac{\pi}{4}+\pi k$ D) $\pm\frac{\pi}{4}-2\pi k$

Yechilishi:

$$\cos\left(2x+\frac{\pi}{6}\right)=-\frac{\sqrt{2}}{2}$$

$$2x+\frac{\pi}{6}=\pm\ arccos(-\frac{\sqrt{2}}{2})+2\pi n,$$

$$2x+\frac{\pi}{6}=\pm\frac{3\pi}{4}+2\pi k$$

$2x+\frac{\pi}{6}=\frac{3\pi}{4}+2\pi k$

$2x=\frac{3\pi}{4}-\frac{\pi}{6}+2\pi k$

$x=\frac{7\pi}{24}+\pi k$

$2x+\frac{\pi}{6}=-\frac{3\pi}{4}+2\pi k$

$2x=-\frac{3\pi}{4}-\frac{\pi}{6}+2\pi k$

$x=-\frac{11\pi}{24}+\pi k$

J: (A)

5032. $\cos\left(x+\frac{\pi}{3}\right)=0$ tenglamani yeching.

A) $\frac{\pi}{6}+2\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $-\frac{\pi}{6}+\pi k$ D) $\pm\frac{\pi}{6}+2\pi k$

5033. $\cos\left(2x-\frac{\pi}{4}\right)=0$ tenglamani yeching.

A) $\pm\frac{3\pi}{8}+\frac{\pi}{2}k$ B) $\frac{3\pi}{8}+\pi k$

C) $\frac{3\pi}{8}+\frac{\pi}{2}k$ D) $\frac{3\pi}{8}+\frac{\pi}{4}k$

5034. $\cos(3x+1)=\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $\pm\frac{\pi}{18}+\frac{2\pi k}{3}$ B) $\pm\frac{\pi}{18}+\frac{2\pi k}{3}+\frac{1}{3}$

C) $\frac{\pi}{18}+\frac{\pi k}{3}-\frac{1}{3}$ D) $\pm\frac{\pi}{18}+\frac{2\pi k}{3}-\frac{1}{3}$

5035. $\cos\left(x+\frac{\pi}{6}\right)=-\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $\frac{2\pi}{3}+2\pi k;\pi+2\pi k$ B) $\frac{2\pi}{3}+2\pi k;-\pi+2\pi k$

C) $\pm\frac{2\pi}{3}+2\pi k;-\pi+2\pi k$ D) $\frac{2\pi}{3}+2\pi k;-\pi+\pi k$

5036. $\sin\left(x+\frac{3\pi}{4}\right)=0$ tenglamani yeching.

A) $(-1)^k\ \frac{3\pi}{4}+2\pi k$ B) $(-1)^k\ \frac{3\pi}{4}+\pi k$

C) $\frac{3\pi}{4}+\pi k$ D) $-\frac{3\pi}{4}+\pi k$

5037. $\sin\left(2x+\frac{\pi}{2}\right)=0$ tenglamani yeching.

A) $\frac{\pi}{4}+\frac{\pi}{2}k$ B) $-\frac{\pi}{4}+\pi k$

C) $-\frac{\pi}{4}+\frac{\pi}{2}k$ D) $-\frac{\pi}{4}-\frac{\pi}{2}k$

5038. $\sin\left(3x+\frac{\pi}{8}\right)=\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $\frac{5\pi}{72}k$ B) $(-1)^k\ \frac{\pi}{9}-\frac{\pi}{24}+\frac{\pi}{3}k$

C) $(-1)^k\ \frac{\pi}{3}$ D) $(-1)^k\ \frac{\pi}{24}-\frac{\pi}{18}+\pi k$

5039. $tg\left(2x+\frac{\pi}{4}\right)=-1$ tenglamani yeching.

A) $-\frac{\pi}{4}+\frac{\pi k}{2}$ B) $\frac{\pi}{4}+\frac{\pi k}{2}$

C) $\frac{\pi k}{2}$ D) $-\frac{\pi}{2}+\frac{\pi k}{2}$

5040. $tg\left(3x-\frac{\pi}{4}\right)=\frac{1}{\sqrt{3}}$ tenglamani yeching.

A) $\frac{5\pi}{108}+\pi k$ B) $\frac{5\pi}{12}+\frac{\pi k}{3}$

C) $\pm\frac{5\pi}{36}+\frac{\pi k}{3}$ D) $\frac{5\pi}{36}+\frac{\pi k}{3}$

5041. $\sqrt{3}-tg\left(x-\frac{\pi}{5}\right)=0$ tenglamani yeching.

A) $\frac{8\pi}{15}+2\pi k$ B) $\frac{8\pi}{15}+\pi k$

C) $\frac{\pi}{2}+\pi k$ D) $-\frac{8\pi}{15}+\pi k$

5042. $1-tg\left(x+\frac{\pi}{7}\right)=0$ tenglamani yeching.

A) $\frac{3\pi}{14}+\pi k$ B) $\frac{3\pi}{28}+\pi k$

C) $-\frac{3\pi}{28}+2\pi k$ D) $\frac{3\pi}{28}+2\pi k$

5043. $\sin\left(2x+\frac{\pi}{6}\right)=-\frac{\sqrt{3}}{2}$ tenglamani yeching.

A) $(-1)^k\ \frac{\pi}{12}-\frac{\pi}{12}+\frac{\pi}{2}k$ B) $(-1)^{k+1}\ \frac{\pi}{6}-\frac{\pi}{6}+\pi k$

C) $(-1)^{k+1}\ \frac{\pi}{6}-\frac{\pi}{12}+\frac{\pi}{2}k$ D) $(-1)^k\ \frac{\pi}{6}-\frac{\pi}{6}+\pi k$

5044. $\sin\left(x-\frac{\pi}{16}\right)=-\frac{\sqrt{2}}{2}$ tenglamani yeching.

A) $(-1)^k\ \frac{\pi}{4}+\frac{\pi}{16}+\pi k$ B) $(-1)^{k+1}\ \frac{\pi}{4}+\frac{\pi}{16}+2\pi k$

C) $\frac{\pi}{4}+\frac{\pi}{16}+\pi k$ D) $(-1)^{k+1}\ \frac{\pi}{4}+\frac{\pi}{16}+\pi k$

5045. $\cos\left(2x+\frac{\pi}{19}\right)=3$ tenglamani yeching.

A) $\pm\frac{\arccos 3}{2}-\frac{\pi}{38}+\pi k$ B) $\pm\frac{\arccos 3}{2}-\frac{\pi}{38}+2\pi k$

C) $\frac{\arccos 3}{2}-\frac{\pi}{38}+\pi k$ D) yechim yo'q

5046. $\sin\left(\frac{x}{21}+\frac{\pi}{19}\right)=5$ tenglamani yeching.

A) $(-1)^k\ 21\arcsin 5-\frac{21\pi}{19}+21\pi k$

B) $(-1)^{k+1}\ 21\arcsin 5-\frac{21\pi}{19}+21\pi k$

C) $(-1)^k\ \arcsin 5-\frac{\pi}{19}+\pi k$

D) yechim yo'q

5047. $\sin\left(\frac{x}{18}+\frac{\pi}{16}\right)=-4,5$ tenglamani yeching.

A) $(-1)^{k+1}\ 18\arcsin 4,5-\frac{9\pi}{8}+18\pi k$

B) $(-1)^k 18\arcsin 4,5-\frac{9\pi}{8}+18\pi k$

C) $(-1)^{k+1}\arcsin 4,5-\frac{\pi}{16}+\pi k$

D) $R\in\varnothing$

5048. $\cos\left(\frac{x}{8}+\frac{\pi}{3}\right)=2$ tenglamani yeching.

A) $\pm\frac{\arccos 2}{2}-\frac{\pi}{18}+\pi k$ B) $\pm\frac{\arccos 2}{2}-\frac{\pi}{18}+2\pi k$

C) $\pm\frac{\arccos 2}{2}+\frac{\pi}{18}+\pi k$ D) yechim yo'q

5049. $\cos\left(\frac{x}{21}+\frac{\pi}{19}\right)=-5$ tenglamani yeching.

A) $\pm\frac{\arccos 21}{2}-\frac{\pi}{38}+\pi k$ B) $\pm\frac{\arccos 21}{2}+\frac{\pi}{38}+\pi k$

C) $\frac{\arccos 21}{2}-\frac{\pi}{38}+\pi k$ D) $\varnothing$

5050. $\cos^2 2x=1+\sin^2 2x$ tenglamani yeching.

A) $\frac{\pi k}{2}$ B) $-\frac{\pi k}{2}$ C) πk D) $\frac{\pi k}{4}$

5051. $4\cos^2 x=3$ tenglamani yeching.

A) $\pm\frac{\pi}{6}+2\pi k$ B) $\frac{\pi}{6}+\pi k$

C) $\pm\frac{\pi}{6}-\pi k$ D) $\pm\frac{\pi}{6}+\pi k$

5052. $2\cos^2 x=1+2\sin^2 x$ tenglamani yeching.

A) $\pm\frac{\pi}{6}+\pi k$ B) $\frac{\pi}{6}+2\pi k$

C) $\frac{\pi}{6}+2\pi k$ D) $-\frac{\pi}{6}+\pi k$

5053. $(1+\cos x)(3-2\cos x)=0$ tenglamani yeching.

A) $\pm\pi+2\pi k$ B) $\pi+2\pi k$

C) $\frac{\pi}{2}+2\pi k$ D) $\pi+\pi k$

5054. $(1-\cos x)(4+3\cos 2x)=0$ tenglamani yeching.

A) $-\pi+2\pi k$ B) $2\pi k$

C) $\pi+\pi k$ D) $\pi+2\pi k$

5055. $(1+2\cos x)(1-3\cos x)=0$ tenglamani yeching.

A) $\pm\frac{2\pi}{3}+2\pi k;\arccos\frac{1}{3}+2\pi k$

B) $\frac{2\pi}{3}+2\pi k;\pm\arccos\frac{1}{3}+2\pi k$

C) $\pm\frac{2\pi}{3}+2\pi k;\pm\arccos\frac{1}{3}+\pi k$

D) $\pm\frac{2\pi}{3}+2\pi k;\pm\arccos\frac{1}{3}+2\pi k$

5056. $\sin x=\frac{2}{7}$ tenglamani yeching.

A) $(-1)^{k+1}\arcsin\frac{2}{7}+\pi k$ B) $\arcsin\frac{2}{7}+\pi k$

C) $(-1)^k\arcsin\frac{2}{7}+2\pi k$ D) $(-1)^k\ \arcsin\frac{2}{7}+\pi k$

5057. $\sin x=-\frac{1}{4}$ tenglamani yeching.

A) $(-1)^{k+1}\ \arcsin\frac{1}{4}+2\pi k$

B) $(-1)^{k+1}\ \arcsin\frac{1}{4}+\pi k$

C) $(-1)^k\ \arcsin\frac{1}{4}+\pi k$

D) $\arcsin\frac{1}{4}+\pi k$

5058. $\sin x=\frac{\sqrt{5}}{3}$ tenglamani yeching.

A) $(-1)^k\ \arcsin\frac{\sqrt{5}}{3}+\pi k$

B) $(-1)^k\ \arcsin\frac{\sqrt{5}}{3}+2\pi k$

C) $\arcsin\frac{\sqrt{5}}{3}+\pi k$

D) $(-1)^{k+1}\ \arcsin\frac{\sqrt{5}}{3}+\pi k$

5059. $\sin\left(\frac{x}{3}-\frac{\pi}{13}\right)=-\frac{1}{2}$ tenglamani yeching.

A) $(-1)^{k+1}\ \frac{\pi}{2}+\frac{3\pi}{13}+3\pi k$

B) $(-1)^{k}\ \frac{\pi}{2}+\frac{3\pi}{13}+3\pi k$

C) $(-1)^{k+1}\ \frac{\pi}{2}+\frac{3\pi}{13}+\pi k$

D) $(-1)^{k+1}\ \frac{\pi}{18}+\frac{3\pi}{13}+3\pi k$

5060. $\sin\left(\frac{x}{8}+\frac{\pi}{3}\right)=2$ tenglamani yeching.

A) $(-1)^{k}\ \arcsin 2+\pi k$ B) $(-1)^{k}\ \arcsin 2+2\pi k$

C) $\arcsin 2+\pi k$ D) $\varnothing$

5061. $1-4\sin x\cos x=0$ tenglamani yeching.

A) $(-1)^{k}\ \frac{\pi}{6}+\pi k$ B) $(-1)^{k}\ \frac{\pi}{12}+\frac{\pi k}{2}$

C) $\frac{\pi}{12}+\frac{\pi k}{2}$ D) $(-1)^{k+1}\ \frac{\pi}{12}+\frac{\pi k}{2}$

5062. $\sqrt{3}+4\sin x\cos x=0$ tenglamani yeching.

A) $(-1)^{k+1}\ \frac{\pi}{6}+\frac{\pi k}{2}$ B) $(-1)^{k}\ \frac{\pi}{6}+\frac{\pi k}{2}$

C) $(-1)^{k+1}\ \frac{\pi}{3}+\pi k$ D) $\frac{\pi}{6}+\frac{\pi k}{2}$

5063. $1+6\sin\frac{x}{4}\cos\frac{x}{4}=0$ tenglamani yeching.

A) $(-1)^{k+1}\ \arcsin\frac{1}{3}+\pi k$

B) $2\arcsin\frac{1}{3}+2\pi k$

C) $(-1)^{k+1}\ 2\arcsin\frac{1}{3}+2\pi k$

D) $(-1)^{k}\ 2\arcsin\frac{1}{3}+2\pi k$

5064. $(2\sin x-1)(3\sin x+1)=0$ tenglamani yeching.

A) $(-1)\arcsin\frac{1}{3}+\pi k;(-1)^{k}\ \frac{\pi}{6}+\pi k$

B) $(-1)^{k+1}\ \arcsin\frac{1}{3}+\pi k;(-1)^{k}\ \frac{\pi}{6}+\pi k$

C) $(-1)^{k+1}\ \arcsin\frac{1}{3}+\pi k;\ \frac{\pi}{6}+\pi k$

D) $\arcsin\frac{1}{3}+\pi k;\ (-1)^{k}\ \frac{\pi}{6}+\pi k$

5065. $(4\sin x-3)(3\sin x+1)=0$ tenglamani yeching.

A) $(-1)^{k}\arcsin\frac{3}{4}+\pi k;\ \ \arcsin\frac{1}{3}+\pi k$

B) $\arcsin\frac{3}{4}+\pi k;\ \ (-1)^{k}\arcsin\frac{1}{3}+\pi k$

C) $\arcsin\frac{3}{4}+\pi k;\ \ (-1)^{k+1}\arcsin\frac{1}{3}+\pi k$

D) $(-1)^{k}\ \arcsin\frac{3}{4}+\pi k;\ \ (-1)^{k+1}\ \arcsin\frac{1}{3}+\pi k$

5066. $(2\sin 2x-1)(\sin 4x+1)=0$ tenglamani yeching.

A) $(-1)^{k}\ \frac{\pi}{12}+\pi k;\ \ -\frac{\pi}{8}+\frac{\pi k}{4}$

B) $(-1)^{k}\ \frac{\pi}{12}+\pi k;\ -\frac{\pi}{8}+\frac{\pi k}{2}$

C) $(-1)^{k}\ \frac{\pi}{12}+\frac{\pi k}{2};\ -\frac{\pi}{8}+\frac{\pi k}{4}$

D) $(-1)^{k+1}\ \frac{\pi}{12}+\pi k;\ (-1)^{k+1}\ \frac{\pi}{8}+\frac{\pi k}{4}$

5067. $(4\sin 3x-1)(2\sin x+3)=0$ tenglamani yeching.

A) $\frac{1}{3}\arcsin\frac{1}{4}+\frac{\pi k}{3}$

B) $(-1)^{k}\ \frac{1}{3}\arcsin\frac{1}{4}+\frac{\pi k}{3}$

C) $(-1)^{k}\ \arcsin\frac{1}{4}+\pi k$

D) $(-1)^{k+1}\ \frac{1}{3}\arcsin\frac{1}{4}+\frac{\pi k}{3}$

5068. $\sin x=1$ tenglamani yeching.

A) $\frac{\pi}{2}+\pi k$ B) $\frac{\pi}{2}+2\pi k$

C) $-\frac{\pi}{2}+2\pi k$ D) $-\frac{\pi}{2}+2\pi k$

5069. $\cos x=-1$ tenglamani yeching.

A) $\frac{\pi}{2}+2\pi k$ B) $\pi+2\pi k$

C) $\frac{\pi}{2}+\pi k$ D) $\pi+\pi k$

5070. $\sin 3x=0$ tenglamani yeching.

A) $\frac{\pi k}{6}$ B) $3\pi k$ C) πk D) $\frac{\pi k}{3}$

5071. $\cos 0{,}5x=0$ tenglamani yeching.

A) $\frac{\pi}{2}+2\pi k$ B) $\pi+2\pi k$

C) $\frac{\pi}{2}+\pi k$ D) $\pi+\pi k$

5072. $\cos 2x-1=0$ tenglamani yeching.

A) $\frac{\pi k}{6}$ B) $3\pi k$ C) πk D) $\frac{\pi k}{3}$

5073. $1-\cos 3x=0$ tenglamani yeching.

A) $\frac{\pi k}{3}$ B) $-\frac{\pi k}{3}$ C) $\frac{\pi k}{4}$ D) $\frac{2\pi k}{3}$

5074. $tgx=-1$ tenglamani yeching.

A) $\frac{\pi}{4}+\pi k$ B) $-\frac{\pi}{4}+2\pi k$

C) $\frac{\pi}{4}+2\pi k$ D) $-\frac{\pi}{4}+\pi k$

5075. $(tgx-1)(tgx+\sqrt{3})=0$ tenglamani yeching.

A) $\frac{\pi}{2}+\pi k;\ \ \frac{\pi}{4}+\pi k$ B) $-\frac{\pi}{3}+\pi k;\ \ \frac{\pi}{4}+\pi k$

C) $-\frac{\pi}{3}+\pi k;\ -\frac{\pi}{4}+\pi k$ D) $\frac{\pi}{2}+\pi k;\ -\frac{\pi}{4}+\pi k$

5076. $(\sqrt{3}tgx+1)(tgx-\sqrt{3})=0$ tenglamani yeching.

A) $-\frac{\pi}{6}+\pi k;\quad \frac{\pi}{3}+\pi k$

B) $-\frac{\pi}{6}+\pi k;\quad -\frac{\pi}{3}+\pi k$

C) $\frac{\pi}{6}+\pi k;\quad \frac{\pi}{3}+\pi k$

D) $-\frac{\pi}{6}+\pi k;\quad \frac{\pi}{3}+2\pi k$

5077. $(tgx-2)(2\cos x-1)=0$ tenglamani yeching.

A) $\frac{\pi}{3}+2\pi k;\quad arctg2+\pi k$

B) $\pm\frac{\pi}{3}+2\pi k;\quad arctg2+\pi k$

C) $\pm\frac{\pi}{3}+2\pi k;\quad -arctg2+\pi k$

D) $\pm\frac{\pi}{3}+2\pi k;\quad arctg2+2\pi k$

✓ $\cos 2x\cdot\sin x-\cos 2x=0$ tenglamaning $\left(90^\circ;180^\circ\right]$ oraliqdagi ildizlarini toping.

A) $\frac{2\pi}{3}$ B) $\frac{5\pi}{6}$ C) $\frac{3\pi}{4}$ D) $\frac{\pi}{2}$

Yechilishi:

$$\cos 2x\cdot\sin x-\cos 2x=0$$
$$\cos 2x\cdot(\sin x-1)=0$$
$$\cos 2x=0 \quad \sin x-1=0$$

$$\cos 2x=0 \quad \sin x-1=0$$
$$2x=\frac{\pi}{2}+\pi k \quad \sin x=1$$
$$x=\frac{\pi}{4}+\frac{\pi k}{2} \quad x=\frac{\pi}{2}+2\pi k$$

$k=0\Rightarrow \boxed{x=\frac{\pi}{4};\ x=\frac{\pi}{2}}$

$k=1\Rightarrow \boxed{x=\frac{3\pi}{4}\ \ x=\frac{5\pi}{2}}$

Javob: (C)

5078. $\cos x=\frac{\sqrt{2}}{2}$ tenglamaning $\left(0^\circ;\ 2\pi\right)$ oraliqdagi ildizlarini toping.

A) $\frac{\pi}{4};\frac{7\pi}{4}$ B) $\frac{3\pi}{4};\frac{5\pi}{4}$ C) $\frac{3\pi}{6};\frac{5\pi}{6}$ D) $\frac{5\pi}{4};\frac{7\pi}{4}$

5079. $\cos 4x\cdot\cos 5x=\cos 6x\cdot\cos 7x$ tenglamaning $\left[0;\frac{\pi}{2}\right]$ kesmadagi ildizlari yig'indisini toping.

A) $\frac{43\pi}{22}$ B) $\frac{41\pi}{22}$ C) $\frac{30\pi}{11}$ D) $\frac{31\pi}{22}$

5080. $\cos 2x-\cos 6x-\sin 4x=0$ tenglama $[0;\pi]$ kesmada nechta ildizga ega?

A) 6 B) 8 C) 4 D) 7

5081. $\cos x\cdot\cos 2x=\cos 3x$ tenglama $[0;2\pi]$ oraliqda nechta ildizga ega?

A) 3 B) 4 C) 5 D) 2

5082. $\sin 2x+\sin 4x=0$ tenglama $[0;2\pi]$ oraliqda nechta ildizga ega?

A) 9 B) 4 C) 8 D) 7

5083. $\cos^2 x-\frac{1}{2}\sin 2x=0$ tenglamaning $[0;2\pi]$ kesmadagi eng katta va eng kichik ildizlari ayirmasini toping.

A) $\frac{5\pi}{4}$ B) $\frac{3\pi}{4}$ C) π D) $\frac{3\pi}{2}$

✓ $\cos x=\frac{7}{a+1}$ Ifoda ma'noga ega bo'lsa, a ning qiymatini toping.

A) $(-\infty;-8)\cup[6;\infty)$ B) $(8;6)$

C) $(-\infty;-8)\cup(6;\infty)$ D) $(-\infty;-8]\cup[6;\infty)$

Yechilishi:

$$\cos x=\frac{7}{a+1}\Rightarrow -1\le\frac{7}{a+1}\le 1$$

$$\begin{cases}-1\le\frac{7}{a+1}\\ \frac{7}{a+1}\le 1\end{cases}\Rightarrow\left[\begin{array}{l}\text{intervalga}\\ \text{qo'ysak}\end{array}\right.$$

$$(-\infty;-8]\cup[6;\infty)$$

Javob: (D)

5084. $\sin x=\frac{2}{a}$ Ifoda ma'noga ega bo'lsa, a ning qiymatini toping.

A) $[2;\infty)$ B) $[-2;\infty)$

C) $(-\infty;2]\cup[2;\infty)$ D) $[-2;2]$

5085. $\cos x=\frac{5a-2}{2-3a}$ Ifoda ma'noga ega bo'lsa, a ning qiymatini toping.

A) $(0;\infty)$ B) $\left(-\frac{1}{2};0\right)$ C) $\left(\frac{1}{2};\infty\right)$ D) $\left[0;\frac{1}{2}\right]$

✓ $\sin^2 x=\frac{1}{4}$ tenglamani yeching.

A) $\frac{2\pi}{3}+\pi k$ B) $\pm\frac{5\pi}{6}+\pi k$

C) $\pm\frac{3\pi}{4}+\pi k$ D) $\pm\frac{\pi}{6}+\pi k$

Yechilishi:

Darajani pasaytirish formulalari :

$$\sin^2\alpha=\frac{1-\cos 2\alpha}{2}\Leftrightarrow \sin^2\frac{\alpha}{2}=\frac{1-\cos\alpha}{2}$$

$$\cos^2\alpha=\frac{1+\cos 2\alpha}{2}\Leftrightarrow \cos^2\frac{\alpha}{2}=\frac{1+\cos\alpha}{2}$$

$$tg^2\alpha=\frac{1-\cos 2\alpha}{1+\cos 2\alpha}\Leftrightarrow tg^2\frac{\alpha}{2}=\frac{1-\cos\alpha}{1+\cos\alpha}$$

$\sin^2 x=\frac{1}{4}$

$\frac{1-\cos 2x}{2}=\frac{1}{4}$ proporsiyadan: **Javob: (D)**

$\cos 2x=\frac{1}{2} \Rightarrow 2x=\pm\frac{\pi}{3}+2\pi k$

$x=\pm\frac{\pi}{6}+\pi k$

5086. $2\cos^2 x-1=-\frac{1}{2}$ tenglamani yeching.

A) $\pm\frac{\pi}{3}+\pi k$ B) $\pm\frac{5\pi}{6}+\pi k$

C) $\pm\frac{2\pi}{3}+\pi k$ D) $(-1)^{k+1}\ \frac{\pi}{6}+\pi k$

5087. $4\cos^2 2x-1=\cos 4x$ tenglamani yeching.

A) $\frac{\pi}{6}+\frac{\pi k}{2}$ B) $\frac{\pi}{4}+\frac{\pi k}{2}$ C) $\frac{\pi k}{2}$ D) $\frac{\pi}{8}+\frac{\pi k}{2}$

5088. $2\cos^2\frac{x}{2}=1+\cos x+\cos 2x$ tenglamani yeching.

A) $\frac{\pi}{4}+\frac{\pi k}{2}$ B) $\frac{\pi}{4}+\pi k$ C) $\frac{\pi}{2}+\frac{\pi k}{2}$ D) $\frac{\pi k}{2}$

5089. $\sin^2 x+\sin^2 2x=1$ tenglamani yeching.

A) $\frac{\pi}{6}+\frac{\pi}{3}k$ B) $\frac{\pi}{12}+\pi k$ C) πk D) $\frac{3\pi}{2}$

5090. $(1+\cos x)\,tg\frac{x}{2}=0$ tenglamani yeching.

A) $2\pi k$ B) πk C) $\pi+2\pi k$ D) $\frac{\pi}{2}+2\pi k$

5091. $4\sin\frac{x}{2}-\cos x+1=0$ tenglama $[0;2\pi]$ kesmada nechta ildizga ega?

A) 0 B) 1 C) 3 D) 2

5092. $\sin\frac{x}{2}+\cos x-1=0$ tenglama $[0;2\pi]$ oraliqda nechta ildizga ega?

A) 1 B) 3 C) 4 D) 2

TRIGONOMETRIK TENGSIZLIKLAR

✓ $\sin 3x\ge\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{3}+2\pi k\le x\le\frac{\pi}{3}+2\pi k$

B) $\frac{\pi}{9}+\frac{2\pi n}{3}\le x\le\frac{2\pi}{9}+\frac{2\pi n}{3}$

C) $\frac{\pi}{3}+\pi k\le x\le\frac{2\pi}{3}+\pi k$

D) $\frac{\pi}{3}+2\pi k\le x\le\frac{2\pi}{3}+2\pi k$

Yechilishi:

Formulalar:

$\sin x\ge a,\ |a|\le 1$

$[\arcsin a+2\pi n;\ \pi-\arcsin a+2\pi n]$

$\sin x\le a,\ |a|\le 1$ $\quad$ $\cos x\ge a,\ |a|\le 1$

$[-\pi-\arcsin a+2\pi n;\ \arcsin a+2\pi n]$ $\quad$ $[-\arccos a+2\pi n;\ \arccos a+2\pi n]$

$\cos x\le a,\ |a|\le 1$

$[\arccos a+2\pi n;\ 2\pi-\arccos a+2\pi n]$

$tgx\ge a,\ a\in R$ $\quad$ $tgx\le a,\ a\in R$

$[\operatorname{arctg} a+\pi n;\ \pi/2+\pi n)$ $\quad$ $(-\pi/2+\pi n;\ \operatorname{arctg} a+\pi n]$

$ctgx\le a,\ a\in R$ $\quad$ $ctgx\ge a,\ a\in R$

$[\operatorname{arcctg} a+\pi n;\ \pi+\pi n).$ $\quad$ $(\pi n;\ \operatorname{arcctg} a+\pi n]$

$\sin 3x\ge\frac{\sqrt{3}}{2}$

$\arcsin\frac{\sqrt{3}}{2}+2\pi n\le 3x\le\pi-\arcsin\frac{\sqrt{3}}{2}+2\pi n$

$\frac{\pi}{3}+2\pi n\le 3x\le\pi-\frac{\pi}{3}+2\pi n$

$\frac{\pi}{9}+\frac{2\pi n}{3}\le x\le\frac{2\pi}{9}+\frac{2\pi n}{3}$ *yoki* $\left[\frac{\pi}{9}+\frac{2\pi n}{3};\frac{2\pi}{9}+\frac{2\pi n}{3}\right]$

Javob: (B)

5093. $\cos x\ge\frac{1}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{3}+\pi k\le x\le\frac{\pi}{3}+\pi k$

B) $-\frac{\pi}{3}+2\pi k\le x\le\frac{\pi}{3}+2\pi k$

C) $x\le\frac{\pi}{3}+\pi k$

D) $x\ge-\frac{\pi}{3}+\pi k$

5094. $\cos\frac{x}{3}>\frac{1}{\sqrt{2}}$ tengsizlikni yeching.

A) $\left(-\frac{3\pi}{4}+3\pi k;\ \frac{3\pi}{4}+6\pi k\right)$

B) $\left(-\frac{\pi}{4}+6\pi k;\ \frac{\pi}{4}+6\pi k\right)$

C) $x\le\frac{3\pi}{4}+6\pi k$

D) $\left(-\frac{3\pi}{4}+6\pi k;\ \frac{3\pi}{4}+6\pi k\right)$

5095. $\cos 3x\ge\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{18}+\frac{2\pi k}{3}\le x\le\frac{\pi}{18}+\frac{2\pi k}{3}$

B) $-\frac{\pi}{18}+\frac{\pi k}{3}\le x\le\frac{\pi}{18}+\frac{\pi k}{3}$

C) $-\frac{\pi}{6}+2\pi k\le x\le\frac{\pi}{6}+2\pi k$

D) $-\frac{\pi}{18}+\frac{\pi k}{3}<x\le\frac{\pi}{18}+\frac{\pi k}{3}$

5096. $\cos 4x \ge -\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $\left[-\frac{7\pi}{24}+\frac{\pi k}{2};\ \frac{\pi}{8}+\frac{\pi k}{2}\right]$

B) $\left(-\frac{7\pi}{24}+\frac{\pi k}{2};\ \frac{\pi}{8}+\frac{\pi k}{2}\right)$

C) $\left(-\frac{7\pi}{24}+\frac{3\pi k}{2};\ \frac{7\pi}{24}+\frac{3\pi k}{2}\right)$

D) $\varnothing$

5097. $\cos\left(x-\frac{\pi}{6}\right)\ge-\frac{\sqrt{2}}{2}$ tengsizlikni yeching.

A) $-\frac{7\pi}{12}+2\pi k\le x\le\frac{11\pi}{12}+2\pi k$

B) $-\frac{7\pi}{12}+\pi k\le x\le\frac{11\pi}{12}+\pi k$

C) $-\frac{7\pi}{12}+2\pi k<x<\frac{11\pi}{12}+2\pi k$

D) $-\frac{7\pi}{6}+2\pi k\le x\le\frac{11\pi}{6}+2\pi k$

5098. $\cos\left(\frac{x}{4}+\frac{\pi}{4}\right)\ge-\frac{1}{2}$ tengsizlikni yeching.

A) $x\le\frac{5\pi}{3}+8\pi k$ B) $-\frac{11\pi}{3}+4\pi k\le x\le\frac{5\pi}{3}+4\pi k$

C) $-\frac{11\pi}{3}+8\pi k\le x\le\frac{5\pi}{3}+8\pi k$ D) $\varnothing$

5099. $\cos 2x\ge 0$ tengsizlikni yeching.

A) $\left(-\frac{\pi}{4}+\pi k;\ \frac{\pi}{4}+\pi k\right)$ B) $\left[-\frac{\pi}{4}+\pi k;\ \frac{\pi}{4}+\pi k\right]$

C) $\left[-\frac{\pi}{4}+2\pi k;\ \frac{\pi}{4}+2\pi k\right]$ D) $\left[-\frac{\pi}{2}+\pi k;\ \frac{\pi}{2}+\pi k\right]$

5100. $\cos\left(x+\frac{\pi}{12}\right)>1$ tengsizlikni yeching.

A) $-\frac{7\pi}{24}+\frac{\pi k}{2}<x<\frac{\pi}{8}+\frac{\pi k}{2}$

B) $-\frac{\pi}{4}+2\pi k\le x\le\frac{\pi}{4}+2\pi k$

C) $-\frac{\pi}{3}+2\pi k\le x\le\frac{\pi}{3}+2\pi k$ D) $\varnothing$

5101. $\cos\frac{x}{8}\ge 2$ tengsizlikni yeching.

A) $\arccos 2+\pi k\le x\le\arccos 2+\pi k$

B) $\arccos 2+\pi k<x<\arccos 2+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5102. $\cos\left(\frac{x}{2}-\frac{\pi}{9}\right)>5$ tengsizlikni yeching.

A) $\arccos 5+\pi k\le x\le\arccos 5+\pi k$

B) $\arccos 5+\pi k<x<\arccos 5+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5103. $\cos\frac{3x+1}{9}\ge-1$ tengsizlikni yeching.

A) $x\le\frac{\pi}{2}+\pi k$ B) $x\ge\frac{\pi}{2}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5104. $\cos\left(\frac{x}{8}+\frac{\pi}{6}\right)\ge-4{,}5$ tengsizlikni yeching.

A) $x\le\frac{\pi}{3}+\pi k$ B) $\frac{\pi}{2}+\pi k<x<\frac{\pi}{2}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5105. $\cos\left(\frac{x}{8}+\frac{\pi}{6}\right)>-15$ tengsizlikni yeching.

A) $x\le\frac{\pi}{6}+\pi k$ B) $x\ge\frac{\pi}{6}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5106. $\cos\left(\frac{2x+\pi}{4}\right)\ge 0$ tengsizlikni yeching.

A) $-\frac{3\pi}{2}+4\pi k\le x\le\frac{\pi}{2}+4\pi k$

B) $-\frac{3\pi}{2}+2\pi k\le x\le\frac{\pi}{2}+2\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5107. $\cos\left(x+\frac{1}{2}\right)\ge-\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $-\frac{5\pi-3}{6}+2\pi k\le x\le\frac{5\pi+3}{6}+2\pi k$

B) $-\frac{5\pi-3}{6}+2\pi k\le x\le\frac{5\pi-3}{6}+2\pi k$

C) $\left[-\frac{5\pi}{6};\frac{5\pi}{6}\right]$ D) $[\frac{5\pi}{6};\infty)$

5108. $\cos\left(2x+\frac{\pi}{9}\right)\ge 1$ tengsizlikni yeching.

A) $-\frac{\pi}{18}+\pi k$ B) 0 C) $-\frac{\pi}{18}+2\pi k$ D) $\varnothing$

5109. $\cos\frac{3x}{19}>-1{,}8$ tengsizlikni yeching.

A) $x\le\frac{\pi}{2}+\pi k$ B) $x\ge\frac{\pi}{2}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5110. $\cos 2x<\frac{1}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{6}+\pi k<x<\frac{\pi}{6}+\pi k$

B) $\frac{\pi}{6}+\pi k<x<\frac{5\pi}{6}+\pi k$

C) $-\frac{\pi}{6}+2\pi k\le x\le\frac{\pi}{6}+2\pi k$

D) $\frac{\pi}{6}+\pi k\le x\le\frac{5\pi}{6}+\pi k$

5111. $\cos\frac{x}{4} \le \frac{1}{\sqrt{2}}$ tengsizlikni yeching.

A) $(\pi+8\pi k;\ 7\pi+8\pi k)$

B) $\left(-\frac{\pi}{4}+6\pi k;\ \frac{\pi}{4}+6\pi k\right)$

C) $\left(-\frac{3\pi}{4}+6\pi k;\ \frac{3\pi}{4}+6\pi k\right)$

D) $[\pi+8\pi k;\ 7\pi+8\pi k]$

5112. $\cos(3x+1) < \frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $\frac{\pi}{18}-\frac{1}{3}+\frac{2\pi k}{3} < x < \frac{11\pi}{18}-\frac{1}{3}+\frac{2\pi k}{3}$

B) $\frac{\pi}{18}-\frac{1}{3}+\frac{\pi k}{3} \le x \le \frac{\pi}{18}-\frac{1}{3}+\frac{\pi k}{3}$

C) $-\frac{\pi}{6}+2\pi k \le x \le \frac{\pi}{6}+2\pi k$

D) $-\frac{\pi}{18}+\frac{\pi k}{3} < x \le \frac{\pi}{18}+\frac{\pi k}{3}$

5113. $\cos\left(x+\frac{\pi}{6}\right) < -\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $\left[-\frac{7\pi}{3}+\frac{\pi k}{2};\ \frac{\pi}{3}+\frac{\pi k}{2}\right]$

B) $\left(\frac{2\pi}{3}+2\pi k;\ \pi+2\pi k\right)$

C) $\left(-\frac{7\pi}{3}+\frac{3\pi k}{2};\ \frac{7\pi}{3}+\frac{3\pi k}{2}\right)$

D) $\left(-\frac{7\pi}{24}+\frac{\pi k}{2};\ \frac{\pi}{8}+\frac{\pi k}{2}\right)$

5114. $\cos\left(2x+\frac{\pi}{6}\right) \le -\frac{\sqrt{2}}{2}$ tengsizlikni yeching.

A) $\frac{7\pi}{24}+\pi k \le x \le \frac{13\pi}{24}+\pi k$

B) $\frac{7\pi}{24}+\pi k \le x \le \frac{11\pi}{24}+\pi k$

C) $\frac{7\pi}{24}+2\pi k < x < \frac{13\pi}{24}+2\pi k$

D) $-\frac{7\pi}{6}+2\pi k \le x \le \frac{11\pi}{6}+2\pi k$

5115. $\cos\left(\frac{x}{2}+\frac{\pi}{11}\right) < -\frac{1}{2}$ tengsizlikni yeching.

A) $\left(\frac{37\pi}{33}+4\pi k;\ \frac{83\pi}{33}+4\pi k\right)$

B) $\left(\frac{38\pi}{33}+2\pi k;\ \frac{82\pi}{33}+2\pi k\right)$

C) $\left(\frac{38\pi}{33}+4\pi k;\ \frac{82\pi}{33}+4\pi k\right)$

D) $\left[\frac{38\pi}{33}+4\pi k;\ \frac{82\pi}{33}+4\pi k\right]$

5116. $\cos 5x \le 0$ tengsizlikni yeching.

A) $\left(\frac{\pi}{10}+\frac{2\pi k}{5};\ \frac{3\pi}{10}+\frac{2\pi k}{5}\right)$

B) $\left[\frac{\pi}{10}+\frac{2\pi k}{5};\ \frac{3\pi}{10}+\frac{2\pi k}{5}\right]$

C) $\left[\frac{\pi}{10}+\frac{\pi k}{5};\ \frac{3\pi}{10}+\frac{\pi k}{5}\right]$

D) $\left[-\frac{\pi}{2}+\pi k;\ \frac{\pi}{2}+\pi k\right]$

5117. $\cos\left(\frac{x}{8}+\frac{\pi}{3}\right) \le 2$ tengsizlikni yeching.

A) $\arccos 2+\pi k \le x \le \arccos 2+\pi k$

B) $\arccos 2+\pi k < x < \arccos 2+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5118. $\cos\left(\frac{x}{21}+\frac{\pi}{19}\right) \le 5$ tengsizlikni yeching.

A) $\arccos 5+\pi k \le x \le \arccos 5+\pi k$

B) $\arccos 5+\pi k < x < \arccos 5+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5119. $\cos\frac{4x+1}{91} \le -2$ tengsizlikni yeching.

A) $x \le \frac{\pi}{2}+\pi k$ B) $x \ge \frac{\pi}{2}+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5120. $\cos\left(\frac{x}{8}+\frac{\pi}{6}\right) \le -4,5$ tengsizlikni yeching.

A) $x \le \frac{\pi}{3}+\pi k$ B) $\frac{\pi}{2}+\pi k < x < \frac{\pi}{2}+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5121. $\cos\left(\frac{x}{8}+\frac{\pi}{6}\right) < -15$ tengsizlikni yeching.

A) $x \le \frac{\pi}{6}+\pi k$ B) $x \ge \frac{\pi}{6}+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5122. $\cos\left(\frac{2x+\pi}{4}\right) \le 0$ tengsizlikni yeching.

A) $\left[\frac{\pi}{2}+4\pi k;\frac{5\pi}{2}+4\pi k\right]$ B) $\left[-\frac{3\pi}{2}+2\pi k;\ \frac{\pi}{2}+2\pi k\right]$

C) $(\pi+8\pi k;5\pi+8\pi k)$ D) $[\pi+8\pi k;5\pi+8\pi k]$

5123. $\sin 2x \ge \frac{1}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{12}+\pi k \le x \le \frac{\pi}{12}+\pi k$

B) $\frac{\pi}{12}+\pi k \le x \le \frac{5\pi}{12}+\pi k$

C) $\frac{\pi}{12}+2\pi k \le x \le \frac{5\pi}{12}+2\pi k$

D) $-\frac{5\pi}{12}+\pi k \le x \le \frac{5\pi}{12}+\pi k$

5124. $\sin\frac{x}{4}>\frac{1}{\sqrt{2}}$ tengsizlikni yeching.

A) $(\pi+6\pi k;\ 3\pi+6\pi k)$

B) $(-3\pi+8\pi k;\ 3\pi+8\pi k)$

C) $(\pi+8\pi k;\ 3\pi+8\pi k)$

D) $(-\pi+8\pi k;\ \pi+8\pi k)$

5125. $\sin\left(4x+\frac{\pi}{6}\right)>-\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $\left(-\frac{\pi}{8}+\frac{\pi k}{2};\ \frac{\pi}{8}+\frac{\pi k}{2}\right)$

B) $\left(-\frac{\pi}{8}+\frac{\pi k}{2};\ \frac{7\pi}{24}+\frac{\pi k}{2}\right)$

C) $\left(-\frac{7\pi}{24}+\frac{\pi k}{2};\ \frac{7\pi}{24}+\frac{\pi k}{2}\right)$

D) $\left[-\frac{\pi}{8}+\frac{\pi k}{2};\ \frac{7\pi}{24}+\frac{\pi k}{2}\right]$

5126. $\sin\left(2x-\frac{\pi}{6}\right)\geq-\frac{\sqrt{2}}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{24}+\pi k\leq x\leq\frac{\pi}{24}+\pi k$

B) $-\frac{\pi}{24}+\pi k\leq x\leq\frac{17\pi}{24}+\pi k$

C) $-\frac{\pi}{24}+\pi k<x<\frac{17\pi}{24}+\pi k$

D) $-\frac{\pi}{24}+2\pi k\leq x\leq\frac{17\pi}{24}+2\pi k$

5127. $\sin\left(\frac{x}{3}+\frac{\pi}{7}\right)\geq-\frac{1}{2}$ tengsizlikni yeching.

A) $-\frac{13\pi}{14}+6\pi k\leq x\leq\frac{43\pi}{14}+6\pi k$

B) $\frac{13\pi}{14}+6\pi k\leq x\leq\frac{43\pi}{14}+6\pi k$

C) $-\frac{13\pi}{14}+6\pi k<x<\frac{43\pi}{14}+6\pi k$

D) $\varnothing$

5128. $\sin(2+x)\geq 0$ tengsizlikni yeching.

A) $[-2\pi-2+2\pi k;\ \pi-2+2\pi k]$

B) $(2\pi k-2;\ \pi-2+2\pi k)$

C) $[2\pi k-2;\ \pi-2+2\pi k]$

D) $(2\pi k-2;\ \pi-2+2\pi k)$

5129. $\sin\left(x-\frac{\pi}{12}\right)>1$ tengsizlikni yeching.

A) $-\frac{\pi}{12}+\pi k<x<\frac{\pi}{12}+\pi k$

B) $-\frac{\pi}{12}+\pi k\leq x\leq\frac{\pi}{12}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5130. $\sin\frac{x}{7}\geq 3$ tengsizlikni yeching.

A) $3\arcsin 3+\pi k<x<7\arcsin 3+\pi k$

B) $3\arcsin 3+\pi k\leq x\leq 7\arcsin 3+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5131. $\sin\left(\frac{x}{2}+\frac{\pi}{9}\right)>15$ tengsizlikni yeching.

A) $\arcsin 9+\pi k\leq x\leq\arcsin 15+\pi k$

B) $-\arcsin 9+\pi k<x<\arcsin 15+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5132. $\sin\frac{3x+\pi}{9}\geq-1$ tengsizlikni yeching.

A) $-\frac{\pi}{2}+\pi k\leq x\leq\frac{\pi}{2}+\pi k$

B) $-\frac{\pi}{2}+\pi k<x<\frac{\pi}{2}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5133. $\sin\left(\frac{x}{3}+\frac{\pi}{6}\right)\geq-4{,}5$ tengsizlikni yeching.

A) $-\frac{\pi}{4}+\pi k\leq x\leq\frac{\pi}{4}+\pi k$

B) $-\frac{\pi}{4}+2\pi k<x<\frac{\pi}{4}+2\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5134. $\sin\left(\frac{x}{4}+\frac{\pi}{6}\right)>-1{,}5$ tengsizlikni yeching.

A) $-\frac{\pi}{6}+\pi k\leq x\leq\frac{\pi}{6}+\pi k$

B) $-\frac{\pi}{6}+2\pi k<x<\frac{\pi}{6}+2\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5135. $\sin\frac{2x+\pi}{4}\geq 0$ tengsizlikni yeching.

A) $-\frac{3\pi}{2}+4\pi k\leq x\leq\frac{3\pi}{2}+4\pi k$

B) $-\frac{\pi}{2}+4\pi k\leq x\leq\frac{3\pi}{2}+4\pi k$

C) $-\frac{\pi}{2}+4\pi k<x<\frac{3\pi}{2}+4\pi k$

D) $\varnothing$

5136. $\sin\left(x+\frac{1}{2}\right)\geq-\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $\left[-\frac{\pi}{3}-\frac{1}{2}+2\pi k;\ \frac{4\pi}{3}-\frac{1}{2}+2\pi k\right]$

B) $\left[-\frac{4\pi}{3}-\frac{1}{2}+\pi k;\ \frac{4\pi}{3}-\frac{1}{2}+2\pi k\right]$

C) $\left[\frac{\pi}{3}-\frac{1}{2}+2\pi k;\ \frac{4\pi}{3}-\frac{1}{2}+2\pi k\right]$

D) $\left[\frac{\pi}{3}+\frac{1}{2}+2\pi k;\ \frac{4\pi}{3}+\frac{1}{2}+2\pi k\right]$

5137. $\sin\left(2x+\frac{\pi}{9}\right)\geq 1$ tengsizlikni yeching.

A) $\frac{7\pi}{36}+2\pi k$ B) $-\frac{7\pi}{36}+\pi k$

C) $\frac{7\pi}{36}+\pi k$ D) $-\frac{7\pi}{36}+2\pi k$

5138. $\sin 3x\leq\frac{1}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{18}+\pi k\leq x\leq\frac{\pi}{18}+\pi k$

B) $-\frac{7\pi}{18}+\frac{2\pi k}{3}\leq x\leq\frac{\pi}{18}+\frac{2\pi k}{3}$

C) $\frac{\pi}{18}+2\pi k\leq x\leq\frac{5\pi}{18}+2\pi k$

D) $\frac{\pi}{12}+\pi k\leq x\leq\frac{5\pi}{12}+\pi k$

5139. $\sin\frac{x}{14}\leq\frac{1}{\sqrt{2}}$ tengsizlikni yeching.

A) $\left(-\frac{37\pi}{2}+28\pi k;\ \frac{5\pi}{2}+28\pi k\right)$

B) $\left(-\frac{35\pi}{2}+28\pi k;\ \frac{7\pi}{2}+28\pi k\right)$

C) $\left[-\frac{35\pi}{2}+28\pi k;\ \frac{7\pi}{2}+28\pi k\right]$

D) $\left[-\frac{35\pi}{2}+24\pi k;\ \frac{7\pi}{2}+24\pi k\right]$

5140. $\sin\left(3x+\frac{\pi}{8}\right)<\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $-\frac{35\pi}{72}+\frac{\pi k}{3}<x<\frac{5\pi}{72}+\frac{\pi k}{3}$

B) $-\frac{35\pi}{72}+\frac{2\pi k}{3}<x<\frac{5\pi}{72}+\frac{2\pi k}{3}$

C) $-\frac{35\pi}{72}+\frac{2\pi k}{3}\leq x\leq\frac{5\pi}{72}+\frac{2\pi k}{3}$

D) $-\frac{5\pi}{72}+\frac{2\pi k}{3}\leq x\leq\frac{35\pi}{72}+\frac{2\pi k}{3}$

5141. $\sin\left(2x+\frac{\pi}{6}\right)<-\frac{\sqrt{3}}{2}$ tengsizlikni yeching.

A) $-\frac{\pi}{24}+\pi k\leq x\leq\frac{\pi}{24}+\pi k$

B) $-\frac{5\pi}{12}+\pi k<x<-\frac{\pi}{4}+\pi k$

C) $-\frac{7\pi}{12}+\pi k\leq x\leq\frac{\pi}{4}+\pi k$

D) $-\frac{\pi}{24}+2\pi k\leq x\leq\frac{17\pi}{24}+2\pi k$

5142. $\sin\left(3x-\frac{\pi}{3}\right)<-\frac{1}{2}$ tengsizlikni yeching.

A) $\left(-\frac{\pi}{6}+\frac{2\pi k}{3};\ \frac{\pi}{18}+\frac{2\pi k}{3}\right)$

B) $\left(-\frac{\pi}{6}+\frac{k}{3};\ \frac{\pi}{9}+\frac{\pi k}{3}\right)$

C) $\left(-\frac{\pi}{2}+\frac{2\pi k}{3};\ \frac{\pi}{3}+\frac{2\pi k}{3}\right)$

D) $\left(-\frac{\pi}{2}+\frac{\pi k}{3};\ \frac{\pi}{3}+\frac{\pi k}{3}\right)$

5143. $\sin 15x<0$ tengsizlikni yeching.

A) $\left[\frac{\pi}{15}+\frac{2\pi k}{15};\ \frac{2\pi k}{15}\right]$

B) $\left(-\frac{\pi}{15}+\frac{2\pi k}{15};\ \frac{\pi}{15}+\frac{2\pi k}{15}\right)$

C) $\left(-\frac{\pi}{15}+\frac{2\pi k}{15};\ \frac{2\pi k}{15}\right)$

D) $\left[-\frac{\pi}{15}+\frac{2\pi k}{15};\ \frac{2\pi k}{15}\right]$

5144. $\sin\left(x-\frac{\pi}{12}\right)\leq -5{,}5$ tengsizlikni yeching.

A) $-\frac{\pi}{12}+\pi k<x<\frac{\pi}{12}+\pi k$

B) $-\frac{\pi}{12}+\pi k\leq x\leq\frac{\pi}{12}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5145. $\sin\left(\frac{x}{7}-\frac{\pi}{12}\right)<-15$ tengsizlikni yeching.

A) $3\arcsin 3+\pi k<x<7\arcsin 3+\pi k$

B) $3\arcsin 3+\pi k\leq x\leq 7\arcsin 3+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5146. $\sin\left(\frac{x}{21}+\frac{\pi}{19}\right)\leq 5$ tengsizlikni yeching.

A) $\arcsin 9+\pi k\leq x\leq\arcsin 15+\pi k$

B) $-\arcsin 9+\pi k<x<\arcsin 15+\pi k$

C) $\varnothing$ D) $(-\infty;\infty)$

5147. $\sin\frac{x+\pi}{8}\leq 2$ tengsizlikni yeching.

A) $-\frac{\pi}{2}+\pi k\leq x\leq\frac{\pi}{2}+\pi k$ B) $-\frac{\pi}{2}+\pi k<x<\frac{\pi}{2}+\pi k$

C) $(-\infty;\infty)$ D) $\varnothing$

5148. $tg(x+\frac{\pi}{6})\geq\frac{1}{\sqrt{3}}$ tengsizlikni yeching.

A) $\pi k\leq x<\frac{\pi}{3}+\pi k$

B) $-\frac{\pi}{3}+\pi k\leq x<\frac{\pi}{3}+\pi k$

C) $-\frac{\pi}{3}+2\pi k\leq x<\frac{\pi}{3}+2\pi k$

D) $-\frac{\pi}{3}+\pi k\leq x\leq\frac{\pi}{3}+\pi k$

5149. $tg4x \ge \sqrt{3}$ tengsizlikni yeching.

A) $\frac{\pi}{12}+\frac{\pi k}{4} \le x \le \frac{\pi}{8}+\frac{\pi k}{4}$

B) $-\frac{\pi}{12}+\frac{\pi k}{4} \le x < \frac{\pi}{12}+\frac{\pi k}{4}$

C) $-\frac{\pi}{8}+\frac{\pi k}{4} \le x < \frac{\pi}{8}+\frac{\pi k}{4}$

D) $\frac{\pi}{12}+\frac{\pi k}{4} \le x < \frac{\pi}{8}+\frac{\pi k}{4}$

5150. $tgx \ge 1$ tengsizlikni yeching.

A) $-\frac{\pi}{4}+\pi k \le x < \frac{\pi}{2}+\pi k$

B) $\frac{\pi}{4}+\pi k \le x < \frac{\pi}{2}+\pi k$

C) $\frac{\pi}{4}+\pi k \le x \le \frac{\pi}{2}+\pi k$

D) $\frac{\pi}{4}+2\pi k \le x < \frac{\pi}{2}+2\pi k$

5151. $tg\frac{x}{4} \ge -\frac{1}{\sqrt{3}}$ tengsizlikni yeching.

A) $\frac{2\pi}{3}+4\pi k \le x < 2\pi+4\pi k$

B) $-\frac{2\pi}{3}+4\pi k \le x \le 2\pi+4\pi k$

C) $-\frac{2\pi}{3}+4\pi k \le x < 2\pi+4\pi k$

D) $-\frac{2\pi}{3}+4\pi k < x < 2\pi+4\pi k$

5152. $tg(\frac{2x}{5}+\frac{3\pi}{7}) > \sqrt{3}$ tengsizlikni yeching.

A) $-\frac{5\pi}{21}+\frac{5\pi k}{2} \le x \le \frac{5\pi}{28}+\frac{5\pi k}{2}$

B) $-\frac{5\pi}{21}+\frac{\pi k}{2} < x < \frac{5\pi}{28}+\frac{5\pi k}{2}$

C) $-\frac{\pi}{21}+\frac{\pi k}{2} < x < \frac{\pi}{28}+\frac{\pi k}{2}$

D) $-\frac{5\pi}{21}+\frac{5\pi k}{2} < x < \frac{5\pi}{28}+\frac{5\pi k}{2}$

5153. $tg5x \ge 0$ tengsizlikni yeching.

A) $\frac{\pi k}{5} \le x \le \frac{\pi}{10}+\frac{\pi k}{5}$ B) $\frac{\pi k}{5} \le x \le \frac{\pi}{10}+\frac{2\pi k}{5}$

C) $-\frac{\pi k}{5} \le x \le \frac{\pi}{10}+\frac{2\pi k}{5}$ D) $\frac{\pi k}{5} < x < \frac{\pi}{10}+\frac{2\pi k}{5}$

5154. $ctg(2x+\frac{\pi}{6}) \le \frac{1}{\sqrt{3}}$ tengsizlikni yeching.

A) $-\frac{\pi}{12}+\frac{3\pi k}{2} < x \le \frac{\pi}{12}+\frac{3\pi k}{2}$

B) $-\frac{\pi}{12}+\frac{\pi k}{2} \le x \le \frac{\pi}{12}+\frac{\pi k}{2}$

C) $\frac{\pi}{12}+\frac{\pi k}{2} \le x < \frac{5\pi}{12}+\frac{\pi k}{2}$

D) $-\frac{\pi}{12}+\frac{\pi k}{2} < x < \frac{\pi}{12}+\frac{\pi k}{2}$

5155. $ctgx \ge \sqrt{3}$ tengsizlikni yeching.

A) $\pi k < x \le \frac{\pi}{6}+\pi k$ B) $-\frac{\pi}{6}+\pi k < x \le \frac{\pi}{6}+\pi k$

C) $-\frac{\pi}{6}+\pi k \le x \le \frac{\pi}{6}+\pi k$ D) $\varnothing$

5156. $ctg\frac{x}{3} \ge 1$ tengsizlikni yeching.

A) $3\pi k < x \le \frac{3\pi}{4}+3\pi k$

B) $-\frac{3\pi}{4}+3\pi k < x \le \frac{3\pi}{4}+3\pi k$

C) $-\frac{3\pi}{4}+3\pi k \le x \le \frac{3\pi}{4}+3\pi k$

D) $-\frac{\pi}{4}+\pi k < x \le \frac{\pi}{4}+\pi k$

5157. $ctg(2x+\frac{\pi}{12}) > -1$ tengsizlikni yeching.

A) $\frac{\pi}{24}+\frac{\pi k}{2} < x < \frac{\pi}{3}+\frac{\pi k}{2}$

B) $-\frac{\pi}{24}+\frac{\pi k}{2} < x < \frac{\pi}{3}+\frac{\pi k}{2}$

C) $-\frac{\pi}{24}+\frac{3\pi k}{2} < x < \frac{\pi}{3}+\frac{3\pi k}{2}$

D) $-\frac{\pi}{24}+\frac{\pi k}{2} < x < -\frac{\pi}{3}+\frac{\pi k}{2}$

5158. $ctg\frac{x}{6} \ge -\frac{1}{\sqrt{3}}$ tengsizlikni yeching.

A) $-4\pi+6\pi k \le x \le 4\pi+6\pi k$

B) $-4\pi+6\pi k < x < 4\pi+6\pi k$

C) $-4\pi+6\pi k < x \le 4\pi+6\pi k$

D) $6\pi k < x \le 4\pi+6\pi k$

5159. $ctg(3x+\frac{\pi}{7}) < 2$ tengsizlikni yeching.

A) $-\frac{1}{3}arcctg2-\frac{\pi}{21}+\frac{\pi k}{3} < x < \frac{2\pi}{7}+\frac{\pi k}{3}$

B) $-\frac{1}{3}arcctg2-\frac{\pi}{12}+\frac{\pi k}{3} < x < \frac{2\pi}{7}+\frac{\pi k}{3}$

C) $\frac{1}{3}arcctg2+\frac{\pi}{12}+\frac{\pi k}{3} < x < \frac{2\pi}{7}+\frac{\pi k}{3}$

D) $\frac{1}{3}arcctg2-\frac{\pi}{12}+\frac{\pi k}{3} < x < \frac{2\pi}{7}+\frac{\pi k}{3}$

Trigonametrik funksiyalarning davri

✓ Ushbu $y=\sin(3x+1)$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $\frac{\pi}{3}$

Yechimi:

$\left.\begin{matrix}\sin kx\\ \cos kx\end{matrix}\right\}\ T=\frac{2\pi}{k}$ $\left.\begin{matrix}\sin x\\ \cos x\end{matrix}\right\}\ T=\frac{2\pi}{1}=2\pi$

$\left.\begin{matrix}tgkx\\ ctgkx\end{matrix}\right\}\ T=\frac{\pi}{k}$ $\left.\begin{matrix}tg\,x\\ ctg\,x\end{matrix}\right\}\ T=\frac{\pi}{1}=\pi$

Eng kichik musbat davri (qisqacha qilib davri ham deyiladi) $\sin x,\ \cos x \Rightarrow 2\pi$ $\quad tgx,\ cgtx \Rightarrow \pi$

$y=\sin(3x+1)\ \ T=\frac{2\pi}{3}$ **Javob: (B)**

5160. Ushbu $y=\sin x+1$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $2\pi+1$

5161. Berilgan $y=\cos x-2$ funksiyani eng kichik musbat davrini toping.

A) 2π B) $\frac{2\pi}{3}$ C) $2\pi-2$ D) 2

5162. Berilgan $y=3\sin x$ funksiyani eng kichik musbat davrini toping.

A) 2π B) 6π C) $2\pi-2$ D) 2

5163. Berilgan $y=\frac{tgx}{2}$ funksiyani eng kichik musbat davrini toping.

A) 2π B) $\frac{\pi}{2}$ C) π D) 2

5164. Ushbu $y=\sin(x-\frac{\pi}{4})$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $2\pi-\frac{\pi}{4}$

5165. Ushbu $y=\cos(x+\frac{2\pi}{3})$ funksiyaning davrini toping.

A) π B) 2π C) $\frac{2\pi}{3}$ D) $2\pi-\frac{2\pi}{3}$

5166. Ushbu $y=ctg2x$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $\frac{\pi}{2}$

5167. Berilgan $y=\cos\frac{x}{2}$ funksiyani eng kichik musbat davrini toping.

A) π B) $\frac{2\pi}{3}$ C) $2\pi-2$ D) 4

5168. Berilgan $y=\sin\frac{4x}{5}$ funksiyani eng kichik musbat davrini toping.

A) $\frac{5\pi}{2}$ B) $\frac{5\pi}{4}$ C) $1{,}5\pi$ D) 4

5169. Berilgan $y=\cos 7x$ funksiyani eng kichik musbat davrini toping.

A) $\frac{\pi}{7}$ B) $\frac{2\pi}{7}$ C) $1{,}5\pi$ D) 7

5170. Berilgan $y=tg\frac{x}{7}$ funksiyani eng kichik musbat davrini toping.

A) $\frac{3\pi}{7}$ B) $\frac{\pi}{7}$ C) 7π D) 7

5171. Berilgan $y=\cos\frac{2x}{5}$ funksiyani eng kichik musbat davrini toping.

A) π B) 5π C) $2\pi-2$ D) 4

5172. Berilgan $y=\sin\frac{3x}{2}$ funksiyani eng kichik musbat davrini toping.

A) $\frac{5\pi}{2}$ B) $\frac{5\pi}{4}$ C) $1{,}5\pi$ D) $\frac{3\pi}{4}$

5173. Berilgan $y=3tg\frac{1}{4}(x+1)$ funksiyani eng kichik musbat davrini toping.

A) $\frac{\pi}{7}$ B) $\frac{2\pi}{7}$ C) 4π D) 4

5174. Berilgan $y=13\sin^2 3x$ funksiyani eng kichik musbat davrini toping.

A) $\frac{\pi}{6}$ B) $\frac{\pi}{3}$ C) 4π D) 4

✓ Ushbu $y=\cos(8x+1)+\sin 4x-tg8x+tg(2x+4)$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $\frac{\pi}{3}$

Yechimi:

$\underbrace{\cos(8x+1)}_{\frac{\pi}{4}}\ \ \underbrace{\sin 4x}_{\frac{\pi}{2}}\ \ \underbrace{tg8x}_{\frac{\pi}{8}}\ \ \underbrace{tg(2x+4)}_{\pi}$

Eng kichik musbat davri π

Suratidagi sonlarga umumiy mahraj topiladi

Javob: (A)

5175. Ushbu $y=tg(x-\frac{\pi}{4})+ctg(\frac{x}{2}+1)+3\sin\left(3x+\frac{\pi}{6}\right)$ funksiyaning davrini toping.

A) π B) $\frac{2\pi}{3}$ C) 2π D) $2\pi+1$

5176. Ushbu $y=4\cos 2x+\cos\frac{x}{2}-\sin 4x$ funksiyaning davrini toping.

A) 4π B) $\frac{2\pi}{3}$ C) 8π D) 2π

5177. Ushbu $y=tg2x+ctg3x-\sin 4x+\cos 5x$ funksiyani eng kichik musbat davrini toping.

A) 4π B) $\frac{2\pi}{3}$ C) 8π D) 2π

5178. Ushbu $y=2\sin\frac{\pi x}{3}+3\cos\frac{\pi x}{4}-tg\frac{\pi x}{2}$ funksiyani eng kichik musbat davrini toping.

A) 24π B) 12 C) 2π D) 12π

5179. Ushbu $y=\left(2+\sin\frac{x}{2}\right)\cdot\left(1-\cos\frac{x}{4}\right)\cdot tg\frac{x}{3}$ funksiyani eng kichik musbat davrini toping.

A) 28π B) 24 C) 30π D) 24π

Trigonametrik funksiyalarning eng katta va eng kichik(qiymatlar to'plami) qiymatini topish.

✓ Ushbu $y=1+\sin x$ funksiyaning qiymatlar to'plamini toping.

A) $[0;2]$ B) $[1;2]$ C) $[0;1]$ D) $[-1;1]$

Yechimi:

$\left.\begin{matrix}\sin x\\ \cos x\end{matrix}\right\}[-1;1]\Rightarrow\left.\begin{matrix}\sin x\\ \cos x\end{matrix}\right\}\begin{cases}\textit{eng katta qiymati};\ 1\\ \textit{eng kichik qiymati};-1\end{cases}$

$\left.\begin{matrix}tgx\\ ctgx\end{matrix}\right\}(-\infty;+\infty)$

$y=1+\sin x=1+[-1;1]=[0;2]$ **Javob: (A)**

Izoh: eng katta qiymati **2** eng kichik qiymati **0**

5180. Ushbu $y=1-\cos x$ funksiyaning qiymatlar to'plamini toping.

A) $[0;2]$ B) $[1;2]$ C) $[0;1]$ D) $[-1;1]$

5181. Ushbu $y=2\cos x+3$ funksiyaning qiymatlar to'plamini toping.

A) $[0;5]$ B) $[1;4]$ C) $[2;5]$ D) $[1;5]$

5182. Ushbu $y=1-4\cos 2x$ funksiyaning qiymatlar to'plamini toping.

A) $[3;5]$ B) $[-3;5]$ C) $[2;5]$ D) $[1;5]$

5183. Ushbu $y=1+\sin^2 x$ funksiyaning eng kichik qiymatini toping.

A) $[3;5]$ B) $[-3;5]$ C) $[2;5]$ D) $[1;2]$

5184. Ushbu $y=2\cos^2 x-1$ funksiyaning eng kichik qiymatini toping.

A) 2 B) 0 C) -1 D) 1

5185. Ushbu $y=1-3\sin^2 x$ funksiyaning eng katta qiymatini toping.

A) **4** B) **0** C) 3 D) 1

5186. Ushbu $y=\sin 2x\cos 2x+2$ funksiyaning qiymatlar to'plamini toping.

A) $[1,75;2]$ B) $[1,75;2,25]$ C) $[1;3]$ D) $[2;3]$

5187. Ushbu $y=\frac{1}{2}\sin x\cos x-1$ funksiyaning eng katta qiymatini toping.

A) $-0,75$ B) 0,75 C) 1 D) 0,5

✓ Ushbu $y=12\sin 3x-5\cos 3x$ funksiyaning qiymatlar to'plamini toping.

A) $[-13;2]$ B) $[1;13]$ C) $[-13;13]$ D) $[-1;1]$

Yechimi:

$y=a\sin kx+b\cos kx\ \left[-\sqrt{a^2+b^2};\ \sqrt{a^2+b^2}\right]$

$y=12\sin 3x-5\cos 3x$

$\left[-\sqrt{12^2+(-5)^2};\ \sqrt{12^2+(-5)^2}\right]$ **Javob: (C)**

$[-13;13]$

Izoh: eng katta qiymati **13** eng kichik qiymati -13

5188. Ushbu $y=3\cos 2x+4\sin 2x$ funksiyaning qiymatlar to'plamini toping.

A) $[-5;5]$ B) $[-5;2]$ C) $[0;5]$ D) $[-1;1]$

5189. Ushbu $y=24\cos 2x-10\sin 2x$ funksiyaning qiymatlar to'plamini toping.

A) $[-1;26]$ B) $[-26;2]$ C) $[-26;26]$ D) $[-1;1]$

5190. Ushbu $y=2\cos 7x-\sin 7x$ funksiyaning eng kichik qiymatini toping.

A) 5 B) $\sqrt{5}$ C) $-\sqrt{5}$ D) 3

5191. Ushbu $y=\sqrt{5}\sin x+\sqrt{11}\cos x$ funksiyaning eng katta qiymatini toping.

A) 4 B) 0 C) 3 D) 1

5192. Ushbu $y=(\cos x+\sin x)^6$ funksiyaning eng katta qiymatini toping.

A) 4 B) 8 C) 2 D) 1

HOSILA

✓ $f(x)=3x+11$ funksiyaning hosilasini toping.

A) 3 B) 4 C) 5 D) 8

Yechilishi: $(\ '\ )$ belgi hosila belgisi, $(x)'=1$ $x-$ ning hosilasi 1 ga teng.

formula	*misol*	*formula*	*misol*
$(c)'=0$	$(260)'=0$ $(-26)'=0$ $\left(\frac{2}{5}\right)'=0$	$(cx)'=c$	$(-7x)'=-7$ $(4x)'=4$ $\left(-\frac{4}{7}x\right)'=-\frac{4}{7}$

formula:	*misol:*
$(cx+b)'=$ $(cx)'+(b)'$	$(3x+11)'=(3x)'+(11)'=3+0=3$

Javob: (A)

IZOH: Har qanday sonning hosilasi "0". $(c)'=0$

5193. $f(x)=9x$ funksiyaning hosilasini toping.

A) 1 B) 4 C) 0 D) 9

5194. $y(x)=5x+2$ funksiyaning hosilasini toping.

A) 1 B) 5 C) 0 D) 6

5195. $g(x)=-7x-5$ funksiyaning hosilasini toping.

A) -7 B) 7 C) 5 D) - 5

✓ x^7 funksiyaning hosilasini toping.

A) $7x^7$ B) $7x^6$ C) $7x^5$ D) $7x$

Yechilishi:

formula:	*misol:*
$(x^n)'=n\,x^{n-1}$	$(x^7)'=7\,x^{7-1}=7x^6$ $(x^{-2})'=-2\,x^{-2-1}=-2x^{-3}=-\frac{2}{x^3}$

Javob: (B)

IZOH: Agar funksiya quyidagicha bo'lsa, :

formula:	*misol:*
$(cx^n)'=c\cdot n\cdot x^{n-1}$	$(4x^5)'=4\cdot 5x^{5-1}=20x^4$

5196. x^6 funksiyaning hosilasini toping.

A) $6x^6$ B) $6x^5$ C) x^5 D) $7x$

5197. $f(x)=x^{11}+x^{13}$ bo'lsa, $f'(x)=?$.

A) $10\,x^{10}+13x^{12}$ B) $6x^5+14x^{12}$

C) $11x^{10}+13x^{12}$ D) $11x+13x^{13}$

5198. x^2+x funksiyaning hosilasini toping.

A) $2x^2+1$ B) $x+1$ C) $2x+1$ D) $2x+x$

5199. $13x^2+26$ funksiyaning hosilasini toping.

A) $13x$ B) $26x+26$ C) $13x+26$ D) $26x$

5200. $2x^3-3x^2+6x+1$ funksiyaning hosilasini toping.

A) $6x^2-6x+7$ B) $6x^2-6x$

C) $6x^2-6x+6$ D) $6x^3-6x^2+6$

5201. x^{-2} funksiyaning hosilasini toping.

A) $-2x^{-1}$ B) $2x^{-3}$ C) $-2x^{-2}$ D) $-2x^{-3}$

5202. x^{-3} funksiyaning hosilasini toping.

A) $-3x^4$ B) $3x^{-4}$ C) $\frac{1}{x^4}$ D) $-\frac{3}{x^4}$

5203. $\frac{1}{x^4}$ funksiyaning hosilasini toping.

A) $4x^5$ B) $4x^{-5}$ C) $-4x^{-5}$ D) $-4x$

5204. $\frac{1}{x^7}$ funksiyaning hosilasini toping.

A) $-7x^{-8}$ B) $-7x^8$ C) $-7x^{-6}$ D) $7x$

5205. $x^{\frac{1}{2}}$ funksiyaning hosilasini toping.

A) $\frac{1}{2}x^{\frac{1}{2}}$ B) $x^{-\frac{1}{2}}$ C) $\frac{1}{2\sqrt{x}}$ D) $-\frac{1}{2}\sqrt{x}$

5206. $x^{\frac{1}{3}}$ funksiyaning hosilasini toping.

A) $\frac{1}{3}x^{\frac{1}{2}}$ B) $\frac{1}{3}\sqrt[3]{x}$ C) $\frac{1}{3\sqrt[3]{x^2}}$ D) $\frac{1}{3\sqrt{x^3}}$

5207. $\frac{1}{\sqrt[7]{x^2}}$ funksiyaning hosilasini toping.

A) $-\frac{2}{7}x^{\frac{5}{7}}$ B) $-\frac{2}{7}x^{-\frac{9}{7}}$ C) $-\frac{2}{7}x^{\frac{5}{7}}$ D) $-\frac{2}{7}x$

5208. $x^{\sqrt{3}}$ funksiyaning hosilasini toping.

A) $\sqrt{3}x^{\sqrt{3}-1}$ B) $\sqrt{3}x^{\sqrt{2}}$ C) $\sqrt{3}x^{\sqrt{3}}$ D) $\sqrt{3}x$

5209. $f(x)=\frac{1}{x^5}+\frac{1}{x^9}$ bo'lsa, $f'(x)=?$.

A) $-5x^{-6}-9x^{-10}$ B) $5x^6-9x^{-10}$

C) $-5x^{-4}$ D) $5x^{-6}+9x^{-10}$

5210. $\sqrt[4]{x}$ funksiyaning hosilasini toping.

A) $-\frac{1}{4}x^{-\frac{3}{4}}$ B) $\frac{1}{4}x^{\frac{3}{4}}$

C) $\frac{1}{4}x^{-\frac{5}{4}}$ D) $\frac{1}{4}x^{-\frac{3}{4}}$

5211. $\sqrt[3]{x^2}$ funksiyaning hosilasini toping.

A) $-\frac{2}{3}x^{-\frac{1}{3}}$ B) $\frac{2}{3}x^{\frac{1}{3}}$

C) $\frac{2}{3}x^{-\frac{1}{3}}$ D) $\frac{2}{3}x^{-\frac{5}{3}}$

5212. $\frac{1}{\sqrt[3]{x}}$ funksiyaning hosilasini toping.

A) $-\frac{1}{3}x^{-\frac{4}{3}}$ B) $-\frac{1}{3}x^{\frac{4}{3}}$

C) $\frac{1}{3}x^{-\frac{4}{3}}$ D) $-\frac{1}{3}x^{-\frac{2}{3}}$

5213. $\frac{1}{\sqrt[4]{x^3}}$ funksiyaning hosilasini toping.

A) $-\frac{3}{4}x^{\frac{7}{4}}$ B) $-\frac{3}{4}x^{-\frac{7}{4}}$

C) $\frac{3}{4}x^{-\frac{7}{4}}$ D) $-\frac{3}{4}x^{-\frac{1}{4}}$

5214. $(2x)^3$ funksiyaning hosilasini toping.

A) $24x^2$ B) $8x^2$ C) $8x^3$ D) $24x^3$

5215. $(-5x)^4$ funksiyaning hosilasini toping.

A) $2500x^2$ B) $-2500x^3$ C) $5000x^3$ D) $2500x^3$

5216. $g(x)=2\sqrt[4]{x}-\sqrt{x}$ bo'lsa, $g'(x)=?$

A) $\frac{1}{2\sqrt[4]{x^3}}-\frac{1}{\sqrt{x}}$ B) $\frac{1}{2\sqrt[4]{x^3}}+\frac{1}{\sqrt{x}}$

C) $\frac{1}{2\sqrt[4]{x^2}}-\frac{1}{2\sqrt{x}}$ D) $\frac{1}{2\sqrt[4]{x^3}}-\frac{1}{2\sqrt{x}}$

5217. $y(x)=x^3+\frac{1}{x^2}$ bo'lsa, $y'(x)=?$

A) $3x^2-\frac{2}{x^3}$ B) $3x^2+\frac{2}{x^3}$

C) $3x^2-\frac{1}{x^3}$ D) $3x^2+\frac{1}{x^3}$

5218. $f(x)=3\sqrt[6]{x}+7\sqrt[14]{x}$ funksiyaning hosilasini toping.

A) $\frac{1}{2\sqrt[6]{x^5}}+\frac{1}{2\sqrt[14]{x^{13}}}$ B) $\frac{1}{\sqrt[6]{x^5}}+\frac{1}{\sqrt[14]{x^{13}}}$

C) $\frac{1}{2x\sqrt[6]{x^5}}+\frac{1}{2\sqrt[14]{x^{13}}}$ D) $\frac{1}{2\sqrt[6]{x^5}}-\frac{1}{\sqrt[14]{x^{13}}}$

✓ $f(x)=8x^2-16x$ bo'lsa, $f'(-1)=?$

A) - 16 B) 16 C) -32 D) 32

Yechilishi:

$$f(x)=8x^2-16x$$

$$f'(x)=\left(8x^2\right)'-(16x)'=8\cdot 2x-16=16x-16$$

$$\Downarrow$$

$$f'(x)=16x-16 \Rightarrow f'(-1)=16(-1)-16=-32$$

Javob: (C)

5219. $f(x)=x^6$ $x_0=\frac{1}{2}$ bo'lsa, $f'(x_0)$ ning qiymtini toping.

A) $-\frac{3}{16}$ B) $\frac{3}{16}$ C) $-\frac{1}{16}$ D) $\frac{1}{16}$

5220. $f(x)=x^{-2}$ $x_0=3$ bo'lsa, $f'(x_0)$ ning qiymtini toping.

A) $-\frac{2}{27}$ B) $\frac{1}{27}$ C) $\frac{2}{27}$ D) $-\frac{1}{27}$

5221. $f(x)=\sqrt{x}$ $x_0=4$ bo'lsa, $f'(x_0)$ ning qiymtini toping.

A) $\frac{1}{2}$ B) $-\frac{1}{4}$ C) $-\frac{1}{2}$ D) $\frac{1}{4}$

5222. $f(x)=\sqrt[3]{x}$ $x_0=8$ bo'lsa, $f'(x_0)$ ning qiymtini toping.

A) $-\frac{1}{12}$ B) $\frac{1}{12}$ C) $-\frac{1}{6}$ D) $\frac{1}{6}$

5223. $f(x)=\frac{1}{x}+\frac{1}{x^2}$ bo'lsa, $f'(3)$ ning qiymatini toping.

A) $-\frac{4}{27}$ B) $-\frac{5}{27}$ C) $\frac{5}{27}$ D) $\frac{4}{27}$

5224. $f(x)=\sqrt{x}+\frac{1}{x}+1$ bo'lsa, $f'(1)$ ning qiymatini toping.

A) 1 B) $\frac{1}{2}$ C) $-\frac{1}{2}$ D) -1

5225. $f(x)=\frac{1}{\sqrt{x}}-\frac{2}{x^3}$ bo'lsa, $f'(\sin^2 6x+\cos^2 6x)$ ning qiymatini toping.

A) $\frac{13}{2}$ B) $-\frac{13}{2}$ C) 6 D) $\frac{11}{2}$

5226. $f(x)=x^{\frac{3}{2}}-x^{-\frac{3}{2}}$ bo'lsa, $f'(\log_2 16)$ ning qiymtini toping.

A) $3\frac{3}{64}$ B) $3\frac{25}{32}$ C) $\frac{27}{32}$ D) $-\frac{27}{32}$

5227. $f(x)=x^2+x+1$ bo'lsa $f'(\log_3 9)$ ning qiymatini toping.

A) 5 B) 7 C) 6 D) 4

5228. $y(x)=4x^2+12x+9$ $y'(x)>0$ ning qiymatlarini toping.

A) $(-2,5;+\infty)$ B) $(-1,5;+\infty)$

C) $[-1,5;+\infty)$ D) $(-\infty;1,5)$

5229. $f(x)=x^4-2x^2$ bo'lsa, $f'(x)\le 0$ ning qiymatlarini toping.

A) $x\le -1;\ 0\le x\le 1$ B) $0\le x\le -1;\ x\ge 1$

C) $x\ge -1;\ 0\le x\le 1$ D) $x\le 1;\ 0\le x\le -1$

5230. $f(x)=-x^3+x^2$ bo'lsa, $f'(x)>0$ ning qiymatlarini toping.

A) $(-\infty;0)\cup\left(\frac{2}{3};+\infty\right)$ B) $\left[0;\frac{2}{3}\right]$

C) $(0;1,5)$ D) $\left(0;\frac{2}{3}\right)$

✓ $(8x+3)^4$ funksiyaning hosilasini toping.

A) $4(2-5x)^3$ B) $32\cdot(8x+3)^3$

C) $-20(2-5x)^3$ D) $-32\cdot(8x+3)^3$

Yechilishi:

formula: $\left(f^{\alpha}(x)\right)'=\alpha f^{\alpha-1}(x)f'(x)$.

misol: $\left((8x+3)^4\right)'=4\cdot(8x+3)^3(8x+3)'=32\cdot(8x+3)^3$

Javob: (B)

IZOH: Agar funksiya quyidagicha bo'lsa :

$(-7x-1)^{-8}$ funksiyaning hosilasini toping.

$(-7x+1)^{-8}=-8(-7)(-7x+1)^{-8-1}=\frac{56}{(-7x+1)^9}$

5231. $(4x-3)^2$ funksiyaning hosilasini toping.

A) $2(4x-3)$ B) $2(4x-3)^2$

C) $8(4x-3)$ D) $-8(4x-3)$

5232. $(5x+2)^{-3}$ funksiyaning hosilasini toping.

A) $15(5x+2)^{-4}$ B) $-\frac{15}{(5x+2)^3}$

C) $-15(5x+2)^{-2}$ D) $-\frac{15}{(5x+2)^4}$

5233. $(1-2x)^{-6}$ funksiyaning hosilasini toping.

A) $12(1-2x)^{-5}$ B) $12(1-2x)^{-7}$

C) $12(1-2x)^7$ D) $-12(1-2x)^{-7}$

5234. $(2-5x)^4$ funksiyaning hosilasini toping.

A) $4(2-5x)^3$ B) $20(2-5x)^3$

C) $-20(2-5x)^3$ D) $-20(2-5x)^{-3}$

5235. $\sqrt[3]{2x+7}$ funksiyaning hosilasini toping.

A) $\frac{1}{3}(2x+7)^{-\frac{2}{3}}$ B) $\frac{2}{3}(2x+7)^{\frac{2}{3}}$

C) $\frac{2}{3}(2x+7)^{-\frac{2}{3}}$ D) $-\frac{2}{3}(2x+7)^{-\frac{2}{3}}$

5236. $\sqrt[4]{7-3x}$ funksiyaning hosilasini toping.

A) $\frac{3}{4\sqrt[4]{(7-3x)^3}}$ B) $-\frac{3}{4\sqrt[4]{(7-3x)^3}}$

C) $-\frac{1}{4\sqrt[4]{(7-3x)^3}}$ D) $\frac{1}{4\sqrt[4]{(7-3x)^3}}$

✓ $(x-1)^8(2-x)^7$ funksiyaning hosilasini toping.

A) $(x-1)^7(2+x)^6(17-15x)$ B) $(x-1)^7(2-x)^6$

C) $(x-1)^7(2-x)^6(23-15x)$ D) $-32\cdot(8x+3)^3$

Yechilishi:

ko'paytmaning hosilasi: $(u\cdot\vartheta)'=u'\cdot\vartheta+u\cdot\vartheta'$;

$\underbrace{(x-1)^8}_{u}\underbrace{(2-x)^7}_{\vartheta}=8(x-1)^7(2-x)^7+7(-1)(x-1)^8(2-x)^6=$

$=(x-1)^7(2-x)^6\left(8(2-x)-7(x-1)\right)=(x-1)^7(2-x)^6(23-15x)$

bo'linmaning hosilasi: $\left(\frac{u}{\vartheta}\right)'=\frac{u'\cdot\vartheta-u\cdot\vartheta'}{\vartheta^2}$.

$\left(\frac{2x^2}{1-7x}\right)'=\frac{(2x^2)'\cdot(1-7x)-2x^2\cdot(1-7x)'}{(1-7x)^2}=\frac{4x-14x^2}{(1-7x)^2}$

Javob: (C)

5237. $y=(x-2)^2\cdot x^3$ funksiyaning hosilasini toping.

A) $5x^4+16x^3+12x^2$ B) $5x^4-16x^3-12x^2$

C) $x^4-4x^3+4x^2$ D) $5x^4-16x^3+12x^2$

5238. $y=(x^2-x)(x^3+x)$ funksiyaning hosilasini toping.

A) $x^5-4x^3+4x^2$ B) $5x^5+16x^3+12x^2$

C) $5x^4-4x^3+3x^2-2x$ D) $5x^5-16x^3+12x^2+x$

5239. $y=(x+2)\cdot\sqrt[3]{x}$ funksiyaning hosilasini toping.

A) $\frac{4x+2}{3\sqrt[3]{x^2}}$ B) $\frac{4x+2}{3\sqrt[3]{2}}$ C) $\frac{4x+2}{3\sqrt[3]{x}}$ D) $\frac{4x}{3\sqrt[3]{x^2}}$

5240. $y=(x-1)\sqrt{x}$ funksiyaning hosilasini toping.

A) $\frac{3x-1}{\sqrt{x}}$ B) $\frac{3x-1}{2\sqrt{x}}$ C) $\frac{3x+1}{2\sqrt{x}}$ D) $\frac{3x^2-1}{2\sqrt{x}}$

5241. $y=(x^2+1)(3-5x^2)$ funksiyaning hosilasini toping.

A) $20x^3-4x$ B) $-20x^3-4x^2$

C) $-20x^3+4x$ D) $-20x^3-4x$

5242. $y=5x^2(x-x^2)$ funksiyaning hosilasini toping.

A) $5x^2(3-4x)$ B) $5x^2(3+4x)$

C) $x^2(15-4x)$ D) $x^2(3-4x)$

5243. $\frac{1-x}{1+x}$ funksiyaning hosilasini toping.

A) $\frac{2}{(1+x)^2}$ B) $\frac{-2}{(1+x)^2}$

C) $\frac{2x}{(1+x)^2}$ D) $\frac{-2x}{(1+x)^2}$

5244. $\frac{x}{x^2+1}$ funksiyaning hosilasini toping.

A) $\frac{1+x^2}{(x^2-1)^2}$ B) $-\frac{(1+x)^2}{(x^2+1)^2}$

C) $\frac{1-x^2}{(x^2+1)^2}$ D) $\frac{-(1+x)}{(x^2-1)^2}$

5245. $\frac{x^3+3}{x-1}$ funksiyaning hosilasini toping.

A) $\frac{2x^3-3x^2-3x}{(x-1)^2}$ B) $\frac{2x^3+3x^2-3}{(x-1)^2}$

C) $\frac{2x^3-3x^2-3}{(x-1)^2}$ D) $\frac{2x^3-3x^2}{(x-1)^2}$

5246. $\frac{2x^4}{2x^2-5x+2}$ funksiyaning hosilasini toping.

A) $\frac{8x^5-30x^4+16x^3}{2x^2-5x+2}$ B) $\frac{8x^5+30x^4+16x^3}{(2x^2+5x+2)^2}$

C) $\frac{8x^5-30x^4+16x^3}{(2x^2+5x+2)^2}$ D) $\frac{8x^5-30x^4+16x^3}{(2x^2-5x+2)^2}$

5247. $f(x)=(x-1)^8(2-x)^7$ bo'lsa $f'(1)$ ning qiymatini toping.

A) -1 B) 0 C) 2 D) 1

5248. $f(x)=(2x-1)^5(1+x)^4$ bo'lsa $f'(1)$ ning qiymatini toping.

A) 192 B) -192 C) 0 D) 129

5249. $f(x)=\frac{2x-1}{2x+1}$ bo'lsa $f'(1)$ ning qiymatini toping.

A) $\frac{4}{9}$ B) $\frac{7}{9}$ C) 0 D) -1

5250. $f(x)=\frac{x^2-1}{x^2+1}$ bo'lsa, $f'(tg\frac{\pi}{4})$ ning qiymatini toping.

A) 0 B) 2 C) -1 D) 1

5251. $f(x)=x^2-2x+1$ bo'lsa $f'(\log_{2018}1)$ ning qiymatini toping.

A) 2 B) -2 C) 0 D) 1

5252. $f(x)=\sqrt{2-x}(3-2x)^8$ bo'lsa, $f'(2017^0)$ ning qiymatini toping.

A) $-14,2$ B) 15 C) 15,6 D) $-16,5$

5253. $f(x)=(5x-4)^6\sqrt{3x-2}$ bo'lsa $f'(tgx\cdot ctgx)$ ning qiymatini toping.

A) 32,2 B) 31,5 C) 25,8 D) $-31,3$

5254. $f(x)=-x^3-2x$ bo'lsa $f'(\log_8 64)$ ning qiymatini toping.

A) -12 B) -10 C) -14 D) 12

✓ e^x+x^4 funksiyaning hosilasini toping.

A) $e^x+3\cdot x^3$ B) $e^x+4\cdot x^3$

C) $e^x-4\cdot x^3$ D) $-32\cdot(8x+3)^3$

Yechilishi:

formula: $\left(e^x\right)'=e^x$ *misol:* $\left(e^x+x^4\right)'=\left(e^x\right)'+\left(x^4\right)'=e^x+4\cdot x^3$

formula: $\left(a^x\right)'=a^x\ln a.$ *misol:* $\left(5^x+x^5\right)'=\left(5^x\right)'+\left(x^5\right)'=5^x\ln 5+5\cdot x^4$

murakkab funksiyaning hosilasi:

formula: $\left(e^{f(x)}\right)'=e^{f(x)}f'(x)$ *misol:* $\left(e^{4x}+4\right)'=\left(e^{4x}\right)'+(4)'=4e^{4x}$

formula: $\left(a^{f(x)}\right)'=a^{f(x)}\cdot\ln a\cdot f'(x)$

misol: $\left(5^{x^5}+5^x\right)'=\left(5^{x^5}\right)'+\left(5^x\right)'=5x^4\cdot 5^{x^5}\ln 5+5^x\cdot\ln 5$

Javob: (B)

5255. e^x+1 funksiyaning hosilasini toping.

A) e^x+1 B) 0 C) e^x D) xe^x

5256. e^x+x^2 funksiyaning hosilasini toping.

A) e^x+x^2 B) e^x+2x C) $x\cdot e^x+x^2$ D) e^x-2x

5257. $e^{2x}+\frac{1}{x}$ funksiyaning hosilasini toping.

A) $e^{2x}-\frac{1}{x^2}$ B) $2e^{2x}+\frac{1}{x^2}$

C) $2e^{2x}-\frac{1}{x^2}$ D) $2xe^{2x}-\frac{1}{x^2}$

5258. $e^{-3x}+\sqrt{x}$ funksiyaning hosilasini toping.

A) $-3e^{-3x}+\frac{1}{2\sqrt{x}}$ B) $3e^{-3x}+\frac{1}{2\sqrt{x}}$

C) $-3e^{3x}-\frac{1}{2\sqrt{x}}$ D) $-3e^{3x}+\frac{1}{2\sqrt{x}}$

5259. $e^{2x+1}+2x^3$ funksiyaning hosilasini toping.

A) $2e^{2x+1}+6x$ B) $(2x+1)e^{2x+1}+6x^2$

C) $2e^{2x+1}+6x^3$ D) $2e^{2x+1}+6x^2$

5260. $e^{\frac{1}{2}x-1}-\sqrt{x-1}$ funksiyaning hosilasini toping.

A) $\frac{1}{2}e^{\frac{1}{2}x-1}+\frac{1}{2\sqrt{x-1}}$ B) $\frac{1}{2}e^{\frac{1}{2}x-1}-\frac{1}{2\sqrt{x-1}}$

C) $\frac{1}{2}e^{\frac{1}{2}x-1}-\frac{1}{\sqrt{x-1}}$ D) $\frac{1}{2}e^{\frac{1}{2}x-1}+\frac{1}{\sqrt{x-1}}$

5261. $e^{0,(3)x+2}+\frac{1}{\sqrt{x}}$ funksiyaning hosilasini toping.

A) $-\frac{1}{3}e^{0,(3)x+2}-\frac{1}{2\sqrt{x^3}}$

B) $-\frac{1}{3}e^{0,(3)x+2}+\frac{1}{2\sqrt{x^3}}$

C) $\frac{1}{3}e^{0,(3)x+2}-\frac{1}{2\sqrt{x^3}}$ D) $\frac{1}{3}e^{0,(3)x-2}-\frac{1}{2\sqrt{x^3}}$

5262. $e^{1-x}+x^{-3}$ funksiyaning hosilasini toping.

A) $-e^{1-x}-3x^{-4}$ B) $-e^{1-x}+3x^{-4}$

C) $-e^{1-x}-3x^{-2}$ D) $e^{1-x}-3x^{-2}$

5263. 2^x+e^x funksiyaning hosilasini toping.

A) $2^x\ln 2+e^x$ B) $2^x\ln x+e^x$

C) $2^x\ln 2+xe^x$ D) $2^x\ln 2-e^x$

5264. 3^x-x^{-2} funksiyaning hosilasini toping.

A) $3^x\ln 3-2x^{-3}$ B) $3^x\ln 3-2x^{-1}$

C) $3^x\ln 3+2x^{-3}$ D) $3^x\ln 3+x^{-1}$

5265. $e^{2x}-x$ funksiyaning hosilasini toping.

A) $2e^{2x}-x$ B) $2e^{2x}-1$

C) $e^{2x}-1$ D) $e^{2x}-x$

5266. $0,5^x+e^{3x}$ funksiyaning hosilasini toping.

A) $0.5^x\ln 0.5+e^{3x}$ B) $0.5^x\ln 0.5-e^{3x}$

C) 0.5^x+3e^{3x} D) $0.5^x\ln 0.5+3e^{3x}$

5267. 3^x-e^{2x} funksiyaning hosilasini toping.

A) $3^x\ln x-2e^{2x}$ B) $3^x\ln 3+e^{2x}$

C) $3^x\ln 3-2e^{2x}$ D) $3^x\ln 3-e^x$

5268. $e^{2-x}+\sqrt[3]{x}$ funksiyaning hosilasini toping.

A) $-e^{2-x}-\frac{1}{3\sqrt[3]{x^2}}$ B) $e^{2-x}+\frac{1}{3\sqrt[3]{x^2}}$

C) $e^{2-x}-\frac{1}{3\sqrt[3]{x^2}}$ D) $-e^{2-x}+\frac{1}{3\sqrt[3]{x^2}}$

5269. $e^{3-x}+\frac{1}{x^4}$ funksiyaning hosilasini toping.

A) $-e^{3-x}-4x^{-5}$ B) $e^{3-x}+4x^{-5}$

C) $-e^{3-x}-4x^{-3}$ D) $-e^{3-x}-x^{-3}$

5270. $(5x-11)e^x$ funksiyaning hosilasini toping.

A) $5e^x$ B) $3^x\ln 3+e^{2x}$

C) $(5x-6)e^x$ D) $(5x-16)e^x$

5271. $(6x-13)e^x$ funksiyaning hosilasini toping.

A) $x(6x-13)e^{x-1}+e^x$ B) $(6x-16)e^x$

C) $6e^x$ D) $(6x-7)e^x$

5272. $(7x-15)e^x$ funksiyaning hosilasini toping.

A) $(7x-8)e^x$ B) $(7x-22)e^x$

C) $7e^x$ D) $x(7x-15)e^{x-1}+e^x$

5273. Agar $f(x)=3x-2e^{-x}$ bo'lsa, $f'(\ln 2)$ ning qiymatini toping.

A) 4 B) 5 C) 2 D) 1

✓ $2\ln x+x^7$ funksiyaning hosilasini toping.

A) $\frac{1}{x}+3\cdot x^3$ B) $e^x+4\cdot x^3$

C) $\frac{2}{x}-7x^6$ D) $\frac{2}{x}+7x^6$

Yechilishi:

formula:	*misol:*
$(\ln x)'=\frac{1}{x}$	$\left(2\ln x+x^7\right)'=(2\ln x)'+\left(x^7\right)'=2\cdot\frac{1}{x}+7\cdot x^6$
formula:	*misol:*
$\left(\log_a x\right)'=\frac{1}{x\ln a}$	$\left(\log_5 x+e^x\right)'=\left(\log_5 x\right)'+\left(e^x\right)'=\frac{1}{x\ln 5}+e^x$

murakkab funksiyaning hosilasi:

formula:	*misol:*
$(\ln f(x))'=\frac{f'(x)}{f(x)}$	$\left(\ln 9x^2+1\right)'=\left(\ln 9x^2\right)'+(1)'=\frac{18x}{9x^2}=\frac{2}{x}$

formula:

$$\left(\log_a f(x)\right)' = \frac{f'(x)}{f(x)\ln a}$$

misol:

$$\left(\log_{\sqrt{77}}(9x+8)+11\right)' = \left(\log_{\sqrt{77}}(9x+8)\right)' + (11)' = \frac{9}{(9x+8)\ln\sqrt{77}}$$

5274. $2\ln x + 3^x$ funksiyaning hosilasini toping.

A) $2\ln x + 3^x \ln 3$ B) $\frac{2}{x} + 3^x \ln x$

C) $\frac{2}{x} + 3^x \ln 3$ D) $\frac{1}{x} - 3^x \ln 3$

5275. $3\ln x - 2^x$ funksiyaning hosilasini toping.

A) $\frac{3}{x} + 2^x \ln 2$ B) $\frac{3}{x} - 2^x \ln 2$

C) $\frac{1}{x} - 2^x \ln 2$ D) $\frac{1}{x} - 2^x \ln x$

5276. $\log_2 x + \frac{1}{2x}$ funksiyaning hosilasini toping.

A) $\frac{1}{x\ln 2} - \frac{1}{2x^2}$ B) $\frac{\ln 2}{x} - \frac{1}{2x^2}$

C) $\frac{1}{x\ln 2} + \frac{1}{2x^2}$ D) $\frac{2}{x} - \frac{1}{2x^2}$

5277. $3e^{-x} - \log_3 x$ funksiyaning hosilasini toping.

A) $3e^{-x} - \frac{\ln 3}{x}$ B) $-3e^{-x} - \frac{1}{\ln 3}$

C) $3e^{-x} - \frac{1}{x\ln 3}$ D) $-3e^{-x} - \frac{1}{x\ln 3}$

5278. $y = \log_5 2x$ funksiyaning hosilasini toping.

A) $\frac{2}{x\ln 5}$ B) $\frac{2}{x\ln 2}$ C) $\frac{1}{x\ln 2}$ D) $\frac{1}{x\ln 5}$

5279. $(4x-7)\ln x$ funksiyaning hosilasini toping.

A) $4\ln x - \frac{4x-7}{x}$ B) $4\ln x + \frac{4x-7}{x}$

C) $-\frac{4x-7}{x}$ D) $\frac{4x-7}{x}$

5280. $(5x-9)\ln x$ funksiyaning hosilasini toping.

A) $5\ln x + \frac{5x-9}{x}$ B) $5\ln x - \frac{5x-9}{x}$

C) $\frac{5x-9}{x}$ D) $-\frac{5x-9}{x}$

5281. $(6x-11)\ln x$ funksiyaning hosilasini toping.

A) $-\frac{6x-11}{x}$ B) $\frac{6x-11}{x}$

C) $6\ln x - \frac{6x-11}{x}$ D) $6\ln x + \frac{6x-11}{x}$

✓ $\sin x + x^2$ funksiyaning hosilasini toping.

A) $\cos x + 5\cdot x$ B) $\cos x + 3\cdot x$

C) $\cos x - 2\cdot x$ D) $\cos x + 2\cdot x$

Yechilishi:

formula: $(\sin x)' = \cos x.$ *misol:* $\left(\sin x + x^2\right)' = (\sin x)' + \left(x^2\right)' = \cos x + 2\cdot x$

formula: $(\cos x)' = -\sin x$ *misol:* $\left(\cos x + e^x\right)' = (\cos x)' + \left(e^x\right)' = -\sin x + e^x$

formula: $(tg\,x)' = \frac{1}{\cos^2 x}.$ *misol:* $(tg\,x+16)' = (tg\,x)' + (16)' = \frac{1}{\cos^2 x}$

formula: $(ctg\,x)' = -\frac{1}{\sin^2 x}.$ *misol:* $(ctg\,x+x)' = (ctg\,x)' + (x)' = -\frac{1}{\sin^2 x} + 1$

murakkab funksiyaning hosilasi:

formula:

$$\left(\sin f(x)\right)' = \cos f(x)\cdot f'(x)$$

misol:

$$(\sin(4x+1)+19)' = (\sin(4x+1))' + (19)' = 4\cos(4x+1)$$

formula:

$$\left(\cos f(x)\right)' = -\sin f(x)\cdot f'(x)$$

misol:

$$\left(\cos(11x^2+8)+13\right)' = \left(\cos(11x^2+8)\right)' + (13)' = -22x\sin(11x^2+8)$$

5282. $\sin x + x^2$ funksiyaning hosilasini toping.

A) $-\cos x + 2x$ B) $\cos x - 2x$

C) $\cos x + 2x$ D) $-\cos x - 2$

5283. $\cos x - 1$ funksiyaning hosilasini toping.

A) $-\sin x$ B) $-\sin x - 1$ C) $\sin x$ D) $\cos x$

5284. *$\cos x + e^x$ funksiyaning hosilasini toping.*

A) $-\cos x + e^x$ B) $-\sin x - xe^x$

C) $\sin x + e^x$ D) $-\sin x + e^x$

5285. $\sin x - 2^x$ funksiyaning hosilasini toping.

A) $\cos x - 2^x \ln 2$ B) $-\cos x - 2^x \ln 2$

C) $-\cos x - 2^x$ D) $\cos x - \ln 2$

5286. $\sin(2x-1)$ funksiyaning hosilasini toping.

A) $\cos(2x-1)$ B) $-2\cos(2x-1)$

C) $2\cos(2x-1)$ D) $-2\sin(2x-1)$

5287. $\cos(x+2)$ funksiyaning hosilasini toping.

A) $\sin(x+2)$ B) $-\sin(x+2)$

C) $2\sin(x+2)$ D) $-2\sin(x+2)$

5288. $\cos(1-x)$ funksiyaning hosilasini toping.

A) $-\sin(1-x)$ B) $\sin(1-x)$

C) $-\cos(1-x)$ D) $\cos(1-x)$

5289. $\sin(3-x)$ funksiyaning hosilasini toping.

A) $\cos(3-x)$ B) $-\cos(3-x)$

C) $-\sin(3-x)$ D) $-3\cos(3-x)$

5290. $\cos\left(\frac{x}{2}-1\right)+e^{3x}$ funksiyaning hosilasini toping.

A) $-\frac{\sin}{2}\left(\frac{x}{2}-1\right)+3e^{3x}$ B) $\frac{\sin}{2}\left(\frac{x}{2}-1\right)+3e^{3x}$

C) $-\frac{\sin\left(\frac{x}{2}-1\right)}{2}+3e^{3x}$ D) $-\cos\left(\frac{x}{2}-1\right)+3e^{3x}$

5291. $\sin\left(\frac{x}{3}+3\right)+2^x$ funksiyaning hosilasini toping.

A) $\frac{\cos\left(\frac{x}{3}+3\right)}{3}+2^x\ln 2$ B) $-\frac{\sin\left(\frac{x}{3}+3\right)}{3}+2^x\ln 2$

C) $\frac{\sin\left(\frac{x}{3}+3\right)}{3}+2^x\ln 2$ D) $-\frac{\cos\left(\frac{x}{3}+3\right)}{3}+2^x\ln 2$

5292. $\frac{1}{2}\sin 2x+\sqrt{2x}$ funksiyaning hosilasini toping.

A) $-\cos 2x+\frac{1}{\sqrt{2x}}$ B) $\cos 2x+\frac{1}{\sqrt{2x}}$

C) $2\cos 2x+\frac{1}{\sqrt{2x}}$ D) $-2\cos 2x+\frac{1}{\sqrt{2x}}$

5293. $3\cos 4x-\frac{1}{2x}$ funksiyaning hosilasini toping.

A) $-3\sin 4x+\frac{1}{2x^2}$ B) $3\sin 4x+\frac{1}{2x^2}$

C) $12\cos 4x+\frac{1}{2x^2}$ D) $-12\sin 4x+\frac{1}{2x^2}$

5294. $f(x)=2\cos x-\frac{\left(\sqrt{\pi}\right)^3}{\sqrt{x}}+\frac{\pi}{2}$ bo'lsa, $f'(\pi)$ ning qiymatini toping.

A) 0,5 B) $\frac{\sqrt{\pi}}{2}$ C) 2,5 D) 1,5

5295. $(8x-15)\sin x$ funksiyaning hosilasini toping.

A) $8\sin x-(8x-15)\cos x$ B) $8\cos x$

C) $8\sin x$ D) $8\sin x+(8x-15)\cos x$

5296. $(16x-7)tg\,x$ funksiyaning hosilasini toping.

A) $16\,tgx-\frac{16x-7}{\cos^2 x}$ B) $16\,tgx+\frac{16x-7}{\cos^2 x}$

C) $16\,tgx+\frac{16x-7}{\sin^2 x}$ D) $-2\sin(16x+7)$

5297. $y=(4x-5)\cos x$ funksiyaning hosilasini toping.

A) $4\sin x-4(4x-5)\cos x$

B) $4\cos x+(4x-5)\sin x$

C) $4\sin x$

D) $4\cos x-(4x-5)\sin x$

5298. $\frac{\cos x}{e^x}$ funksiyaning hosilasini toping.

A) $-\frac{\sin x\cdot e^x+\cos x\cdot e^x}{e^{2x}}$ B) $\frac{\sin x\cdot e^x+\cos x\cdot e^x}{e^{2x}}$

C) $\frac{-\sin x\cdot e^x+\cos x\cdot e^x}{e^{2x}}$ D) $\frac{-\cos x\cdot e^x+\cos x\cdot e^x}{e^{2x}}$

5299. $\frac{3^x}{\sin x}$ funksiyaning hosilasini toping.

A) $\frac{3^x\ln 3\cdot\sin x+\cos x\cdot 3^x}{\sin^2 x}$ B) $\frac{3^x\ln 3\cdot\sin x-\cos x\cdot 3^x}{\sin^2 x}$

C) $\frac{3^x\ln x\cdot\sin x-\cos x\cdot 3^x}{\sin^2 x}$ D) $\frac{3^x\sin x-\cos x\cdot 3^x}{\sin^2 x}$

5300. $\ln x\cdot\cos 3x$ funksiyaning hosilasini toping.

A) $x^{-1}\cdot\cos 3x-3\ln x\sin 3x$

B) $x^{-1}\cdot\cos 3x+3\ln x\sin 3x$

C) $3x^{-1}\cdot\cos 3x-3\ln x\sin 3x$

D) $x^{-1}\cdot\cos 3x+\ln x\sin 3x$

5301. $\log_3(x)\cdot\sin 2x$ funksiyaning hosilasini toping.

A) $\frac{\sin 2x}{x\ln 3}-2\log_3(x)\cos 2x$

B) $\frac{\sin 2x}{x\ln 3}-\log_3(x)\cos 2x$

C) $\frac{\sin 2x}{x\ln 3}+\log_3(x)\cos 2x$

D) $\frac{\sin 2x}{x\ln 3}+2\log_3(x)\cos 2x$

5302. $\sin x+\cos x$ funksiyaning hosilasini toping.

A) $\cos x-\sin x$ B) $\cos x+\sin x$

C) $-\cos x-\sin x$ D) $-\cos x+\sin x$

5303. $\sin x-\cos x$ funksiyaning hosilasini toping.

A) $\cos x-\sin x$ B) $\cos x+\sin x$

C) $-\cos x-\sin x$ D) $-\cos x+\sin x$

5304. $-\sin x+7\cos x$ funksiyaning hosilasini toping.

A) $-\cos x+7\sin x$ B) $\cos x-7\sin x$

C) $\cos x+7\sin x$ D) $-\cos x-7\sin x$

5305. $2\sin x-3\cos x$ funksiyaning hosilasini toping.

A) $-2\cos x-3\sin x$ B) $2\cos x-3\sin x$

C) $2\cos x+3\sin x$ D) $-2\cos x+3\sin x$

5306. $x^2\cos x$ funksiyaning hosilasini toping.

A) $2x\cdot\cos x+x^2\sin x$ B) $2x\cdot\cos x-x^2\sin x$

C) $x\cdot\cos x-x^2\sin x$ D) $2x\cdot\cos x-x^2\cos x$

5307. $\sin x\cos x$ funksiyaning hosilasini toping.

A) $\cos 2x$ B) $\cos^2 x+\sin^2 x$

C) $\dfrac{\cos 2x}{2}$ D) $-\cos 2x$

5308. $x\sin x$ funksiyaning hosilasini toping.

A) $\cos x+x\sin x$ B) $x\sin x-x\cos x$

C) $\sin x-x\cos x$ D) $\sin x+x\cos x$

5309. $(\cos x)/x$ funksiyaning hosilasini toping.

A) $\dfrac{-\sin x\cdot x+x\cdot\cos x}{x^2}$ B) $\dfrac{-\sin x\cdot x-x\cdot\cos x}{x^2}$

C) $\dfrac{-\sin x-x\cdot\cos x}{x^2}$ D) $-\dfrac{\sin x\cdot x+\cos x}{x^2}$

5310. $x^3\cos x$ funksiyaning hosilasini toping.

A) $3x^2\cos x-x^3\sin x$ B) $x^2\cos x-x^3\sin x$

C) $3x^2\cos x+x^3\sin x$ D) $3x^2\cos x-4x^3\sin x$

5311. $(1-2\sin x)(1-3\cos x)$ funksiyaning hosilasini toping.

A) $-3\sin x-2\cos x+6\cos 2x$

B) $-3\sin x-2\cos x-6\cos 2x$

C) $\sin x-2\cos x+6\cos 2x$

D) $3\sin x-2\cos x+6\cos 2x$

5312. $e^x-\sin x$ funksiyaning hosilasini toping.

A) $e^x-\cos x$ B) $e^x+\cos x$

C) $e^x-\sin x$ D) $e^x+\sin x$

5313. $\cos x-\ln x$ funksiyaning hosilasini toping.

A) $\sin x-\dfrac{1}{x}$ B) $-\sin x-\dfrac{1}{x}$

C) $-\cos x-\dfrac{1}{x}$ D) $\sin x+\dfrac{1}{x}$

5314. $\sin x-\sqrt[3]{x}$ funksiyaning hosilasini toping.

A) $-\cos x+\dfrac{1}{3\sqrt[3]{x^2}}$ B) $\cos x+\dfrac{1}{3\sqrt[3]{x^2}}$

C) $-\cos x-\dfrac{1}{3\sqrt[3]{x^2}}$ D) $\cos x-\dfrac{1}{3\sqrt[3]{x^2}}$

5315. $6x^4-9e^x$ funksiyaning hosilasini toping.

A) $24x^3-9e^x$ B) $24x^4-9$

C) $18x^3-9e^x$ D) $6x^4+9e^x$

5316. $\dfrac{5}{x}+4e^x$ funksiyaning hosilasini toping.

A) $-5x^2+4e^x$ B) $\dfrac{5}{x^2}+4e^x$

C) $-\dfrac{5}{x^2}+4e^x$ D) $\dfrac{5}{x^2}-4e^x$

5317. $\dfrac{1}{3x^3}+\dfrac{1}{2}\ln x$ funksiyaning hosilasini toping.

A) $-\dfrac{1}{9x^4}+\dfrac{1}{2x}$ B) $-\dfrac{1}{3x^4}+\dfrac{1}{2x}$

C) $-\dfrac{1}{x^4}+\dfrac{1}{2x}$ D) $\dfrac{1}{x^4}+\dfrac{1}{2x}$

5318. $\sin 5x+\cos(2x-3)$ funksiyaning hosilasini toping.

A) $5\cos 5x-2\sin(2x-3)$

B) $5\cos 5x+2\sin(2x-3)$

C) $-5\cos 5x-2\sin(2x-3)$

D) $-5\cos 5x+2\sin(2x-3)$

5319. $e^{2x}-\ln 3x$ funksiyaning hosilasini toping.

A) $2e^{2x}+\dfrac{1}{x}$ B) $2e^{2x}-\dfrac{1}{x}$

C) $e^{2x}-\dfrac{1}{x}$ D) $2e^{2x}-\dfrac{3}{x}$

5320. $\sin(x-3)-\ln(1-2x)$ funksiyaning hosilasini toping.

A) $-\cos(x-3)+\dfrac{2}{1-2x}$ B) $\cos(x-3)-\dfrac{2}{1-2x}$

C) $\cos(x-3)+\dfrac{2}{1-2x}$ D) $-\cos(x-3)-\dfrac{1}{1-2x}$

5321. $6\sin\dfrac{2x}{3}-e^{1-3x}$ funksiyaning hosilasini toping.

A) $4\cos\dfrac{2x}{3}+3e^{1-3x}$ B) $\cos\dfrac{2x}{3}+3e^{1-3x}$

C) $-4\cos\dfrac{2x}{3}-3e^{1-3x}$ D) $-4\cos\dfrac{2x}{3}+e^{1-3x}$

5322. Agar $f(x)=x\sin 2x$ va $x_0=\pi$ bo'lsa, $f'(x_0)+f(x_0)+2$ ni toping.

A) $2+\pi$ B) $2+2\pi$ C) $2-2\pi$ D) 2

5323. $y=a^{1/x}$ funksiyaning hosilasini toping.

A) $\dfrac{a^{1/x}\ln a}{x^2}$ B) $\dfrac{a^{1/x}\ln a}{x}$

C) $-\dfrac{a^{1/x}\ln a}{x}$ D) $-\dfrac{a^{1/x}\ln a}{x^2}$

5324. $y=x^n n^x$ funksiyaning hosilasini toping.

A) $n^{x+1}x^{n-1}+x^n n^x\ln n$

B) $n^{x+1}x^{n+1}+x^n n^x\ln n$

C) $n^{x+1}x^{n-1}+x^n n^x$

D) $n^{x+1}x^{n+1}+x^n n^x$

5325. $y=\ln e^{\cos x}$ funksiyaning hosilasini toping.

A) $\sin x$ B) $-\sin x$

C) $\sin x\ln\cos x$ D) $\cos x$

5326. $y = xa^2$ funksiyaning hosilasini toping.

A) a^2 B) a C) ax D) $2\ln a$

5327. $y = x/e^x$ funksiyaning hosilasini toping.

A) $\frac{1+x}{e^x}$ B) $-\frac{1-x}{e^x}$ C) $\frac{1-x}{e^x}$ D) $-\frac{1+x}{e^x}$

5328. $y = e^{x\ln x}$ funksiyaning hosilasini toping.

A) $x^x \ln(x+1)$ B) $x^2 \ln(x+1)$

C) $x^x(\ln x + 1)$ D) $-x^x(\ln x - 1)$

5329. $y = e^{\cos x}\sin x$ funksiyaning hosilasini toping.

A) $(-\sin^2 x + \cos x)e^{\cos x}$

B) $(-\sin^2 x - \cos x)e^{\cos x}$

C) $(\sin^2 x + \cos x)e^{\cos x}$

D) $(\sin^2 x - \cos x)e^{\cos x}$

5330. $-2e^{\sin x}$ funksiyaning hosilasini toping.

A) $2\cos x e^{\sin x}$ B) $-2\ln\sin x e^{\sin x}$

C) $2\sin x e^{\sin x}$ D) $-2\cos x e^{\sin x}$

5331. $y = \cos e^x$ funksiyaning hosilasini toping.

A) $\sin e^x$ B) $-e^x \sin e^x$

C) $e^x \sin e^x$ D) $-e^x \cos e^x$

5332. $y = e^{\ln^2 x}$ funksiyaning hosilasini toping.

A) $\frac{2e^{\ln^2 x}\cdot\ln x}{x}$ B) $\frac{2e^{\ln x}\cdot\ln x}{x}$

C) $\frac{e^{\ln^2 x}\cdot\ln x}{x}$ D) $-\frac{2e^{\ln^2 x}\cdot\ln x}{x}$

5333. $y = e^{tgx}$ funksiyaning hosilasini toping.

A) $-\frac{e^{tgx}}{\cos^2 x}$ B) $\frac{tgxe^{tgx}}{\cos^2 x}$

C) $\frac{e^{tgx}}{\cos^2 x}$ D) $\frac{2e^{tgx}}{\cos^2 x}$

5334. $y = -2e^{\sin^2 x} + \cos 2e^{x^2}$ funksiyaning hosilasini toping.

A) $-2\sin 2xe^{\sin^2 x} + 4xe^{x^2}\cdot\sin 2e^{x^2}$

B) $-2\sin 2xe^{\sin^2 x} - 2xe^{x^2}\cdot\sin 2e^{x^2}$

C) $-2\sin 2xe^{\sin^2 x} - 4xe^{x^2}\cdot\sin 2e^{x^2}$

D) $2\sin 2xe^{\sin^2 x} - 4xe^{x^2}\cdot\sin 2e^{x^2}$

5335. $y = \frac{0{,}3^x}{\lg x+3}$ funksiyaning hosilasini toping.

A) $\frac{0{,}3^x(\lg x+3)+\frac{0{,}3^x}{x\ln 10}}{(\lg x+3)^2}$

B) $\frac{0{,}3^x\ln 0{,}3(\lg x+3)+\frac{0{,}3^x}{x\ln 10}}{(\lg x+3)^2}$

C) $\frac{0{,}3^x\ln 0{,}3(\lg x+3)-\frac{0{,}3^x}{\ln 10}}{(\lg x+3)^2}$

D) $\frac{0{,}3^x\ln 0{,}3(\lg x+3)-\frac{0{,}3^x}{x\ln 10}}{(\lg x+3)^2}$

5336. Agar $f(x) = \sqrt{x^2+3} + \frac{2x}{x+1}$ bo'lsa $f'(1)$ ni toping.

A) 2 B) -1 C) 1 D) $\sin 2$

5337. Agar $f(x) = \frac{x^2-2}{x^2+2}$ bo'lsa $f'(2)$ ni toping.

A) 3 B) $-\frac{3}{5}$ C) $\frac{2}{5}$ D) $\frac{4}{9}$

5338. Agar $f(x) = \frac{x}{3} - \frac{3}{x}$ bo'lsa $f'(3)$ ni toping.

A) 4,5 B) $\frac{2}{3}$ C) $\frac{1}{3}$ D) $\frac{2}{7}$

5339. Agar $f(x) = x - \frac{2}{x^2} - \frac{1}{3x^3}$ bo'lsa $f'(-1)$ ni toping.

A) 1,5 B) 1 C) 3 D) -2

5340. Agar $f(x) = \frac{x}{\sqrt{x^2+3}} + \frac{1}{x+1}$ bo'lsa $f'(1)$ ni toping.

A) $\frac{3}{2}$ B) $\frac{1}{8}$ C) $\frac{2}{7}$ D) $\frac{1}{3}$

5341. Agar $f(x) = \frac{\sqrt{x+1}}{\sqrt{x+1}+1}$ bo'lsa $f'(0)$ ni toping.

A) $\frac{1}{2}$ B) $\frac{1}{5}$ C) 2 D) $\frac{1}{8}$

5342. Agar $f(x) = \sin 4x\cos 4x$ bo'lsa $f'(\frac{\pi}{3})$ ni toping.

A) -2 B) 0 C) 1 D) -3

5343. Agar $f(x) = \sin^2 x^2$ bo'lsa $f'(0)$ ni toping.

A) 0 B) $\frac{1}{2}$ C) 32 D) 3

5344. Agar $f(x) = \frac{\cos x}{1+\sin x}$ bo'lsa $f'(\frac{\pi}{2})$ ni toping.

A) $\frac{2}{3}$ B) $-\frac{1}{2}$ C) 0,5 D) 1,5

5345. Agar $f(x) = \sin^4 x - \cos^4 x$ bo'lsa $f'(\frac{\pi}{12})$ ni toping.

A) 0 B) -2 C) 1 D) 3,5

5346. Agar $f(x)=\frac{\sqrt{x-1}+\sqrt[5]{x-1}}{\sqrt[3]{x-1}}$ bo'lsa $f'(2)$ ni toping.

A) $\frac{1}{30}$ B) $\frac{1}{6}$ C) $-\frac{2}{27}$ D) $\frac{3}{5}$

5347. Agar $f(x)=5(x+1)^2\cdot\sqrt[5]{x-1}$ bo'lsa $f'(2)$ ni toping.

A) 33 B) 34 C) -7 D) 39

5348. Agar $f(x)=\sqrt{x^2-1+\sqrt[3]{x}}$ bo'lsa $f'(1)$ ni toping.

A) $\frac{7}{6}$ B) 10 C) $\frac{7}{5}$ D) 8

5349. Agar $f(x)=\frac{1}{2}\sin x\cdot tg2x$ bo'lsa $f'(\frac{\pi}{2})$ ni toping.

A) 1 B) 0,33 C) 2 D) 4,6

5350. Agar $f(x)=\sqrt{\frac{1-x}{1+x^2}}$ bo'lsa $f'(0)$ ni toping.

A) 1 B) 1,5 C) $-\frac{1}{2}$ D) -6

5351. Agar $f(x)=\frac{2^{2x}}{\sqrt{2-2^{2x}}}$ bo'lsa $f'(0)$ ni toping.

A) $3\ln 3$ B) $\ln 8$ C) $-3\ln 2$ D) $2\ln 3$

5352. Agar $f(x)=\sin^3\frac{x}{2}$ bo'lsa $f'(\frac{\pi}{2})$ ni toping.

A) $\frac{\sqrt{2}}{3}$ B) $\frac{3\sqrt{2}}{8}$ C) 2,5 D) $\frac{\sqrt{2}}{8}$

5353. Agar $f(x)=2^{x-2x^2-1}$ bo'lsa $f'(0)$ ni toping.

A) $\ln 4$ B) $-0,5\ln 2$ C) $\ln\sqrt{2}$ D) $\ln 0,5$

5354. Agar $f(x)=\frac{x^2+3}{x-1}$ bo'lsa $f'(0)$ ni toping.

A) -4 B) 2,3 C) 3 D) -3

5355. Agar $f(x)=(x^2-x)\cos^2 x$ bo'lsa $f'(0)$ ni toping.

A) 1 B) 7 C) -1 D) 3

5356. Agar $f(x)=\frac{\sin 2x}{\sqrt{x}}$ bo'lsa $f'(\pi)$ ni toping.

A) $\sqrt{2\pi}$ B) $\frac{2}{\sqrt{\pi}}$ C) $\frac{\sqrt{\pi}}{2}$ D) $\sqrt{2\pi}$

5357. Agar $f(x)=\frac{x-2}{\sin^2 x}$ bo'lsa $f'(\frac{\pi}{2})$ ni toping.

A) 1 B) 0 C) 2 D) -1

HOSILANING FIZIK MA'NOSI

✓ $s(t)=3t^2+5t-1$ qonun bo'yicha harakat qilayotgan jismning $t=5$ vaqt momentidagi tezligini aniqlang.

A) 30 B) 35 C) 40 D) 55

Yechilishi:

1-qoida:

$s(t)$ yo'lning vaqtga bog'liqligi berilgan bo'lsa, $s(t)$ dan t ga nisbatan birinchi tartibli hosila olsak, tezlik kelib chiqadi: $\vartheta(t)=s'(t)$

2-qoida:

$s(t)$ yo'lning vaqtga bog'liqligi berilgan bo'lsa, $s(t)$ dan t ga nisbatan ikkinchi tartibli (yoki tezlikdan birinchi tartibli) hosila olsak, tezlanish kelib chiqadi: $a(t)=s''(t)=\vartheta'(t)$

$s(t)=3t^2+5t-1\Rightarrow\ \vartheta(t)=s'(t)=\left(3t^2+5t-1\right)'=6t+5$

$t=5$ vaqt momentidagi tezligini aniqlang. $\Rightarrow$ $\vartheta(t)=s'(t)=6t+5$

$\vartheta(5)=s'(5)=6\cdot 5+5=35$

Javob: (B)

5358. Agar nuqta $s(t)=\frac{3}{2}t^2$ qonun bo'yicha harakatlanayotgan bo'lsa uning oniy tezligini toping.

A) $v=\frac{4}{3}t$ B) $v=3t$ C) $v=3t^2$ D) $v=4t$

5359. $s(t)=3t^2+5t-1$ qonun bo'yicha harakatlanayotgan jismning $t=10$ vaqtdagi tezligini toping.

A) 100 B) 60 C) 110 D) 65

5360. $s(t)=\sqrt{t+1}$ qonun bo'yicha harakatlanayotgan jismning $t=3$ vaqtdagi tezligini toping.

A) $\frac{1}{4}$ B) 1 C) $\frac{1}{2}$ D) $\frac{3}{2}$

5361. $s(t)=t^3+3t^2$ qonun bo'yicha harakatlanayotgan jismning $t=1$ vaqtdagi tezligini toping.

A) 16 B) 9 C) 13 D) 12

5362. $s(t)=3t^2-t$ qonun bo'yicha harakatlanayotgan jismning $t=4$ vaqtdagi tezligini toping.

A) 11 B) 35 C) 23 D) 19

5363. $s(t)=7t^4-2t^2+4t$ qonun bo'yicha harakatlanayotgan jismning $t=0$ vaqtdagi tezligini toping.

A) 4 B) 0 C) 9 D) 13

5364. $s(t)=2t^3+t^2$ qonun bo'yicha harakatlanayotgan jismning $t=3$ vaqtdagi tezlanishini toping.

A) 30 B) 38 C) 31 D) 24

5365. $s(t)=4t^4+3t^2+5$ qonun bo'yicha harakatlanayotgan jismning $t=2$ vaqtdagi tezlanishini toping.

A) 198 B) 102 C) 108 D) 166

5366. $s(t)=t^5+6t^2-t$ qonun bo'yicha harakatlanayotgan jismning $t=4,5$ vaqtdagi tezlanishini toping.

A) 1802,5 B) 1807,5 C) 1834,5 D) 1842,5

5367. $s(t)=-2t^3+5t^2+6t$ qonun bo'yicha harakatlanayotgan jismning tezlanishi nolga teng bolgan vaqtdagi tezligini toping.

A) $12\frac{1}{6}$ B) $4\frac{1}{6}$ C) $10\frac{1}{6}$ D) $4\frac{5}{6}$

5368. $s(t)=2t^3-5t^2+8t$ qonun bo'yicha harakatlanayotgan jismning tezlanishi nolga teng bolgan vaqtdagi tezligini toping.

A) $4\frac{1}{6}$ B) $3\frac{5}{6}$ C) $8\frac{5}{6}$ D) $8\frac{1}{6}$

5369. $s(t)=t^4-6t^2+10t$ qonun bo'yicha harakatlanayotgan jismning tezlanishi nolga teng bolgan vaqtdagi tezligini toping.

A) 2 B) 1 C) 1,3 D) 3,5

5370. $s(t)=-6t^2+3t$ qonun bo'yicha harakatlanayotgan jismning tezligi nolga teng bolguncha bosib o'tadigan yo'lini toping.

A) -3/8 B) 3/8 C) 6 D) 3/4

5371. $s(t)=-8t^2+32t$ qonun bo'yicha harakatlanayotgan jismning tezligi nolga teng bolguncha bosib o'tadigan yo'lini toping.

A) 31 B) 24 C) -4 D) 32

5372. $s(t)=8t^4-3t^2+1$ qonun bo'yicha harakatlanayotgan jismning tezligi nolga teng bolguncha bosib o'tadigan yo'lini toping.

A) $\frac{23}{32}$ B) $-\frac{14}{21}$ C) $\frac{14}{21}$ D) $\frac{3}{5}$

5373. Jismning o'q atrofida burilish burchagi t vaqtga bog'liq ravishda $\varphi(t)=0,1t^2-0,5t+0,2$ qonun asosida o'zgarsa $t=20s$ vaqt momentidagi burchak tezligini toping.

A) 3 B) 4 C) 3,5 D) 4,5

5374. Massasi $m=5kg$ bo'lgan jism $s=1-t+t^2$ qonun bo'yicha harakatlanmoqda. Jismning harakat boshlanishidan 10s dan keyingi $\frac{mv^2}{2}$ kinetik energiysini toping.

A) 808 B) 912,3 C) 804,5 D) 902,5

5375. $s(t)=\frac{4t+3}{t+4}$ qonun bo'yicha harakatlanayotgan jismning $t=9\ s$ vaqtdagi tezligini toping.

A) $\frac{1}{13}$ B) $\frac{2}{13}$ C) $\frac{2}{11}$ D) $\frac{1}{9}$

5376. $s(t)=2t^3-3t+4$ qonun bo'yicha harakatlanayotgan jismning $t=2\ s$ vaqtdagi tezlanishini toping.

A) 21 B) 22 C) 25 D) 24

5377. $s(t)=0,5t^4-5t^3+12t^2-1$ bo'lsa, qaysi vaqt momentlarida jismning tezlanishi nolga teng bo'ladi.

A) 2; 5 B) 1; 4 C) 3 D) 2; 4

5378. $s(t)=8-2t+24t^2-0,3t^5$ bo'lsa, qaysi vaqt momentlarida jismning tezligi eng katta bo'ladi.

A) $t=2s$ B) $t=3s$ C) $t=5s$ D) $t=1s$

HOSILANING GEOMETRIK MA'NOSI

✓ $f(x)=\cos x\ \sin x$ funksiyaning grafigiga $x_0=\frac{\pi}{6}$ nuqtada o'tkazilgan urinmaning burchak koeffisientini toping.

A) $\frac{3}{2}$ B) $\frac{1}{4}$ C) $\frac{1}{2}$ D) $\frac{3}{4}$

Yechilishi:

$y=f(x)$ funksiya grafigiga x_0 nuqtada o`tqazilgan urinmaning burchak koeffisienti $k$ va $OX$ o`qining musbat yo`nalishi bilan xosil qilgan burchagi $\alpha$ bo`lsa, u holda: *a)* $k=f'(x_0)$; *b)* $tg\alpha=f'(x_0)$;

$f(x)=\cos x\ \sin x$

$f'(x)=(\cos x\ \sin x)'=(\cos x\ )'\cdot\sin x+\cos x\cdot(\ \sin x)'=$

$=\cos 2x$

urinmaning burchak koeffisientini toping $\Rightarrow$ *a)* $k=f'(x_0)$;

$k=f'(\frac{\pi}{6})=\cos 2\cdot\frac{\pi}{6}=\cos\frac{\pi}{3}=\frac{1}{2}$

Javob: (C)

5379. $y=\frac{1}{2}x^2-\ln x$ funksiya grafigiga $x_0=2$ nuqtada o'tkazilgan urinmaning burchak koeffisientini toping.

A) 1,5 B) 1,25 C) 2 D) -2,5

5380. $f(x)=e^x\ln x$ funksiya hosilasining $x_0=1$ absissali nuqtadagi qiymatini toping.

A) 1 B) $2e$ C) 3 D) e

5381. $f(x)=\ln x+x^2$ funksiya hosilasining $x_0=0,5$ absissali nuqtadagi qiymatini toping.

A) 6 B) 4 C) 3,5 D) 3

5382. $f(x)=\frac{2\cos x}{\sin x}$ funksiya grafigiga $x_0=\frac{\pi}{4}$ nuqtada o'tkazilgan urinmaning burchak koeffisientini toping.

A) -4 B) 1 C) 5 D) -2

5383. $f(x)=\frac{1}{3}x^3$ funksiya grafigiga $x_0=1$ absissali nuqtada o'tkazilgan urinma bilan Ox o'qi atrofidagi burchakni toping .

A) $\frac{\pi}{2}$ B) π C) $\frac{\pi}{3}$ D) $\frac{\pi}{4}$

5384. $f(x)=\frac{1}{x}$ funksiya grafigiga $x_0=1$ absissali nuqtada o'tkazilgan urinma bilan Ox o'qi atrofidagi burchakni toping.

A) $-\frac{\pi}{2}$ B) $\frac{\pi}{2}$ C) $-\frac{\pi}{4}$ D) $\frac{\pi}{3}$

5385. $f(x)=2\sqrt{x}$ funksiya grafigiga $x_0=3$ absissali nuqtada o'tkazilgan urinma bilan Ox o'qi atrofidagi burchakni toping.

A) $\frac{\pi}{4}$ B) $\frac{\pi}{6}$ C) 2π D) $-\frac{\pi}{2}$

✓ $f(x)=3\ln x-0,5x$ funksiya grafigiga absissasi $x_0=3$ nuqtada o'tkazilgan urinmaning tenglamasini tuzing.

A) $y=0,5x+3\ln 3$ B) $y=-0,5x+3\ln 3+3$

C) $y=0,5x-3$ D) $y=0,5x+3\ln 3-3$

Yechilishi:

$y=f(x)$ funksiya grafigiga x_0 nuqtada o'tqazilgan **urinma** tenglamasi: $y=f(x_0)+f'(x_0)(x-x_0)$.

$f(x)=3\ln x-0,5x$

$f(x_0)=f(3)=3\ln 3-1,5$

$f'(x_0)=(3\ln x-0,5x)'=3\cdot\frac{1}{x}-0,5$

$f'(3)=3\cdot\frac{1}{3}-0,5=0,5$

urinmaning tenglamasini tuzing $y=f(x_0)+f'(x_0)(x-x_0)$

$\Downarrow$

$y=3\ln 3-1,5+0,5\cdot(x-3)$ $y=0,5x+3\ln 3-3$

Javob: (D)

5386. $f(x)=x^2+x+1$ funksiya grafigiga $x_0=1$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=3x$ B) $y=-2x$ C) $y=x$ D) $y=5x$

5387. $f(x)=x-3x^2$ funksiya grafigiga $x_0=2$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=-11x+12$ B) $y=10x+3$

C) $y=3x+15$ D) $y=-5x+9$

5388. $f(x)=\frac{1}{x}$ funksiya grafigiga $x_0=3$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=\frac{x}{2}+2$ B) $y=\frac{1}{2}-3x$

C) $y=\frac{2}{3}-\frac{x}{9}$ D) $y=3x$

5389. $f(x)=10^x$ funksiya grafigiga $x_0=1$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=10-10x\ln 10-10\ln 10$

B) $y=10+10x\ln 10-10\ln 10$

C) $y=10+10x\ln 10+10\ln 10$

D) $y=10-10x\ln 10+10\ln 10$

5390. $f(x)=e^{2x}$ funksiya grafigiga $x_0=0$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=2x-1$ B) $y=1-2x$

C) $y=2x$ D) $y=1+2x$

5391. $f(x)=3^{-x}$ funksiya grafigiga $x_0=1$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=\frac{1}{3}+\frac{x}{3}\ln 3+\frac{1}{3}\ln 3$ B) $y=\frac{1}{3}-\frac{x}{3}\ln 3+\frac{1}{3}\ln 3$

C) $y=\frac{1}{3}-\frac{x}{3}\ln 3-\frac{1}{3}\ln 3$ D) $y=\frac{1}{3}+\frac{x}{3}\ln 3-\frac{1}{3}\ln 3$

5392. $f(x)=x^2-2x$ funksiya grafigiga $x_0=3$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=4x-9$ B) $y=2x-7$

C) $y=3x+1$ D) $y=5x$

5393. $f(x)=x^3+3x$ funksiya grafigiga $x_0=3$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=21x-22$ B) $y=13x+8$

C) $y=24x-54$ D) $y=30x-54$

5394. $f(x)=\sin x$ funksiya grafigiga $x_0=\frac{\pi}{6}$ absissali nuqtada o'tkazilgan urinma tenglamasini tuzing.

A) $y=\frac{1}{2}+\frac{\sqrt{3}x}{2}-\frac{\sqrt{3}\pi}{12}$ B) $y=\frac{1}{2}-\frac{\sqrt{3}x}{2}-\frac{\sqrt{3}\pi}{12}$

C) $y=\frac{1}{2}-\frac{\sqrt{3}x}{2}+\frac{\sqrt{3}\pi}{12}$ D) $y=\frac{1}{2}+\frac{\sqrt{3}x}{2}+\frac{\sqrt{3}\pi}{12}$

5395. $f(x)=x^3$ funksiya grafigining $A(-1;-1)$ nuqtasiga o'tkazilgan urinma tenglamasini tuzing.

A) $y=3x+2$ B) $y=3x-2$

C) $y=x+2$ D) $y=3x$

5396. $f(x)=\cos 2x$ funksiya grafigining $\left(\frac{\pi}{4};f\left(\frac{\pi}{4}\right)\right)$ nuqtasiga o'tkazilgan urinma tenglamasini tuzing.

A) $y=\frac{\pi}{2}+3x$ B) $y=\pi-3x$

C) $y=\pi-2x$ D) $y=\frac{\pi}{2}-2x$

✓ $y=2-x^2$ va $y=(2+x)^2$ funksiyalar grafigiga o'tkazilgan umumiy urinma tenglamasini tuzing.

A) $y=-2x+3$ B) $y=2x-3$

C) $y=2x+3$ D) $y=0,5x+3$

Yechilishi: Funksiyalarning umumiy nuqtalari absissalarini topamiz:

$$\begin{cases} y=(2+x)^2 \\ y=2-x^2 \end{cases} \Rightarrow \begin{vmatrix} (2+x)^2=2-x^2 \\ 4+4x+x^2=2-x^2 \\ 2(x^2+2x+1)=0 \\ x=-1 \end{vmatrix}$$

funksiyalarning umumiy nuqtasining absissasi $x_0=-1$ nuqtada o'tqazilgan

urinma tenglamasi: $y=f(x_0)+f'(x_0)(x-x_0)$.

$$y=2-x^2 \Rightarrow \left| \begin{array}{l} f(x_0)=y(1)=2-(-1)^2=1 \\ f'(x_0)=y'(-1)=-2\cdot(-1)=2 \end{array} \right.$$

urinmaning tenglamasini tuzing $\quad y=f(x_0)+f'(x_0)(x-x_0)$

$\Downarrow$

$y=1+2\cdot(x-(-1))=2x+3$ **Javob: (C)**

5397. $y=-x^2+2$ *va* $y=(x-2)^2$ funksiyalar grafigiga o'tkazilgan umumiy urinma tenglamasini tuzing.

A) $y=-2x-3$ B) $y=-2x+3$

C) $y=2x+3$ D) $y=2x-3$

5398. $y=x^3-3x^2$ *va* $y=x^4$ funksiyalar grafigiga o'tkazilgan umumiy urinma tenglamasini tuzing.

A) $y=0$ B) $y=-2$

C) $y=3x$ D) $y=x$

5399. $y=\frac{1}{2}x^2$ *va* $y=(x-1)^2+1$ funksiyalar grafigiga o'tkazilgan umumiy urinma tenglamasini tuzing.

A) $y=-x$ B) $y=-2$

C) $y=2x-2$ D) $y=x$

✓ Ushbu $y=-x^2-2$ chiziqning $y=4x+1$ to'g'ri chiziqqa parallel bo'lgan urinma tenglamasini toping.

A) $y=-4x+3$ B) $y=4x+2$

C) $y=-4x+2$ D) $y=2x+3$

Yechilishi: $y=f(x)$ va $y=g(x)$ funksiyalarga $x=x_0$ nuqtada o`tqazilgan **urinmalar uchun**:

a) $f'(x_0)=g'(x_0)$ – **parallellik** sharti;

b) $f'(x_0)\cdot g'(x_0)=-1$ **perpendikulyarlik** sharti.

$$\left.\begin{array}{l} y=-x^2-2 \Rightarrow y'=-2x \\ y=4x+1 \Rightarrow y'=4 \end{array}\right| \Rightarrow \left| \begin{array}{l} y'=y' \\ -2x=4 \\ x=-2 \Rightarrow x=x_0 \end{array} \right.$$

$x_0=-2$ nuqtada o`tqazilgan **urinma** tenglamasi:

$y=f(x_0)+f'(x_0)(x-x_0)$

$$y=-x^2-2 \Rightarrow \left| \begin{array}{l} f(x_0)=y(-2)=-(-2)^2-2=-6 \\ f'(x_0)=y'(-2)=-2\cdot(-2)=4 \end{array} \right.$$

urinmaning tenglamasini tuzing $\quad y=f(x_0)+f'(x_0)(x-x_0)$

$\Downarrow$

$y=-6+4\cdot(x-(-2))=4x+2$ **Javob: (B)**

5400. $y=-5x+3$ to'g'ri chiziq, $f(x)=x^2-x$ funksiyaning grafigiga o'tkazilgan urinmaga parallel. Urinish nuqtasining koordinatalarini toping.

A) (2 ; 6) B) (-2; 6) C) (2 ; 4) D) (1; 0)

5401. Qaysi nuqtada $y=\frac{1}{3}x^3-x^2-x+1$ funksiyaning grafigiga o'tkazilgan urinma $y-2x+1=0$ to'g'ri chiziqqa, parallel bo'ladi ?

A) (3; -2), (-1; 0,(6)) B) (2 ; 4), (1; $\frac{2}{3}$)

C) (3 ; 4), (-1; $\frac{2}{3}$) D) (3 ; 2), (-1; $\frac{2}{3}$)

5402. Ushbu $y=x^2+2x+8$ chiziqning $y+2x-8=0$ to'g'ri chiziqqa parallel bo'lgan urinma tenglamasini toping.

A) $y=-2x-4$ B) $y=2x+4$

C) $y=-2x+4$ D) $y=2x-4$

FUNKSIYANING O'SISH VA KAMAYISH ORALIQLARI

✓ Ushbu $f(x)=x^3-3x$ funksiyaning o'sish intervalini toping.

A) $(-1;1)$ B) $(-\infty;1)\cup(1;+\infty)$

C) $(-\infty;-1)$ D) $(-\infty;-1]\cup[1;+\infty)$

Yechilishi:

1. Agar $y=f(x)$ funksiya $[a;b]$ intervalda differensiallanuvchi va $f'(x)\geq 0$, bo`lsa, u holda $y=f(x)$ funksiya shu intervalda **o`sadi**.

$$\underline{y=x^3-3x} \Rightarrow \left| \begin{array}{l} y'=3(x^2-1) \\ y'\geq 0 \end{array} \right.$$

$3(x^2-1)\geq 0$

$x_1=-1 \quad x_2=1$ intervalga qo'yamiz:

$(-\infty;-1]\cup[1;+\infty)$

2. Agar $y=f(x)$ funksiya $[a;b]$ intervalda differensiallanuvchi va $f'(x)\leq 0$, bo`lsa, u holda $y=f(x)$ funksiya shu intervalda **kamayadi.**

$$\underline{y=x^3-3x} \Rightarrow \left| \begin{array}{l} y'=3(x^2-1) \\ y'\leq 0 \Leftrightarrow 3(x^2-1)\leq 0 \end{array} \right.$$

$x_1=-1 \quad x_2=1$ intervalga qo'yamiz:

$[-1;1]$

Javob: (D)

5403. $f(x)=x^2-x$ funksiyaning o'sish intervalini toping.

A) $\left(\frac{1}{2};+\infty\right)$ B) $\left[\frac{1}{2};+\infty\right)$

C) $\left(-\infty;\frac{1}{2}\right)$ D) $\left[-\frac{1}{2};+\infty\right]$

5404. $f(x)=5x^2-3x-1$ funksiyaning kamayish intervalini toping.

A) $(-\infty;0,3]$ B) $(0,3;+\infty)$

C) $(-0,3;+\infty)$ D) $[0,3;+\infty]$

5405. $f(x)=x^2+2x$ funksiyaning kamayish intervalini toping.

A) $(-1;+\infty)$ B) $[-\infty;-1]$ C) $(-\infty;-1]$ D) $[1;+\infty]$

5406. $f(x)=x^2+12x-100$ funksiyaning o'sish intervalini toping.

A) $(6;+\infty)$ B) $[-6;+\infty]$ C) $(-\infty;6)$ D) $(-6;+\infty)$

5407. $f(x)=x^4-2x^2$ funksiyaning kamayish intervalini toping.

A) $(-\infty;-1]\cup[0;1]$ B) $[-1;1]$

C) $(-\infty;-1)\cup(-1;1)$ D) $(0;1)$

5408. $f(x)=2x^3-3x^2-36x+40$ funksiyaning o'sish intervalini toping.

A) $(-\infty;-3)\cup(-2;+\infty)$ B) $(-3;2)$

C) $(-\infty;-2]\cup[3;+\infty)$ D) $(3;+\infty)$

5409. $f(x)=x^3-6x^2+9$ funksiyaning kamayish intervalini toping.

A) $(-\infty;0]\cup[4;+\infty)$ B) $(4;+\infty)$

C) $(-\infty;-4)\cup(0;+\infty)$ D) $[0;4]$

5410. $f(x)=\frac{1}{x+2}$ funksiyaning kamayish intervalini toping.

A) $(-\infty;-2)\cup(-2;+\infty)$ B) $(-2;2)$

C) $(-\infty;-2)\cup(2;+\infty)$ D) $(2;+\infty)$

5411. $f(x)=1+\frac{2}{x}$ funksiyaning kamayish intervalini toping.

A) $(-\infty;0)\cup(0;+\infty)$ B) $(0;2)$

C) $(-\infty;0)\cup(2;+\infty)$ D) $(0;+\infty)$

5412. $f(x)=-\sqrt{x-3}$ funksiyaning kamayish intervallarini toping.

A) $(-\infty;-3)$ B) $(3;+\infty)$ C) $(-\infty;3)$ D) $[3;+\infty)$

5413. $f(x)=1+3\sqrt{x-5}$ funksiyaning o'sish intervallarini toping.

A) $(-\infty;-5)$ B) $(5;+\infty)$ C) $[5;+\infty)$

D) doim o'suvchi

5414. $f(x)=\frac{x^3}{x^2+3}$ funksiyaning o'sish intervalini toping.

A) $(-\infty;3)$ B) $(3;+\infty)$ C) $(-\infty;-3)$

D) doim o'suvchi

5415. $f(x)=\frac{(x-2)(8-x)}{x^2}$ funksiyaning kamayish intervalini toping.

A) $(3,2;+\infty)$ B) $(-\infty;0)\cup[3,2;+\infty)$

C) $[0;3,2]$ D) $(-\infty;-3,2)\cup(0;+\infty)$

5416. $f(x)=(x-1)e^{3x}$ funksiyaning o'sish intervalini toping.

A) $\left[\frac{2}{3};+\infty\right)$ B) $\left(-\infty;-\frac{2}{3}\right)$

C) $\left(\frac{2}{3};+\infty\right)$ D) $\left(-\frac{2}{3};+\infty\right)$

5417. $f(x)=x\cdot e^{3x}$ funksiyaning kamayish intervalini toping.

A) $\left(-\frac{1}{3};+\infty\right)$ B) $\left(-\infty;\frac{1}{3}\right)$

C) $\left(-\infty;-\frac{1}{3}\right]$ D) $\left(-\infty;-\frac{1}{3}\right)$

5418. $f(x)=x^3+3x^2-2$ funksiyaning kamayish intervalini toping.

A) $(-\infty;-2)$ B) $[-2;0]$

C) $(-1;+\infty)$ D) $[0;+\infty)$

5419. $f(x)=\frac{1}{3}x^3-\frac{1}{2}x^2-2x+5$ funksiyaning o'sish intervalini toping.

A) $(-\infty;-2)\cup(1;+\infty)$ B) $[-1;2]$

C) $(-\infty;-1]\cup[2;+\infty)$ D) $(-2;1)$

5420. $f(x)=\frac{3}{x}-1$ funksiyaning kamayish intervalini toping.

A) $(-\infty;0)\cup(0;+\infty)$ B) $x=0$

C) $(0;+\infty)$ D) $(-\infty;0)$

✓ Ushbu $y=x^3+3x^2+1$ funksiyaning $[-1;4]$ oraliqdagi eng katta va eng kichik qiymatlari ayirmasini toping.

A) 110 B) 113 C) 116 D) 20

Yechilishi:

$y=f(x)$ funksiyaning yopiq $[a,b]$ oraliqdagi eng katta va eng kichik qiymatlarini topish:

a) $f'(x)=0 \Rightarrow x_i \in [a,b]$ aniqlash;

b) agar $x_i \in [a,b]$ bo`lsa,

$f(x_1), f(x_2), f(x_2), ..., f(a), f(b)$ ni hisoblash;

v) agar $x_i \notin [a,b]$ bo`lsa, $f(a)$, $f(b)$ ni hisoblash;

g) bu qiymatlar ichidan eng kattasi va eng kichigi tanlab olinadi.

$$\underline{y=x^3+3x^2+1} \Rightarrow \begin{vmatrix} y'=3x^2+6x \\ y'=0 \\ 3x^2+6x=0 \\ 3x(x+2)=0 \\ x_1=0 \quad x_2=-2 \end{vmatrix}$$

$0 \in [-1;4]$; $-2 \notin [-1;4]$

$$y(0)=1 \Rightarrow \begin{vmatrix} y(-1)=(-1)^3+3(-1)^2+1=3 \\ y(4)=4^3+3\cdot 4^2+1=113 \end{vmatrix}$$

eng katta va eng kichik qiymatlari ayirmasini toping $\Rightarrow$ $113-3=110$ **J: (A)**

5421. $y=2x^3+3x^2-36x$ funksiyaning $[-2;1]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=68$ $y_{min}=-31$ B) $y_{max}=48$ $y_{min}=-31$

C) $y_{max}=68$ $y_{min}=31$ D) $y_{max}=48$ $y_{min}=31$

5422. $y=x^4-8x^2+5$ funksiyaning $[-3;2]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=11$ $y_{min}=-14$ B) $y_{max}=14$ $y_{min}=-11$

C) $y_{max}=5$ $y_{min}=-11$ D) $y_{max}=14$ $y_{min}=5$

5423. $y=x+\frac{1}{x}$ funksiyaning $[-2;-0,5]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=2$ $y_{min}=-2,5$

B) $y_{max}=-2,5$ $y_{min}=-2$

C) $y_{max}=-3$ $y_{min}=-2,5$

D) $y_{max}=-2$ $y_{min}=-2,5$

5424. $y=x-\sqrt{x}$ funksiyaning $[0;4]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=2$ $y_{min}=-\frac{1}{4}$ B) $y_{max}=2$ $y_{min}=-2$

C) $y_{max}=2$ $y_{min}=0$ D) $y_{max}=2$ $y_{min}=-2,5$

5425. $y=\sin x+\cos x$ funksiyaning $\left[\pi;\frac{3\pi}{2}\right]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=\sqrt{2}$ $y_{min}=-1$ B) $y_{max}=-1$ $y_{min}=-\sqrt{2}$

C) $y_{max}=-1$ $y_{min}=0$ D) $y_{max}=-\sqrt{2}$ $y_{min}=-1$

5426. $y=x\ln x-x\ln 5$ funksiyaning $[1;5]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=-1$ $y_{min}=-\frac{2}{3}$

B) $y_{max}=\frac{2}{3}$ $y_{min}=-\ln 5$

C) $y_{max}=5-e^{-1}$ $y_{min}=-\frac{1}{3}$

D) $y_{max}=5-e^{-1}$ $y_{min}=-\ln 5$

5427. $y=x+e^{-x}$ funksiyaning $[-1;2]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=-2+e^{-2}$ $y_{min}=1$

B) $y_{max}=1+e^{-2}$ $y_{min}=1$

C) $y_{max}=2+e^{-2}$ $y_{min}=1$

D) $y_{max}=-2+e^{-1}$ $y_{min}=1$

5428. $y=2\cos x-\cos 2x$ funksiyaning $[0;\pi]$ oraliqdagi eng katta va eng kichik qiymatlarini toping.

A) $y_{max}=1$ $y_{min}=-3$ B) $y_{max}=2$ $y_{min}=-3$

C) $y_{max}=3$ $y_{min}=-0,5$ D) $y_{max}=0,5$ $y_{min}=-3$

✓ Ushbu $y=x^2-2\ln x$ funksiyaning statsionar nuqtalarini toping.

A) ± 1 B) ± 2 C) 0 D) 1

Yechilishi:

$y=f(x)$ funksiyaning hosilasi nolga teng (ya`ni $f'(x)=0$ ) bo`lgan nuqtalar to`plamiga **stasionar (kritik)** nuqtalar deyiladi.

$$\underline{y=x^2-2\ln x} \Rightarrow y'=2x-\frac{2}{x}$$

$$\underline{\begin{matrix} y'=0 \\ 2x-\frac{2}{x}=0 \end{matrix}} \Rightarrow \begin{vmatrix} \frac{2(x^2-1)}{x}=0 \\ x_{12}=\pm 1 \end{vmatrix}$$

Javob: (A)

5429. $f(x)=\frac{x}{3}+\frac{8}{x}$ funksiyaning statsionar nuqtalarini toping.

A) $x=2$ B) $x=-4$ C) $x=\pm 2\sqrt{6}$ D) $x=0$

5430. $f(x)=2x^3-15x^2+36x$ funksiyaning kritik nuqtalarini toping.

A) $x_1=-2$; $x_2=3$ B) $x_1=2$; $x_2=3$

C) $x_1=2$; $x_2=-3$ D) $x_1=-2$; $x_2=-3$

5431. $f(x)=\sin x-\cos x$ funksiyaning statsionar nuqtalarini toping.

A) $x=-\frac{\pi}{4}+\pi k$ B) $x=\frac{\pi}{4}+2\pi k$

C) $x=\frac{\pi}{4}+\pi k$ D) $x=-\frac{\pi}{4}+2\pi k$

5432. $f(x)=4x^4-2x^2+3$ funksiyaning kritik nuqtalarini toping.

A) $x_1=0;\ x_{2,3}=\pm 0,5$ B) $x_1=0;\ x_{2,3}=\pm 1$

C) $x_1=0;\ x_2=0,5;\ x_3=1$ D) $x_1=0;\ x_2=0,5;\ x_3=-1$

5433. $f(x)=e^{2x}+2e^x$ funksiyaning statsionar nuqtalarini toping.

A) $x=0$ B) $x=1$ C) $x=-3$ D) $\varnothing$

5434. $f(x)=\cos 2x+2\cos x$ funksiyaning statsionar nuqtalarini toping.

A) $x=2\pi k; x=\frac{2\pi}{3}+2\pi k$ B) $x=\pi k;\ x=\pm\frac{2\pi}{3}+2\pi k$

C) $x=\pi k;\ x=\frac{2\pi}{3}+2\pi k$ D) $x=\pi k;\ x=\pm\frac{2\pi}{3}+\pi k$

✓ Ushbu $y=x^3-3x$ funksiyaning ekstremum nuqtalarini toping.

A) ± 1 B) ± 2 C) 0 D) 1

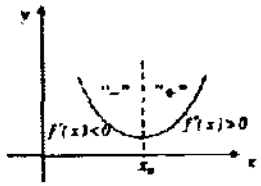
Yechilishi:

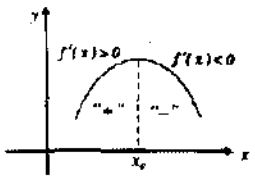
$$\underline{y=x^3-3x} \Rightarrow y'=3x^2-3$$

$$y'=0 \quad 3\left(x^2-1\right)=0$$

$$x_{12}=\pm 1$$

Funksiyaning **maksimum** va **minimumlari:**

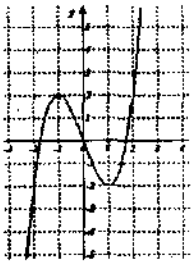




$x=x_0$ minimum nuqtasi $x=x_0$ maksimum.

1. Funksiyaning maksimum va minimumlari nuqtalari shu funksiyaning **ekstremum** nuqtalari, funksiyaning bu nuqtalardagi qiymatlari esa **funksiyaning ekstremumlari** deyiladi.

	$-\infty;-1$	-1	$-1;1$	1	$1;+\infty$
dy/dx	+	0	−	0	+
y	↗	2	↘	−2	↗



Javob: (A)

5435. $f(x)=x^2-20x+1$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{min}=10$ B) $x_{min}=8$

C) $x_{max}=10$ D) $x_{min}=-5$

5436. $f(x)=3x^2+36x-1$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{max}=6$ B) $x_{min}=6$

C) $x_{min}=-6$ D) $x_{max}=-6$

5437. $f(x)=x\ln x$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{min}=-\frac{1}{e}$ B) $x_{max}=\frac{1}{e}$

C) $x_{max}=e$ D) $x_{min}=\frac{1}{e}$

5438. $f(x)=x^2+x^3$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{min}=0;\ x_{max}=-\frac{2}{3}$ B) $x_{min}=0$

C) $x_{max}=5;\ x_{min}=-5$ D) $x_{min}=-5;\ x_{min}=-5;0$

5439. $f(x)=0,6x^5-2x^3-1$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{max}=-3;\ x_{min}=7$ B) $x_{max}=3;\ x_{min}=-3$

C) $x_{max}=2;\ x_{min}=3$ D) $x_{max}=-\sqrt{2};\ x_{min}=\sqrt{2}$

5440. $f(x)=(x-1)^{6/7}$ funksiyaning ekstremum nuqtalarini toping.

A) $x_{max}=6$ B) $x_{min}=6$

C) $x_{min}=8$ D) ekstremumlari yo'q

5441. Ushbu $y=\frac{x^2-2}{x^2+2}$ funksiyaning eng kichik qiymatini toping.

A) 0 B) 1 C) −1 D) −2

5442. Ushbu $y=-\frac{2}{3}x^3+8x$ funksiyaning maksimumini toping.

A) $10\frac{1}{3}$ B) 16 C) $10\frac{2}{3}$ D) $-11\frac{1}{3}$

5443. Ushbu $y=-4x^3+12x$ funksiyaning minimumini toping.

A) 0 B) 8 C) −16 D) −8

5444. Ushbu $y=12x-x^3$ funksiyaning minimumini toping.

A) 16 B) 8 C) −16 D) −8

5445. Ushbu $y=x^3+2,5x^2-2x$ funksiyaning maksimum nuqtadagi qiymatini toping.

A) 6 B) 12 C) −8 D) −12

5446. Ushbu $y=\frac{x^3}{3}+\frac{x^2}{2}-6x$ funksiyaning maksimum nuqtadagi qiymatini toping.

A) 0 B) 13,5 C) −1 D) −3,5

5447. Ushbu $y=3x^5-5x^3-3$ funksiyaning Ekstremum nuqtadagi qiymatlari yig'indisini toping.

A) 1 B) 6 C) −9 D) −6

BOSHLANG'ICH FUNKSIYA

✓ Ushbu $y=(5x+1)^8$ funksiyaning boshlang'ich funksiyasini toping.

A) $\frac{(5x+1)^9}{9}$ B) $\frac{(5x-1)^9}{9}$

C) $\frac{(5x+1)^9}{45}$ D) $\frac{(5x-1)^9}{45}$

Yechilishi: Agar berilgan oraliqdan olingan barcha x lar uchun $F'(x)=f(x)$ tenglik bajarilsa, u holda $F(x)$ shu oraliqda $f(x)$ funksiyaning **boshlang'ich funksiyasi** deyiladi va $f(x) \Rightarrow F(x)+C$ deb belgilanadi, C – ixtiyoriy o'zgarmas son.

formula:	*misol:*	*formula:*	*misol:*
$C \Rightarrow C\,x+C_0$	$3 \Rightarrow 3x+C$	$x^n \Rightarrow \frac{x^{n+1}}{n+1}+C$	$x^5 \Rightarrow \frac{x^6}{6}+C$

formula:

$$(kx\pm b)^n \Rightarrow \frac{(kx\pm b)^{n+1}}{k(n+1)}+C$$

misol:

$$(5x+1)^8 = \frac{1}{5}\frac{(5x+1)^{8+1}}{8+1} = \frac{(5x+1)^9}{45}$$

Javob: (C)

5448. x^2 ning boshlang'ich funksiyasini toping.

A) $\frac{x^3}{2}+C$ B) $\frac{x^3}{3}+C$ C) x^3+C D) $\frac{1}{x^3}+C$

5449. x^3 ning boshlang'ich funksiyasini toping.

A) $\frac{x^4}{4}+C$ B) $\frac{x^4}{3}+C$ C) $\frac{4x^4}{3}+C$ D) $\frac{3x^4}{4}+C$

5450. x^{-3} ning boshlang'ich funksiyasini toping.

A) $-\frac{1}{x^2}+C$ B) $\frac{1}{2x^2}+C$

C) $-\frac{x^2}{2}+C$ D) $-\frac{1}{2x^2}+C$

5451. $x^{-\frac{1}{2}}$ ning boshlang'ich funksiyasini toping.

A) $-2\sqrt{x}+C$ B) $\frac{1}{2}\sqrt{x}+C$

C) $2\sqrt{x}+C$ D) $-\frac{1}{2}\sqrt{x}+C$

5452. $2x^5-3x^2$ ning boshlang'ich funksiyasini toping.

A) $\frac{x^6}{6}-x^3+C$ B) $\frac{x^6}{3}-x^3+C$

C) $\frac{x^6}{3}+x^3+C$ D) $-\frac{x^6}{6}+x^3+C$

5453. $5x^4+2x^3$ ning boshlang'ich funksiyasini toping.

A) $\frac{x^5}{5}+\frac{x^4}{4}+C$ B) $\frac{x^5}{5}-\frac{x^4}{2}+C$

C) $\frac{x^5}{5}+\frac{x^4}{2}+C$ D) $x^5+\frac{x^4}{2}+C$

5454. $\sqrt{x}+2\sqrt[3]{x}$ ning boshlang'ich funksiyasini toping.

A) $\frac{4\sqrt{x^4}}{3}+\frac{3\sqrt[3]{x^4}}{2}+C$ B) $\frac{2\sqrt{x^3}}{5}+\frac{\sqrt[3]{x^4}}{2}+C$

C) $\frac{\sqrt{x^3}}{5}-\frac{3\sqrt[3]{x^4}}{2}+C$ D) $\frac{2\sqrt{x^3}}{3}+\frac{3\sqrt[3]{x^4}}{2}+C$

5455. $4\sqrt[3]{x}-6\sqrt{x}$ ning boshlang'ich funksiyasini toping.

A) $x\sqrt[3]{x}-4x\sqrt{x}+C$ B) $3x\sqrt[3]{x}+4x\sqrt{x}+C$

C) $x\sqrt[3]{x}-x\sqrt{x}+C$ D) $3x\sqrt[3]{x}-4x\sqrt{x}+C$

5456. $3x^3+2x-1$ ning boshlang'ich funksiyasini toping.

A) $\frac{3x^4}{4}+x^2-x+C$ B) $\frac{x^4}{4}+x^2-x+C$

C) $\frac{3x^4}{4}+\frac{x^2}{2}-x+C$ D) $\frac{3x^4}{4}+x^2-\frac{x}{2}+C$

5457. $6x^2-4x+3$ ning boshlang'ich funksiyasini toping.

A) $\frac{2x^3}{3}-2x^2+3x+C$ B) $2x^3-\frac{x^2}{4}+3x+C$

C) $2x^3-2x^2+3x+C$ D) $2x^3-2x^2-3x+C$

5458. $(2x+3)^4$ ning boshlang'ich funksiyasini toping.

A) $\frac{(2x+3)^4}{8}$ B) $\frac{(2x+3)^5}{5}$

C) $\frac{(2x-3)^5}{10}$ D) $\frac{(2x+3)^5}{10}$

5459. $(0{,}25x+3)^3$ ning boshlang'ich funksiyasini toping.

A) $(0{,}25x+3)^4$ B) $(2x+3)^4$

C) $\frac{(0{,}25x+3)^4}{4}$ D) $\frac{(0{,}25x+3)^4}{16}$

5460. $\frac{2}{\sqrt[3]{2x-1}}$ ning boshlang'ich funksiyasini toping.

A) $\frac{\sqrt[3]{(2x-1)^2}}{6}$ B) $\frac{1}{2\sqrt[3]{(2x-1)^2}}$

C) $\frac{3\sqrt[3]{(2x-1)^2}}{2}$ D) $\sqrt[3]{2x-1}$

✓ Ushbu $y=x^2+e^x$ funksiyaning boshlang'ich funksiyasini toping.

A) $\frac{1}{3}x^3-e^x+C$ B) $\frac{1}{2}x^3+e^x+C$

C) $\frac{1}{3}x^3+e^x$ D) $\frac{1}{3}x^3+e^x+C$

Yechilishi:

formula:	*misol:*
$e^x \Rightarrow e^x + C$	$x^2 + e^x \Rightarrow \frac{1}{3}x^3 + e^x + C$
formula:	*misol:*
$e^{kx\pm b} \Rightarrow \frac{1}{k}e^{kx\pm b} + C$	$e^{3x-2} \Rightarrow \frac{1}{3}e^{3x-2} + C$
formula:	*misol:*
$\frac{1}{x} \Rightarrow \ln\lvert x\rvert + C$	$x^5 + \frac{1}{x} \Rightarrow \frac{x^6}{6} + \ln x + C$
formula:	*misol:*
$\frac{1}{kx\pm b} \Rightarrow \frac{1}{k}\ln\lvert kx\pm b\rvert + C$	$\frac{4}{5x+2} \Rightarrow \frac{4}{5}\ln\lvert 5x+2\rvert + C$

Javob: (D)

5461. $\frac{2}{x} + \frac{3}{x^2}$ ning boshlang'ich funksiyasini toping.

A) $2\ln\lvert x\rvert + \frac{3}{x} + C$ B) $\ln\frac{2}{x} - \frac{3}{x} + C$

C) $2\ln\lvert x\rvert - \frac{3}{x} + C$ D) $\ln 2x - \frac{3}{x} + C$

5462. $\frac{2}{x^3} - \frac{3}{x}$ ning boshlang'ich funksiyasini toping.

A) $-\frac{1}{x^2} - 3\ln\lvert x\rvert + C$ B) $\frac{1}{x^2} - 3\ln\lvert x\rvert + C$

C) $\frac{1}{x^2} - \ln 3x + C$ D) $\frac{2}{x^2} + 3\ln\lvert x\rvert + C$

5463. $\frac{4}{\sqrt{x}} + \frac{3}{x} - 2e^{-x}$ ning boshlang'ich funksiyasini toping.

A) $8\sqrt{x} + \ln 3x + 2e^{-x} + C$ B) $8\sqrt{x} + \ln\lvert 3x\rvert - 2e^{-x} + C$

C) $8\sqrt{x} + 3\ln\lvert x\rvert + 2e^{-x} + C$ D) $8\sqrt{x} + 3\ln\lvert x\rvert - 2e^{-x} + C$

5464. $6\sqrt[3]{x} - \frac{2}{x} + 3e^x$ ning boshlang'ich funksiyasini toping.

A) $\frac{9\sqrt[3]{x^4}}{2} - 2\ln\lvert x\rvert + 3e^x + C$

B) $\frac{3\sqrt[3]{x^4}}{2} - 2\ln\lvert x\rvert - 3e^x + C$

C) $\frac{3\sqrt[3]{x^4}}{2} + 2\ln\lvert x\rvert + 3e^x + C$

D) $\frac{9\sqrt[3]{x^4}}{2} + 2\ln\lvert x\rvert + 3e^x + C$

5465. $\frac{1}{3x-1}$ ning boshlang'ich funksiyasini toping.

A) $\frac{\ln\lvert x-1\rvert}{3} + C$ B) $\frac{\ln\lvert 3x+1\rvert}{3} + C$

C) $\frac{\ln\lvert 3x-1\rvert}{3} + C$ D) $\ln\lvert 3x-1\rvert + C$

5466. $\frac{10}{5-2x}$ ning boshlang'ich funksiyasini toping.

A) $\ln\lvert 5-2x\rvert + C$ B) $5\ln\lvert 5-2x\rvert + C$

C) $\frac{\ln\lvert 5-2x\rvert}{2} + C$ D) $-5\ln\lvert 5-2x\rvert + C$

5467. $\frac{9}{\sqrt[3]{2x-1}} + \frac{2}{1-x}$ ning boshlang'ich funksiyasini toping.

A) $\frac{27}{4}(2x-1) - 2\ln\lvert 1-x\rvert + C$

B) $\frac{27}{4}(2x-1)^{2/3} + 2\ln\lvert 1-x\rvert + C$

C) $\frac{27}{4}(2x-1)^{2/3} - 2\ln\lvert 1-x\rvert + C$

D) $\frac{27}{4}(2x-1)^{2/3} - 2\ln\lvert 1+x\rvert + C$

5468. $\frac{4}{\sqrt{3x+1}} - \frac{3}{2x-5}$ ning boshlang'ich funksiyasini toping.

A) $\frac{8}{3}\sqrt{3x+1} - \frac{3}{2}\ln\lvert 2x-5\rvert + C$

B) $\frac{8}{3}\sqrt{3x+1} - \frac{2}{3}\ln\lvert 2x-5\rvert + C$

C) $\frac{8}{3}\sqrt{3x+1} - \ln\lvert 2x-5\rvert + C$

D) $\frac{8}{3}\sqrt{3x+1} - \frac{3}{2}\ln\lvert x-5\rvert + C$

✓ Ushbu $y = \frac{5x+7}{2x-3}$ funksiyaning boshlang'ich funksiyasini toping.

A) $2{,}5x + 7{,}25\ln(2x-3) + C$

B) $2{,}5x + 14{,}5\ln(2x-3) + C$

C) $2{,}5x + 7{,}5\ln(2x-3) + C$ D) $-2{,}5x + 7\ln(2x-3) + C$

Yechilishi:

$$\frac{5x+7}{2x-3} = \frac{5}{2} + \frac{29}{2(2x-3)} \Rightarrow$$

$5x+7$	$2x-3$
$5x - \frac{15}{2}$	$\frac{5}{2}$
$\frac{29}{2}$	

$$\frac{5}{2} + \frac{29}{2(2x-3)} \Rightarrow \frac{5}{2}x + \frac{29}{2}\cdot\frac{1}{2}\ln\lvert 2x-3\rvert$$

Javob: (A)

$2{,}5x + 7{,}25\ln(2x-3) + C$

5469. $\frac{x}{x-3}$ ning boshlang'ich funksiyasini toping.

A) $x + 3\ln(x+3) + C$ B) $x + 3\ln\lvert x-3\rvert + C$

C) $x - 3\ln\lvert x+3\rvert + C$ D) $-x - 3\ln(x-3) + C$

5470. $\frac{4x+3}{x-3}$ ning boshlang'ich funksiyasini toping.

A) $4x+12\ln(x-3)+C$ B) $x+15\ln(x-3)+C$

C) $x+12\ln(x-3)+C$ D) $4x+15\ln|x-3|+C$

5471. $\frac{2x}{x+4}$ ning boshlang'ich funksiyasini toping.

A) $2x+8\ln(x+4)+C$ B) $2x-8\ln|x+4|+C$

C) $2x-4\ln|x+4|+C$ D) $2x+2\ln(x+4)+C$

5472. $\frac{x+9}{x-7}$ ning boshlang'ich funksiyasini toping.

A) $x+9\ln(x-7)+C$ B) $7x-7\ln|x-7|+C$

C) $x+16\ln|x-7|+C$ D) $x-16\ln(x-7)+C$

5473. $\frac{x-3}{\sqrt{x}}$ ning boshlang'ich funksiyasini toping.

A) $\left(\frac{1}{3}-3x\right)2\sqrt{x}+C$ B) $\left(\frac{1}{3}x-3\right)2\sqrt{x}+C$

C) $\left(\frac{1}{3}x+3\right)2\sqrt{x}+C$ D) $\left(\frac{1}{3}x-3\right)\sqrt{x}+C$

5474. $\frac{x+4}{\sqrt[3]{x}}$ ning boshlang'ich funksiyasini toping.

A) $0,6x^{1,(6)}-6x^{\frac{2}{3}}+C$ B) $\frac{3}{5}x^{1,(2)}+6x^{\frac{2}{3}}+C$

C) $\frac{4}{5}x^{1,(6)}+6x^{\frac{2}{3}}+C$ D) $0,6x^{1,(6)}+6x^{\frac{2}{3}}+C$

5475. $\frac{3x-2}{\sqrt[3]{x}}$ ning boshlang'ich funksiyasini toping.

A) $\left(\frac{9}{5}+\frac{3}{2}x\right)\sqrt[3]{x}+C$ B) $\left(\frac{9}{5}x+3\right)\sqrt[3]{x}+C$

C) $\left(\frac{9}{7}-\frac{3}{2}x\right)x\sqrt[3]{x}+C$ D) $\left(\frac{9}{5}x-3\right)\sqrt[3]{x}+C$

5476. $\frac{2x+1}{\sqrt{x}}$ ning boshlang'ich funksiyasini toping.

A) $0,8x^{2,5}-0,(2)x^{1,5}+C$ B) $1,(3)x^{1,5}+2x^{0,5}+C$

C) $1,(6)x^{2,5}-0,(2)x^{0,5}+C$ D) $0,8x^{1,5}+0,(2)x^{1,5}+C$

✓ Ushbu $y=\frac{x}{x^2-4x+3}$ funksiyaning boshlang'ich funksiyasini toping.

A) $\frac{3}{2}\ln|x-3|-\frac{1}{2}\ln|x-1|+C$

B) $\frac{3}{2}\ln|x-3|+\frac{1}{2}\ln|x-1|+C$

C) $\frac{3}{2}\ln(x-3)-\frac{1}{2}\ln(x+1)+C$

D) $\ln(x-3)-\frac{1}{2}\ln(x-1)+C$

Yechilishi:

$$\frac{x}{x^2-4x+3}=\frac{x}{(x-3)(x-1)}\Rightarrow\frac{x}{(x-3)(x-1)}=\frac{A}{x-3}+\frac{B}{x-1}$$

$x=A(x-1)+B(x-3)$ $\qquad$ $x=A(x-1)+B(x-3)$

$x=1$ $\qquad$ $x=3$

$1=A\cdot0+B\cdot(-2);\ B=-\frac{1}{2}$ $\qquad$ $3=A\cdot2+B\cdot0;\ A=\frac{3}{2}$

$$\frac{x}{(x-3)(x-1)}=\frac{3}{2(x-3)}-\frac{1}{2(x-1)}$$

$$\frac{3}{2(x-3)}-\frac{1}{2(x-1)}\Rightarrow\frac{3}{2}\ln|x-3|-\frac{1}{2}\ln|x-1|+C$$

Javob: (A)

5477. $\frac{1}{2x^2+19x-21}$ ning boshlang'ich funksiyasini toping.

A) $-\frac{2}{23}\ln(2x+21)-\frac{1}{23}\ln(x-1)+C$

B) $-\frac{1}{23}\ln|2x+21|+\frac{1}{23}\ln|x-1|+C$

C) $-\frac{2}{23}\ln(2x+21)+\frac{1}{13}\ln(x-1)+C$

D) $\frac{1}{23}\ln|2x+21|-\frac{1}{23}\ln|x-1|+C$

5478. $\frac{4}{x^2-8x+7}$ ning boshlang'ich funksiyasini toping.

A) $\frac{2}{3}\ln\left|\frac{x-1}{x-7}\right|+C$ B) $\frac{2}{3}\ln\left|\frac{x-7}{x-1}\right|+C$

C) $-\frac{3}{2}\ln|x-7|+\frac{3}{2}\ln|x-3|+C$

D) $\frac{2}{3}\ln|x-7|-\ln|x-1|+C$

5479. $\frac{1}{x^2-x-20}$ ning boshlang'ich funksiyasini toping.

A) $-\frac{3}{27}\ln|x-5|+\frac{1}{9}\ln|x+4|+C$

B) $\frac{1}{9}\ln\left|\frac{x-5}{x+4}\right|+C$ C) $\frac{1}{9}\ln\left|\frac{x+4}{x-5}\right|+C$

D) $x-16\ln(x-7)+C$

5480. $\frac{x}{x^2-4x+3}$ ning boshlang'ich funksiyasini toping.

A) $\frac{1}{2}\ln|x-1|+\frac{3}{2}\ln|x-3|+C$

B) $-\ln|x-1|+\frac{3}{2}\ln|x-3|+C$

C) $-\frac{3}{2}\ln|x-2|-\frac{1}{2}\ln|x-3|+C$

D) $-\frac{1}{2}\ln|x-1|+\frac{3}{2}\ln|x-3|+C$

5481. $\frac{x-8}{x^2-10x+21}$ ning boshlang'ich funksiyasini toping.

A) $-\frac{1}{4}\ln|x-7|+\ln|x-3|+C$

B) $-\frac{1}{4}\ln|x-7|-\frac{5}{4}\ln|x-3|+C$

C) $\frac{1}{4}\ln|x-7|+\frac{5}{4}\ln|x-3|+C$

D) $-\frac{1}{4}\ln|x-7|+\frac{5}{4}\ln|x-3|+C$

5482. $\frac{2x^2}{x^2-4x+3}$ ning boshlang'ich funksiyasini toping.

A) $\frac{2}{3}\ln\left|\frac{x+3}{x-1}\right|+C$ B) $2x+\ln\left|\frac{(x-3)^9}{x-1}\right|+C$

C) $2x+\ln\left|\frac{(x-3)}{x-1}\right|+C$ D) $2x+\ln\left|\frac{(x+3)^9}{x-1}\right|+C$

5483. $\frac{x^2-4x}{x^2-18x+32}$ ning boshlang'ich funksiyasini toping.

A) $x+13\frac{1}{7}\ln|x-16|+\frac{2}{5}\ln|x-2|+C$

B) $x+\frac{5}{7}\ln|x-16|-\frac{2}{7}\ln|x-2|+C$

C) $x+13\frac{5}{7}\ln|x-16|+\frac{1}{7}\ln|x-2|+C$

D) $x+13\frac{5}{7}\ln|x-16|+\frac{2}{7}\ln|x-2|+C$

✓ Ushbu $e^{7x}-4\sin 4x$ funksiyaning boshlang'ich funksiyasini toping.

A) $e^{7x}+\cos 4x+C$ B) $\frac{1}{7}e^{7x}+\cos 4x+C$

C) $\frac{1}{7}e^{7x}-\frac{1}{4}\cos 4x+C$ D) $e^{7x}+\frac{1}{4}\cos 4x+C$

Yechilishi:

formula: $\sin x\Rightarrow -\cos x+C$ *misol:* $2+\sin x\Rightarrow 2x-\cos x+C$

formula: $\cos x\Rightarrow \sin x+C$ *misol:* $e^x+\cos x\Rightarrow e^x+\sin x+C$

formula: $\sin(kx+b)\Rightarrow -\frac{1}{k}\cos(kx+b)+C$

misol: $e^{7x}-4\sin 4x\Rightarrow \frac{1}{7}e^{7x}+\cos 4x+C$

formula: $\cos(kx+b)\Rightarrow \frac{1}{k}\sin(kx+b)+C$

misol: $e^{7x}+4\cos 4x\Rightarrow \frac{1}{7}e^{7x}+\sin 4x+C$

formula: $tg(kx+b)\Rightarrow -\frac{1}{k}ln|\cos(kx+b)|+C$

formula: $ctg(kx+b)\Rightarrow \frac{1}{k}ln|\sin(kx+b)|+C$

formula: $\frac{1}{\sin^2(kx+b)}\Rightarrow -\frac{1}{k}ctg(kx+b)+C$

formula: $\frac{1}{\cos^2(kx+b)}\Rightarrow \frac{1}{k}tg(kx+b)+C$

formula: $a^{kx\pm b}\Rightarrow \frac{a^{kx\pm b}}{k\cdot lna}+C$

Javob: (B)

5484. $3\cos x-4\sin x$ ning boshlang'ich funksiyasini toping.

A) $-3\sin x+4\cos x+C$ B) $3\sin x+4\cos x+C$

C) $3\sin x-4\cos x+C$ D) $-3\sin x-4\cos x+C$

5485. $5\sin x+2\cos x$ ning boshlang'ich funksiyasini toping.

A) $2\sin x+5\cos x+C$ B) $-2\sin x-5\cos x+C$

C) $-2\sin x+5\cos x+C$ D) $2\sin x-5\cos x+C$

5486. $e^x-2\cos x$ ning boshlang'ich funksiyasini toping.

A) $e^x-2\sin x+C$ B) $e^x-2\cos x+C$

C) $xe^x+2\cos x+C$ D) $e^x+2\cos x+C$

5487. $3e^x-\sin x$ ning boshlang'ich funksiyasini toping.

A) $3e^x-\cos x+C$ B) $e^{3x}-\cos x+C$

C) $3e^x+\cos x+C$ D) $3e^x-\sin x+C$

5488. $5-e^{-x}+3\cos x$ ning boshlang'ich funksiyasini toping.

A) $5x-e^{-x}+3\sin x+C$ B) $5x+e^{-x}+3\sin x+C$

C) $5x-e^{-x}-3\sin x+C$ D) $5x-e^{-x}-3\sin x+C$

5489. $1+3e^x-4\cos x$ ning boshlang'ich funksiyasini toping.

A) $x+3e^x+4\sin x+C$ B) $x+e^{3x}-4\sin x+C$

C) $x-3e^x-4\sin x+C$ D) $x+3e^x-4\sin x+C$

5490. $e^{8x}+\cos 3x$ ning boshlang'ich funksiyasini toping.

A) $e^{8x}+\sin 3x+C$ B) $\frac{1}{8}e^{8x}-\frac{1}{3}\sin 3x+C$

C) $e^{8x}+\sin 3x+C$ D) $\frac{1}{8}e^{8x}+\frac{1}{3}\sin 3x+C$

5491. $e^{9x}-\sin 4x$ ning boshlang'ich funksiyasini toping.

A) $\frac{1}{9}e^{9x}+\frac{1}{4}\sin 4x+C$ B) $\frac{1}{9}e^{9x}+\frac{1}{4}\cos 4x+C$

C) $\frac{1}{9}e^{9x}-\frac{1}{4}\cos 4x+C$ D) $e^{9x}+\cos 4x+C$

5492. $\cos^2 x$ ning boshlang'ich funksiyasini toping.

A) $\sin 2x+C$ B) $\frac{x}{2}-\frac{\sin 2x}{4}+C$

C) $\frac{x}{2}+\frac{\sin 2x}{2}+C$ D) $\frac{x}{2}+\frac{\sin 2x}{4}+C$

5493. $\sin^2 x$ ning boshlang'ich funksiyasini toping.

A) $\sin 2x+C$ B) $\frac{x}{2}+\frac{\sin 2x}{4}+C$

C) $\frac{x}{2}+\frac{\sin 2x}{2}+C$ D) $\frac{x}{2}-\frac{\sin 2x}{4}+C$

5494. $\sin 3x\cdot\cos 5x$ ning boshlang'ich funksiyasini toping.

A) $\frac{\cos 8x}{8}+\frac{\cos 2x}{4}+C$ B) $-\frac{\cos 8x}{8}+\frac{\cos 2x}{2}+C$

C) $-\frac{\cos 8x}{16}+\frac{\cos 2x}{4}+C$ D) $\frac{\cos 8x}{16}+\frac{\cos 2x}{2}+C$

5495. $\cos 7x\cdot\cos 15x$ ning boshlang'ich funksiyasini toping.

A) $\frac{\sin 8x}{16}+\frac{\sin 22x}{44}+C$ B) $\frac{\sin 8x}{8}+\frac{\sin 22x}{22}+C$

C) $\frac{\sin 8x}{8}+\frac{\sin 22x}{44}+C$ D) $\frac{\sin 8x}{16}+\frac{\sin 22x}{22}+C$

5496. $\frac{12}{\cos^2 6x}$ ning boshlang'ich funksiyasini toping.

A) $tg6x+C$ B) $2tg6x+C$

C) $2ctg6x+C$ D) $-2tg6x+C$

5497. $\frac{1}{\cos^2(3x+4)}$ ning boshlang'ich funksiyasini toping.

A) $\frac{1}{3}tg(3x+4)+C$ B) $tg(3x+4)+C$

C) $-\frac{1}{3}tg(3x+4)+C$ D) $\frac{1}{3}ctg(3x+4)+C$

5498. $\frac{3}{\cos^2(7x+3)}$ ning boshlang'ich funksiyasini toping.

A) $tg(7x+3)+C$ B) $-\frac{3}{7}tg(7x+3)+C$

C) $\frac{3}{7}tg(7x+3)+C$ D) $\frac{3}{7}ctg(7x+3)+C$

5499. $\frac{2}{3\sin^2 2x}$ ning boshlang'ich funksiyasini toping.

A) $-\frac{1}{3}tg2x+C$ B) $ctg2x+C$

C) $-ctg2x+C$ D) $-\frac{1}{3}ctg2x+C$

5500. $\frac{4}{(x+3)^2}+\frac{7}{\sin^2 3x}$ ning boshlang'ich funksiyasini toping.

A) $\frac{4}{x+3}-\frac{7}{3}ctg3x+C$ B) $-\frac{4}{x+3}-\frac{7}{3}ctg3x+C$

C) $\frac{4}{x+3}+\frac{7}{3}ctg3x+C$ D) $-\frac{4}{x+3}+\frac{7}{3}ctg3x+C$

5501. $3^{x/2}-5$ ning boshlang'ich funksiyasini toping.

A) $\frac{2\cdot 3^{x/2}}{\ln 3}-5x+C$ B) $\frac{3^{x/2}}{2\cdot\ln 3}-5x+C$

C) $\frac{3^{x/2}}{4\cdot\ln 3}-5x+C$ D) $\frac{2\cdot 3^{x/2}}{\ln 3}+5x+C$

5502. $5^{1-3x}+(0,6)^{4x}$ ning boshlang'ich funksiyasini toping.

A) $\frac{5^{1-3x}}{3\cdot\ln 5}+\frac{(0,6)^{4x}}{4\cdot\ln 0,6}+C$ B) $-\frac{5^{1-3x}}{3\cdot\ln 5}+\frac{(0,6)^{4x}}{4\cdot\ln 0,6}+C$

C) $\frac{5^{1-3x}}{\ln 5}+\frac{(0,6)^{4x}}{\ln 0,6}+C$ D) $\frac{5^{1-3x}}{3\cdot\ln 5}-\frac{(0,6)^{4x}}{4\cdot\ln 0,6}+C$

✓ $f(x)=x^3$ funksiyaning $(2;3)$ nuqtadan o'tuvchi boshlang'ich funksiyasini toping.

A) $\frac{x^4}{4}-1$ B) $\frac{x^4}{4}-4$ C) $\frac{x^4}{4}+7$ D) $\frac{x^4}{4}-7$

Yechilishi:

$f(x)=x^3 \Rightarrow F(x)=\frac{x^4}{4}+C$ $(2;3)$ nuqtadan o'tuvchi

$3=\frac{2^4}{4}+C \quad F(x)=\frac{x^4}{4}-1$

$C=-1$

Javob: (A)

5503. $f(x)=x^3+2x$ funksiya uchun grafigi $M(1;3)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $\frac{x^4}{4}-x+\frac{7}{5}$ B) $\frac{x^4}{4}+2x^2+\frac{3}{4}$

C) $\frac{3x^4}{4}+x^2+\frac{5}{4}$ D) $\frac{x^4}{4}+x^2+\frac{7}{4}$

5504. $f(x)=e^{3x}$ funksiyaning $M(1;2)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $\frac{e^{3x}}{3}-\frac{e^3}{3}+2$ B) $\frac{e^{3x}}{3}+\frac{e^3}{3}-2$

C) $\frac{e^{3x}}{3}-\frac{e}{3}+2$ D) $\frac{e^{3x}}{3}+C$

5505. $f(x)=1/2^x$ funksiya uchun grafigi $M(\log_2 3;-\frac{1}{3\ln 2})$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $-\frac{2^{-x}}{\ln 2}$ B) $-\frac{2^{-x}}{\ln 2}+1$

C) $-\frac{2^{-x}}{\ln 2}+2$ D) $-\frac{2^x}{\ln 2}$

5506. $f(x)=\sqrt{x}$ funksiyaning $M(9;10)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $\frac{x\sqrt{x}}{3}-16$ B) $\frac{2x\sqrt{x}}{3}-8$

C) $\frac{2x\sqrt{x}}{3}-24$ D) $-\frac{2x\sqrt{x}}{3}+8$

5507. $f(x)=e^{x/2}$ funksiya uchun grafigi $M(1;3\sqrt{e})$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $e^{x/2}+\sqrt{e}$ B) $e^{x/2}-\sqrt{e}$

C) $2e^{x/2}-\sqrt{e}$ D) $2e^{x/2}+\sqrt{e}$

5508. $f(x)=\cos 5x+1$ funksiyaning $M(5\pi;0)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $-\frac{\sin 5x}{5}+x+5\pi$ B) $\frac{\sin 5x}{5}+x-\frac{3\pi}{2}$

C) $\frac{\sin 5x}{5}+x-5\pi$ D) $\frac{\sin 5x}{5}+2x-5\pi$

5509. $f(x)=\frac{1}{\cos^2 x}+x$ funksiya uchun grafigi $M(0;2)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $tgx+\frac{x^2}{2}+2$ B) $tgx+\frac{x^2}{3}+3$

C) $3tgx+\frac{x^2}{2}+3$ D) $tg3x+\frac{x^2}{2}+2$

5510. $f(x)=\sin x+\cos x$ funksiya uchun grafigi $M(\pi;3)$ nuqta orqali o'tadigan boshlang'ich funksiyasini toping.

A) $-\sin x+\cos x+1$ B) $\sin x-\cos x-2$

C) $\sin x+\cos x-2$ D) $\sin x-\cos x+2$

ANIQ INTEGRAL

✓ $\int_{-2}^{3} x^3\,dx$ ning integralini hisoblang.

A) $\frac{172}{9}$ B) $\frac{65}{4}$ C) $\frac{65}{16}$ D) $-\frac{182}{9}$

Yechilishi:

N'yuton-Leybnis formulasi:

$$\int_a^b f(x)dx=F(x)\Big|_a^b=F(b)-F(a).$$

$$\int_{-2}^{3} x^3\,dx=\frac{x^4}{4}\Big|_{-2}^{3}=\frac{3^4}{4}-\frac{(-2)^4}{4}=\frac{81-16}{4}=\frac{65}{4}$$

Javob: (B)

IZOH: Integrallarni hisoblashda "boshlangich olib chekka nuqtalarini qo'yib hisoblaymiz va natijalarini ayriymiz" formulasiga e'tibor bering.

$$\int_a^b f(x)dx=F(x)\Big|_a^b=F(b)-F(a).$$

5511. $\int_0^1 x\,dx$ ning integralini hisoblang.

A) 1 B) $\frac{1}{2}$ C) 0 D) -1

5512. $\int_0^3 x^2\,dx$ ning integralini hisoblang.

A) 9 B) 6 C) 4,5 D) 2

5513. $\int_{-1}^{2} 3x^2\,dx$ ning integralini hisoblang.

A) 2 B) 13 C) 9 D) 7

5514. $\int_{-2}^{3} 2x\,dx$ ning integralini hisoblang.

A) 5 B) 12 C) 4 D) -7

5515. $\int_2^3 \frac{1}{x^2}\,dx$ ning integralini hisoblang.

A) -6 B) $\frac{1}{6}$ C) 8 D) 5

5516. $\int_1^2 \frac{1}{x^3}\,dx$ ning integralini hisoblang.

A) $\frac{2}{5}$ B) 9 C) $\frac{1}{3}$ D) $\frac{3}{8}$

5517. $\int_1^7 \sqrt{x}\,dx$ ning integralini hisoblang.

A) $\frac{8\sqrt{7}-1}{3}$ B) 0 C) -4 D) $\frac{14\sqrt{7}-2}{3}$

5518. $\int_4^9 \frac{1}{\sqrt{x}}dx$ ning integralini hisoblang.

A) 2 B) 9 C) 1 D) -5

5519. $\int_1^e \frac{1}{x}dx$ ning integralini hisoblang.

A) 11 B) 1 C) 13 D) -4

5520. $\int_0^{\ln 2} e^x dx$ ning integralini hisoblang.

A) 3 B) 6 C) -2 D) 1

5521. $\int_{-\pi}^{2\pi} \cos x dx$ ning integralini hisoblang.

A) 0 B) -2 C) 3 D) 9

5522. $\int_{-2\pi}^{\pi} \sin x dx$ ning integralini hisoblang.

A) 3 B) $\frac{1}{2}$ C) 2 D) $\frac{\sqrt{2}}{2}$

5523. $\int_{-2\pi}^{\pi} \sin 2x\, dx$ ning integralini hisoblang.

A) $\frac{\sqrt{3}}{2}$ B) 0 C) -1 D) $\frac{1}{2}$

5524. $\int_{-3\pi}^{0} \cos 3x\, dx$ ning integralini hisoblang.

A) $\frac{1}{2}$ B) $\frac{\sqrt{2}}{2}$ C) 0 D) 1

5525. $\int_{-3}^{2} (2x-3)\, dx$ ning integralini hisoblang.

A) -11 B) -20 C) -2 D) 28

5526. $\int_{-2}^{-1} (5-4x)\, dx$ ning integralini hisoblang.

A) 11 B) 1 C) -9 D) 9

5527. $\int_{-1}^{2} (1-3x^2)dx$ ning integralini hisoblang.

A) 4 B) 5 C) -6 D) -7

5528. $\int_{-1}^{1} (x^2+1)dx$ ning integralini hisoblang.

A) $\frac{2}{3}$ B) $3\frac{1}{3}$ C) $\frac{1}{3}$ D) $2\frac{2}{3}$

5529. $\int_{-2}^{-1} (6x^2+2x-10)dx$ ning integralini hisoblang.

A) -10 B) 11 C) 1 D) 20

5530. $\int_{0}^{2} (3x^2-4x+5)dx$ ning integralini hisoblang.

A) 26 B) 12 C) 10 D) 0

5531. $\int_{0}^{4} (x-3\sqrt{x})dx$ ning integralini hisoblang.

A) 24 B) -8 C) 0 D) 16

5532. $\int_{1}^{9} (2x-\frac{3}{\sqrt{x}})dx$ ning integralini hisoblang.

A) 63 B) 64 C) 68 D) 48

5533. $\int_{0}^{2} e^{3x}dx$ ning integralini hisoblang.

A) $\frac{e^6-1}{3}$ B) $-\frac{e^6-1}{3}$

C) $\frac{e^6-2}{3}$ D) $-\frac{e^6+2}{3}$

5534. $\int_{1}^{3} 2e^{2x}dx$ ning integralini hisoblang.

A) e^6+e^2+1 B) e^6+e^2

C) e^6-e^2+4 D) e^6-e^2

5535. $\int_{-2}^{1} x(x+3)(2x-1)dx$ ning integralini hisoblang.

A) -5 B) 12 C) 6 D) 11

5536. $\int_{-1}^{0} (x+1)(x^2-2)dx$ ning integralini hisoblang.

A) $-\frac{11}{12}$ B) $\frac{3}{6}$ C) $-\frac{1}{2}$ D) 14

5537. $\int_{1}^{2} \frac{5x-2}{\sqrt[3]{x}}dx$ ning integralini hisoblang.

A) $3\sqrt[3]{3}$ B) $4\sqrt[3]{3}$ C) $4\sqrt[3]{4}$ D) $3\sqrt[3]{4}$

5538. $\int_{1}^{3} \frac{3x-1}{\sqrt{x}}\, dx$ ning integralini hisoblang.

A) $-2\sqrt{3}$ B) $3\sqrt{4}$ C) $4\sqrt{3}$ D) $8\sqrt{2}$

5539. $\int_{0}^{5} \frac{6}{\sqrt{3x+1}}\, dx$ ning integralini hisoblang.

A) 12 B) 19 C) -2 D) 0

5540. $\int_{2}^{7} \frac{4}{\sqrt{x+2}}\, dx$ ning integralini hisoblang.

A) -7 B) 8 C) 7 D) 1

5541. $\int_{1}^{2} \frac{3}{2x-1}dx$ ning integralini hisoblang.

A) $\frac{3}{2}\ln 3$ B) $3\ln 3$ C) $2\ln 3$ D) $\frac{2\ln 3}{3}$

5542. $\int_{0}^{1} \frac{4}{3x+2}dx$ ning integralini hisoblang.

A) $\frac{3}{4}\ln 2{,}5$ B) $\frac{4}{3}\ln 2{,}5$

C) $4\ln 2{,}5$ D) $3\ln 2{,}5$

5543. $\int_{\frac{\pi}{4}}^{\pi} \cos\left(3x-\frac{\pi}{4}\right)dx$ ning integralini hisoblang.

A) $\frac{\sqrt{2}-2}{6}$ B) $-\frac{\sqrt{2}+3}{6}$

C) $\frac{\sqrt{2}}{6}+1$ D) $-\frac{\sqrt{2}+2}{6}$

5544. $\int_{0}^{\frac{\pi}{2}} \sin\left(2x+\frac{\pi}{3}\right)dx$ ning integralini hisoblang.

A) $\frac{1}{3}$ B) 2,7 C) 0,5 D) 1,5

5545. $\int_{-\pi}^{\pi} \sin^2 x dx$ ning integralini hisoblang.

A) $\frac{\pi}{3}$ B) π C) -2π D) $\frac{\pi}{6}$

5546. $\int_{0}^{\frac{\pi}{2}} \sin x \cdot \cos x \, dx$ ning integralini hisoblang.

A) $\frac{1}{5}$ B) 3,2 C) $\frac{1}{2}$ D) 2

5547. $\int_{0}^{\frac{\pi}{4}} (\cos^2 x - \sin^2 x) dx$ ning integralini hisoblang.

A) $\frac{1}{5}$ B) 3,2 C) $\frac{1}{2}$ D) 2

5548. $\int_{0}^{\pi} (\cos^2 x + \sin^2 x) \, d x$ ning integralini hisoblang.

A) π B) $-\frac{\pi}{3}$ C) $\frac{\pi}{2}$ D) $\frac{\pi}{4}$

5549. $\int_{3}^{4} \frac{x^2-4x+5}{x-2} d x$ ning integralini hisoblang.

A) $3+\ln 2$ B) $\ln 1{,}5$ C) $\ln 2$ D) $\ln 2+1{,}5$

5550. $\int_{-1}^{2} 2dx$ ning integralini hisoblang.

A) 6 B) 8 C) 12 D) 4

5551. $\int_{-2}^{2} (3-x)dx$ ning integralini hisoblang.

A) 8 B) 12 C) 18 D) -5

5552. $\int_{1}^{3} (x^2-2x)dx$ ning integralini hisoblang.

A) $\frac{2}{3}$ B) 1 C) $\frac{1}{2}$ D) $-\frac{1}{3}$

5553. $\int_{-1}^{1} (2x-3x^2) \, dx$ ning integralini hisoblang.

A) 0 B) 4 C) -2 D) 2

5554. $\int_{1}^{8} \sqrt[3]{x} dx$ ning integralini hisoblang.

A) 0,5 B) $10\frac{1}{2}$ C) $15\frac{5}{6}$ D) $11\frac{1}{4}$

5555. $\int_{1}^{2} \frac{dx}{x^3}$ ning integralini hisoblang.

A) $\frac{3}{8}$ B) $-\frac{2}{5}$ C) $\frac{1}{8}$ D) 0

5556. $\int_{0}^{\frac{\pi}{2}} \sin x dx$ ning integralini hisoblang.

A) 0 B) 1 C) -1 D) π

5557. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \cos x \, dx$ ning integralini hisoblang.

A) $\pi-2$ B) 1 C) 2 D) $\frac{\pi}{3}$

5558. $\int_{0}^{1} (5x^4-8x^3)dx$ ning integralini hisoblang.

A) -1 B) 3 C) -4 D) 8

5559. $\int_{-1}^{1} (6x^3-5x)dx$ ning integralini hisoblang.

A) 2 B) -1 C) 1 D) 0

5560. $\int_{1}^{4} \sqrt{x}\left(8-\frac{7}{x}\right)dx$ ning integralini hisoblang.

A) $22\frac{1}{2}$ B) $23\frac{1}{3}$ C) $24\frac{1}{4}$ D) 20

5561. $\int_{0}^{3} \sqrt{x+1}dx$ ning integralini hisoblang.

A) $4\frac{2}{3}$ B) $1\frac{1}{3}$ C) 2,25 D) 4,25

5562. $\int_{2}^{6} \sqrt{2x-3}dx$ ning integralini hisoblang.

A) $4\frac{1}{3}$ B) $5\frac{2}{3}$ C) $7\frac{1}{3}$ D) $8\frac{2}{3}$

5563. $\int_{0}^{\frac{\pi}{4}} \frac{1}{2}\cos\left(x+\frac{\pi}{4}\right)dx$ ning integralini hisoblang.

A) $\frac{2-\sqrt{2}}{4}$ B) $-\frac{2+\sqrt{2}}{4}$

C) $\frac{2-\sqrt{2}}{4}-\pi$ D) $\frac{1-\sqrt{2}}{4}+1$

5564. $\int_{0}^{\frac{\pi}{3}} \frac{1}{3}\sin\left(x-\frac{\pi}{3}\right)dx$ ning integralini hisoblang.

A) $\frac{2}{3}$ B) $-\frac{1}{6}$ C) $1\frac{1}{2}$ D) $-\frac{3}{5}$

5565. $\int_{1}^{3} 3\sin(3x-6)dx$ ning integralini hisoblang.

A) -1 B) 2 C) 0 D) 1

5566. $\int_{3}^{6} dx$ ning integralini hisoblang.

A) 3 B) 9 C) 18 D) $\frac{1}{2}$

5567. $\int_{1}^{1} 6x^5 dx$ ning integralini hisoblang.

A) 0 B) 3 C) 1 D) 2

5568. $\int_2^5 4x\,dx$ ning integralini hisoblang.

A) 39 B) 27 C) 53 D) 42

5569. $\int_0^5 \frac{dx}{\sqrt{x}}$ ning integralini hisoblang.

A) $\sqrt{5}$ B) $2\sqrt{5}$ C) $\sqrt{4}$ D) $\frac{1}{2}\sqrt{5}$

5570. $\int_0^{\pi} \sin^2 x dx$ ning integralini hisoblang.

A) 1 B) $\frac{\pi}{4}$ C) $\frac{\pi}{2}$ D) 0

5571. $\int_0^{\pi} \cos^2 x\,dx$ ning integralini hisoblang.

A) $\frac{\pi}{4}$ B) $\frac{\pi}{2}$ C) $\frac{\pi}{5}$ D) π

5572. $\int_{-\pi}^{\pi/2} \sin^2 2x\,dx$ ning integralini hisoblang.

A) $\frac{5\pi}{4}$ B) $\frac{3\pi}{4}$ C) $1{,}125\pi$ D) $2\frac{2}{3}\pi$

5573. $\int_0^{\pi/2} \sin x dx$ ning integralini hisoblang.

A) 1 B) $\frac{\pi}{4}$ C) $\frac{\pi}{2}$ D) 0

5574. $\int_1^1 \frac{dx}{\sqrt{3x+1}}$ ning integralini hisoblang.

A) 5 B) 8 C) 0 D) -5

5575. $\int_{-2}^{2} (1-x)^3 dx$ ning integralini hisoblang.

A) 20 B) -7 C) 15 D) 23

5576. $\int_{-2}^{0} \frac{dx}{(1-2x)^3}$ ning integralini hisoblang.

A) $\frac{5}{39}$ B) $\frac{6}{25}$ C) $\frac{7}{29}$ D) $\frac{22}{43}$

5577. $\int_2^7 \frac{dx}{\sqrt[3]{(8-x)^2}}$ ning integralini hisoblang.

A) $-3(\sqrt[3]{6}-1)$ B) $3(\sqrt[3]{6}-1)$

C) $3(\sqrt[3]{6}+1)$ D) $-3(\sqrt[3]{6}+1)$

5578. $\int_{-1}^{0} \frac{dx}{\sqrt{1-x}}$ ning integralini hisoblang.

A) $\sqrt{2}-1$ B) $2\sqrt{2}-1$

C) $\sqrt{2}+1$ D) $2(\sqrt{2}-1)$

5579. $\int_0^{3\pi/2} \cos\frac{x}{3} dx$ ning integralini hisoblang.

A) 3 B) 5 C) 1 D) 12

5580. $\int_{-2}^{-1} \frac{4}{x^2}\left(1-\frac{2}{x}\right)dx$ ning integralini hisoblang.

A) 7 B) 8 C) 5 D) -7

5581. $\int_{\pi/6}^{\pi/4} \sin 2x dx$ ning integralini hisoblang.

A) $\frac{1}{3}$ B) $\frac{1}{2}$ C) $\frac{1}{4}$ D) $\frac{1}{6}$

5582. $\int_0^{\pi/4} (\sin 2t - \cos 2t)^2\,dt$ ning integralini hisoblang.

A) $\frac{\pi-2}{4}$ B) $\frac{4-2\pi}{3}$

C) $\frac{\pi-5}{4}$ D) $\frac{\pi-6}{4}$

5583. $\int_0^{\pi/2} \sin x \cdot \cos^2 x\,dx$ ning integralini hisoblang.

A) 2 B) $\frac{1}{3}$ C) $\frac{3}{4}$ D) $\frac{5}{2}$

Kombinatorika elementlari

✓ Samarqanddan Toshkentga 4 xil yo'l bilan kelish mumkin: samolyot, poyezd, avtobus va yengil mashina (taksi). Toshkentdan Xo'jakentga 3 xil transport vositasi olib boradi: poyezd, avtobus, taksi. Samarqanddan Xo'jakentga necha xil usulda kelish mumkin?

A) 20 B) 8 C) 9 D) 12

Yechimi:

Kombinatorika — matematikaning keng tatbiqlarga ega bo'limlaridan biri. Turmushda, texnika va ishlab chiqarishda uchraydigan masalalarni yechish usullari ko'p bolishi mumkin. *Bu usullarning soni nechta? Ularni qanday hisoblash mumkin?* Kombinatorika ana shu savollarga javob beradi.

Yuqoridagi

Samarqanddan Toshkentga kelishning jami 4 ta yo'li bor. Mavjud 4 ta yo'ldan bittasini tanlab, Toshkentga keldik, deylik. Endi Xo'jakentga borishning 3 ta yo'li — imkoniyati bor. Shunday qilib, Samarqanddan Toshkent orqali Xo'jakentga borishning jami $4 \cdot 3 = 12$ xil usuli bor.

***Javob:* 12 xil**

5584. Birinchi elmenti A = {a, b, c} to'plamdan, ikkinchi dementi esa B = {2, 3} to'plamdan olingan nechta juftliklar tuzish mumkin?

A) 10 B) 6 C) 9 D) 12

5585. Birinchi elmenti A = {a, c} to'plamdan. ikkinchi elmenti esa B = {1,2, 3,4,5} to'plamdan olingan nechta juftliklar tuzish mumkin?
A) 10 B) 6 C) 9 D) 12

5586. To'rt xil bolt va uch xil gaykadan bittadan olib necha xil juftliklar tuzish mumkin?
A) 10 B) 15 C) 9 D) 12

5587. «TESTOLOG» so'zidan undosh va unli harflarni necha xil usul bilan tanlab olish mumkin?
A) 10 B) 15 C) 9 D) 12

5588. «Daftar» so'zidan undosh va unli harflarni necha xil usul bilan tanlab olish mumkin?
A) 10 B) 6 C) 8 D) 12

5589. Savatda 10 dona olma va 8 dona nok bor. Noila mevalardan ham olma, ham nokni oladi. Bunday tanlashlar soni qancha bo'lishi mumkin?
A) 80 B) 36 C) 20 D) 12

5590. 2 ta kitob, 3 ta daftar va 4 ta qalam bor. Ulardan bittadan olinib komplektlar tuzilmoqchi. Bu ishni necha xil usul bilan qilish mumkin?
A) 10 B) 6 C) 24 D) 12

5591. Onasi Nargizaga "Korzinka. Uz" supermarketidan 3 xil meva xarid qilishni aytdi. "Korzinka. Uz" da 6 xil olma, 4 xil nok, 5 xil uzum bor. Nargiza mevalarning har bir xilidan 1 kg dan olib, nechta turli to'plam tuza oladi?
A) 80 B) 120 C) 80 D) 12

✓ A_6^4 ni hisoblang.
A) 240 B) 108 C) 360 D) 36
Yechimi:

formulasi: $A_n^k = \underbrace{n(n-1)(n-2)(n-3)\ldots}_{k\ ta}$

misol: $A_6^4 = \underbrace{6\cdot 5\cdot 4\cdot 3}_{4\ ta} = 360$

Javob: C)

Izoh: Agar $\overline{A}_n^k$ ko'rinishda berilsa:

formulasi: $\overline{A}_n^k = n^k$

misol: $\overline{A}_6^4 = 6^4 = 1296$

5592. $\overline{A}_5^2$ ni hisoblang.
A) 10 B) 25 C) 12 D) 20

5593. A_5^2 ni hisoblang.
A) 10 B) 9 C) 12 D) 20

5594. A_7^2 ni hisoblang.
A) 210 B) 49 C) 42 D) 12

5595. A_{10}^2 ni hisoblang.
A) 5050 B) 90 C) 5040 D) 90

5596. $\overline{A}_9^2$ ni hisoblang.
A) 5050 B) 27 C) 729 D) 90

✓ Ushbu 1, 2, 3 raqamlaridan jami nechta: 2 xonali; sonlar tuzsa bo'ladi? (Raqamlar takrorlanmaydigan)
A) 24 B) 6 C) 3 D) 36
Yechimi:
Buni hisoblash formulasi bor:
n ta elementli *X* to'plam elementlaridan *k* tadan olib tuzilgan ***o'rinlashtirishlar***ning soni: A_n^k

formulasi: $A_n^k = \underbrace{n(n-1)(n-2)(n-3)\ldots}_{k\ ta}$

misol: $A_3^2 = 3\cdot 2 = 6$ (2 ta)

Sanab ko'rish mumkin: 12; 13; 21; 23; 31; 32 *6 ta*
Shartida aytilgan: 11; 22; 33; takrorlanmasin shuning uchun olinmaydi
Javob: B)
Izoh: Agar masala sharti :" Ushbu 1, 2, 3 raqamlaridan jami nechta: 2 xonali; sonlar tuzsa bo'ladi? (...) $\overline{A}_n^k$:

formulasi: $\overline{A}_n^k = n^k$

misol: $\overline{A}_3^2 = 3^2 = 9$

E'tibor bering qavsning ichida hech narsa yozilmaydi.

5597. Ushbu 1; 2; 3; 4; 5 raqamlaridan jami nechta: 3 xonali; sonlar tuzsa bo'ladi? (Raqamlar takrorlanmaydigan)
A) 80 B) 60 C) 125 D) 65

5598. Ushbu 1; 2; 3; 4; raqamlaridan jami nechta: 3 xonali; sonlar tuzsa bo'ladi?
A) 80 B) 64 C) 24 D) 65

5599. 30 o'quvchisi bo'lgan sinfdan boshliq, yordamchi va kotib necha xil usul bilan saylanishi mumkin?
A) 24310 B) 24355 C) 24360 D) 900

5600. Sexda 6 ishchi ishlaydi. Ulardan uch kishiga uch turli, ya'ni har bir kishiga bir xildan buyum tayyorlashni necha usul bilan topshirish mumkin?
A) 105 B) 158 C) 36 D) 216

5601. Qo'mitaga 7 kishi saylangan. Ular orasidan rais, yordamchi, kotib necha usul bilan tanlanishi mumkin?
A) 230 B) 343 C) 210 D) 240

5602. 1, 2, 3, 4, 5, 6, 7, 8, 9 raqamlaridan nechta uch xonali nomerlar tuzish mumkin?
A) 729 B) 243 C) 27 D) 712

5603. 5 ta har xil daftarni uch bola o'rtasida necha xil usul bilan taqsimlash mumkin?
A) 60 B) 6 C) 125 D) 120

5604. a, b, d, e, f harflaridan qancha uch harfli so'z tuzish mumkin(«so'z» deganda harflarning istalgan ketma-ketligi tushuniladi)?
A) 60 B) 6 C) 125 D) 120

5605. 8 ta har xil kitobdan 3 tasi necha xil usul bilan tanlanishi mumkin?
A) 80 B) 336 C) 512 D) 65

✓ Ushbu 1, 2, 3 raqamlaridan jami nechta: 3 xonali; sonlar tuzsa bo'ladi? (Raqamlar takrorlanmaydigan)
A) 24 B) 3 C) 6 D) 36
Yechimi:
Buni hisoblash formulasi bor:

n ta elementli X to'plam elementlaridan n tadan olib tuzilgan ***o'rinlashtirishlar***ning soni: A_n^n

formulasi:	misol:
$A_n^n = \underbrace{n(n-1)(n-2)(n-3)....}_{n\ ta}$	$A_3^3 = 3\cdot 2\cdot 1 = 6$ 3 ta

Sanab ko'rish mumkin: 123; 132; 213; 231; 312; 312 *6ta*
Shartida aytilgan: 111; 112; 113... ; takrorlanmasin shuning uchun olinmaydi.
Javob: **C)**

Izoh: A_n^n ni hisoblash formulasini P_n bilan belgilab:

formulasi:	formulasi:	bo'ladi.
$P_n = A_n^n = n!$	$P_3 = 3! = 3\cdot 2\cdot 1 = 6$	

5606. P_5 ni hisoblang.
A) 80 B) 120 C) 512 D) 65

5607. P_7 ni hisoblang.
A) 5080 B) 336 C) 512 D) 5040

5608. 4 detalni 4 qutiga necha xil tartibda joylashtirish mumkin?
A) 60 B) 12 C) 24 D) 120

5609. 1; 3, 6, 7, 9 raqamlaridan ularni takrorlamasdan mumkin bo'lgan barcha to'rt xonali sonlarni sonini toping.
A) 120 B) 125 C) 60 D) 110

5610. Nodira, Mubinabonu, A'zamxon va Otabek o'zlaridagi yashil, ko'k, qizil va sariq sharlarni bir-birlariga berishmoqchi. Buni necha xil usulda bajarsa bo'ladi?
A) 120 B) 24 C) 60 D) 110

5611. Nozimaxonda Alisher Navoiyning 5 ta asari bor. Nozimaxon ularni kitob javoniga terib qo'ymoqchi. Buning necha xil usuli bor?
A) 120 B) 125 C) 60 D) 110

5612. Bir bola yozayotgan she'rining 1-qatorida «A'lo o'qisang yaxshi-da!» deyilgan. Bola 1-qatordagi so'zlarning o'rinlarini almashtirib, keyingi qatorlani hosil qilmoqchi? Bu she'rda nechta qator bo'ladi?
A) 10 B) 12 C) 9 D) 6

✓ $\frac{11!}{9!}$ ni hisoblang.
A) 110 B) 402 C) 180 D) 915
Yechimi:

$$\frac{11!}{9!} = \frac{1\cdot 2\cdot 3\cdot 4\cdot 5\cdot 6\cdot 7\cdot 8\cdot 9\cdot 10\cdot 11}{1\cdot 2\cdot 3\cdot 4\cdot 5\cdot 6\cdot 7\cdot 8\cdot 9} = \frac{1\cdot 2\cdot 3\cdot 4\cdot 5\cdot 6\cdot 7\cdot 8\cdot 9\cdot 10\cdot 11}{1\cdot 2\cdot 3\cdot 4\cdot 5\cdot 6\cdot 7\cdot 8\cdot 9} =$$

$$= \frac{10\cdot 11}{1} = 11\cdot 10 = 110$$

Javob: (A)

5613. $\frac{22!}{20!}$ ni hisoblang.
A) 120 B) 462 C) 400 D) 410

5614. $\frac{34!}{35!}$ ni hisoblang.
A) 1399 B) 34 C) 1/35 D) 280

✓ C_5^2 ni hisoblang.
A) 210 B) 20 C) 680 D) 10
Yechimi:

$$C_n^k = \frac{n!}{k!(n-k)!}$$

$$C_5^2 = \frac{5!}{2!\cdot(5-2)!} = \frac{5!}{2!\cdot 3!} = \frac{1\cdot 2\cdot 3\cdot 4\cdot 5}{1\cdot 2\cdot 1\cdot 2\cdot 3} = \frac{20}{2} = 10$$

Javob: (D)

5615. C_6^4 ni hisoblang.
A) 24 B) 30 C) 15 D) 81

5616. C_{11}^4 ni hisoblang.
A) 120 B) 75 C) 330 D) 95

5617. $C_8^5 - C_8^3$ ni hisoblang.
A) 900 B) 1000 C) 1 D) 0

5618. $C_{10}^7 - C_{10}^3$ ni hisoblang.
A) 90 B) 100 C) 1 D) 0

✓ Ushbu 1, 2, 3, 4 raqamlaridan jami nechta: 2 tadan olib tuzilgan har xil guruhlar soni nechta?
A) 24 B) 6 C) 3 D) 36
Yechimi:
Buni hisoblash formulasi bor:
Umuman, **n** ta elementdan **k** tadan olib tuzilgan barcha guruhlar soni C_n^k deb belgilanadi va bu son $C_n^k = \frac{n!}{k!(n-k)!}$ ga teng

$$C_4^2 = \frac{4!}{2!\cdot(4-2)!} = \frac{4!}{2!\cdot 4!} = \frac{1\cdot 2\cdot 3\cdot 4}{1\cdot 2\cdot 1\cdot 2} = \frac{12}{2} = 6$$

Sanab ko'rish mumkin: 12; 13; 14; 23; 24; 34 *6 ta*
Eslatma : bu yerda 12; 21; 13; 31... ; 2 ta sanashga o'tmaydi chunki ular 1 ta guruh.
Javob: B)

5619. 4 ta ***a, b, c, d*** elementdan (predmetdan) 2 tadan olib tuzilgan har xil guruhlar soni nechta? .
A) 8 B) 6 C) 12 D) 5

5620. Kutubxonachi Sizga 5 ta turli kitobni o'qishni taklif qildi. Siz shulardan 3 tasini tanlab olmoqchisiz. Buni necha xil usulda amalga oshirish mumkin? .
A) 10 B) 6 C) 12 D) 5

5621. Taqsimchada 8 ta yong'oq bor edi. Abbos ixtiyoriy 3 tasini olmoqchi bo'ldi. Buni u necha xil usulda amalga oshirishi mumkin? .
A) 120 B) 56 C) 28 D) 5

5622. 7- sinfda 12 ta fandan dars o'tiladi. Dushanba kuni jadval bo'yicha 5 soat dars bo'lib, har bir soatda har xil dars o'tiladi. Dushanba kungi jadvalni necha xil usulda tuzish mumkin?
A) 892 B) 760 C) 792 D) 560

EHTIMOLLIK NAZARIYASI

Ta'rif. $\frac{k}{n}$ *kasr son A tasodifiy hodisaning ro'y berish ehtimolligi deyiladi.*

Bu ehtimollik $P(A)$ bilan belgilanadi ta'rifga ko'ra:

$$p(A)=\frac{k}{n}=\frac{qulaylik\ tug'diruvchi\ imkoniyatlar\ soni}{barcha\ imkoniyatlar\ soni}$$

Bu formula *ehtimollikning klassik ta'rifi* deyiladi.

Misol: Idishda 10 ta shar bo'lib, uning **1 tasi qora**, *9 tasi oq* rangda. Tasodifiy ravishda (tavakkaliga) bitta shar olamiz. Uning oq rangda bo'lish imkoniyati ko'p mi, qora rangda bo'lish imkoniyati ko'pmi?

Yechimi: Oq rangda bo'lish imkoniyati katta, albatta, chunki idishda ular ko'p. Idishdagi sharlarning ixtiyoriy bittasi olinishi mumkin. Bu tajribada ro'y berishi mumkin bo'lgan barcha imkoniyatlar soni 10 ta, ulardan 9 tasi olinadigan sharning "oq rangda bo'lishi"

$$p(A)=\frac{9}{10}=\frac{qulaylik\ tug'diruvchi\ imkoniyatlar\ soni}{barcha\ imkoniyatlar\ soni}$$

Javob: 9/10

Misol: Shoshqol toshi (o'yin kubigi) bir marta tashlangan bo'lsa. 3 raqamini paydo bo'lish ehtimolini toping.

Yechimi: o'yin kubigini tashlash tajribasida barcha imkoniyatlar soni 6 ta(1,2,3,4,6 yozilgan) : 3 raqamini 1 ta tomonida bo'lganidan bir imkoniyatga ega:

$$p(A)=\frac{1}{6}$$

Javob: 1/6

5623. Tanga tashlanganda uning "gerbil tomoni chiqishi" hodisasining ehtimolini toping.

A) $\frac{1}{3}2$ B) 1 C) $\frac{1}{2}$ D) 0,4

5624. Idishda 10 ta oq, 20 ta ko'k rangli sharlar bor. Tasodifiy ravishda olingan sharning oq rangda ekanligining ehtimolligini toping.

A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{10}{40}$ D) $\frac{1}{30}$

5625. Idishda 10 ta oq, 20 ta ko'k rangli sharlar bor. Tasodifiy ravishda olingan sharning ko'k rangda ekanligining ehtimolligini toping.

A) $\frac{1}{3}$ B) $\frac{2}{3}$ C) $\frac{10}{40}$ D) $\frac{1}{30}$

5626. 30 ta qizil olma va 20 ta nashvati nok bor. Savatdan tavakkaliga bir dona meva olindi. Uning olma ekanligining ehtimolligini toping?

A) 0 B) $\frac{2}{5}$ C) $\frac{3}{5}$ D) 0,5

5627. 1000 ta mahsulotdan 20 tasi yaroqsiz. Sotib olingan mahsulotning yaroqsiz ekanligi ehtimolligini toping .

A) $\frac{1}{1020}$ B) $\frac{20}{1020}$ C) $\frac{1}{40}$ D) $\frac{1}{50}$

5628. Maktabda 800 ta bola o'qiydi. Shulardan 80 tasi a'lochi. Tasodifiy ravishda bir o'quvchi tanlandi. Uning a'lochi ekanligining ehtimolligini toping.

A) $\frac{1}{880}$ B) $\frac{1}{80}$ C) $\frac{1}{10}$ D) $\frac{1}{30}$

5629. 30 ta qizil olma va 20 ta nashvati nok bor. Savatdan tavakkaliga bir dona meva olindi. Uning yong'oq ekanligining ehtimolligini toping?

A) 0 B) $\frac{2}{5}$ C) $\frac{3}{5}$ D) 0,5

5630. "Daftar" so'zidan tasodifiy ravishda bitta harf olindi. Bu harf "a" bo'lish ehtimolini toping?

A) 0 B) $\frac{1}{3}$ C) $\frac{1}{6}$ D) 0,5

5631. «TESTOLOG» so'zidan tasodifiy ravishda bitta harf olindi. Bu unli harf bo'lish ehtimolini toping?

A) 0 B) $\frac{3}{4}$ C) $\frac{3}{8}$ D) 0,25

5632. «TESTOLOG» so'zidan tasodifiy ravishda bitta harf olindi. Bu harf "a" bo'lish ehtimolini toping?

A) 0 B) $\frac{3}{4}$ C) $\frac{3}{8}$ D) 0,25

5633. Kubning birinchi yog'iga -1, ikkinchi yog'iga-2,...oltinchi yog'iga-6 yozilgan. Kub bir marta tashlansa, u tasodifan juft soni chiqish extimolini toping.

A) $\frac{1}{6}$ B) $\frac{1}{5}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$

5634. Kubning birinchi yog'iga -1, ikkinchi yog'iga-2,..., oltinchi yog'iga-6 yozilgan. Kub bir marta tashlansa, u tasodifan toq soni chiqish extimolini toping.

A) $\frac{1}{6}$ B) $\frac{1}{5}$ C) $\frac{1}{3}$ D) $\frac{1}{2}$

✓ Dasturxondagi mevalarning 20% olma va 10 % nashvati nok bor. Dasturxondan tavakkaliga bir dona meva olindi. Uning olma yoki nok ekanligining ehtimolligini toping

A) 0,5 B) 0,6 C) 0,4 D) 0,3

Yechimi:

P(AB)=P(A)+P(B) fo'rmulaga ko'ra:

Avval % dan qismga (100 ga bo'lib) o'tib olamiz

20%⇒ 0,2 10% ⇒0,1

$P(AB)=0,2+0,1=0,3$

Javob: D)

5635. Idishda o'lchamlari bir xil bo'lgan qalamning 10 % ko'k, 25 % yashil rangli qalamlar bor Idishdan tavakkaliga bir dona qalam olindi. Uning ko'k yoki yashil ekanligining ehtimolligini toping

A) 0,4 B) $\frac{7}{25}$ C) $\frac{7}{20}$ D) 0,3

5636. Maktabda 800 ta bola o'qiydi. Shulardan 80 tasi a'lochi, 40 tasi qoniqarli.o'qiydi . Tasodifiy ravishda bir o'quvchi tanlandi. Uning a'lochi yoki qoniqarli ekanligining ehtimolligini toping.

A) $\frac{3}{20}$ B) $\frac{3}{80}$ C) $\frac{1}{10}$ D) $\frac{1}{30}$

5637. «TESTOLOG SERVIS» so'zidan tasodifiy ravishda bitta harf olindi. Bu "o" yoki undosh harf bo'lish ehtimolini toping?

A) $\frac{1}{2}$ B) $\frac{3}{14}$ C) $\frac{13}{14}$ D) $\frac{11}{14}$

5638. 1, 2, .3,..., 15 sonlar bilan nomerlangan chiptalardan ixtiyoriy biri tanlab olinmoqda. Chiptadagi nomer 11 dan katta yoki 8 dan kichik bo'lishi ehtimolligini toping.

A) 0,4 B) $\frac{7}{15}$ C) $\frac{11}{15}$ D) 0,3

5639. Kubning birinchi yog'iga -1, ikkinchi yog'iga-2,...oltinchi yog'iga-6 yozilgan. 2ta Kub bir marta teng tashlansa, u tasodifan juft raqam yoki 5 raqami chiqish extimolini toping.

A) $\frac{2}{3}$ B) $\frac{9}{10}$ C) $\frac{1}{3}$ D) $\frac{7}{10}$

✓ .Tanga va kub bir vaqtda tashlangan. "Gerb" tushishi va "4" soni tushishi hodisalarining birgalikda ro'y berishi ehtimolligini toping.

A) 1/12 B) 1/6 C) 1/4 D) 1/3

Yechimi:

$P(A)$ – tanganing "gerb" tomoni tushishi hodisasi

$$P(A)=\frac{1}{2}$$

$P(B)$ – kubik tashlanganda "3" sonining tushishi hodisasi bo'lsin.

$$P(B)=\frac{1}{6}$$

A va B hodisalar bog'liq bo'lmagan hodisalar. Demak,

$$P(A,B)=P(A)\cdot P(B)=\frac{1}{2}\cdot\frac{1}{6}=\frac{1}{12}$$

***Javob:* A)**

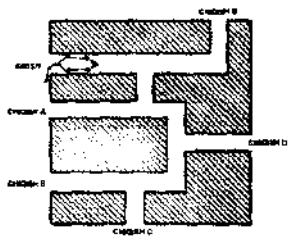
5640. "kitob" va "yurt" so'zlaridan bir vaqtda tasodifiy ravishda bittadan harf olindi. Bu 2 lasidan ham "t" harf tushishini birgalikda ro'y berishi ehtimolligini toping.

A) $\frac{1}{9}$ B) $\frac{1}{5}$ C) $\frac{1}{3}$ D) $\frac{1}{20}$

5641. 2 ta qutidan birinchisida 3 ta qizil va 5 ta ko'k qalam, ikkinchisida 2 ta qizil va 3 ta ko'k ruchka bor. Bir sinashda tavakkal qilib bittadan qalam va ruchka olindi. Ularning ikkalasi ham ko'k bo'lish ehlimolini toping. .

A) $\frac{5}{8}$ B) $\frac{1}{5}$ C) $\frac{3}{8}$ D) $\frac{3}{20}$

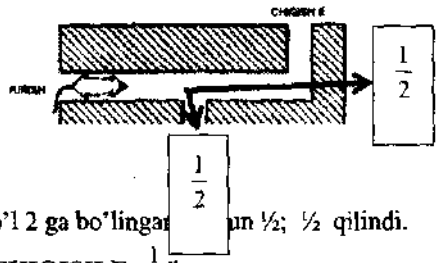
✓ Rasmda labirint tasvirlangan. Sichqon labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, sichqonning labirintning C joyidan chiqishi ehtimolini toping.



A) 0,125 B) 0,25 C) 0,0625 D) 0,375

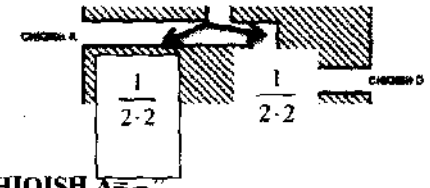
Yechimi:

Chizmani shu yeriga qarab shuni yozish mumkin:

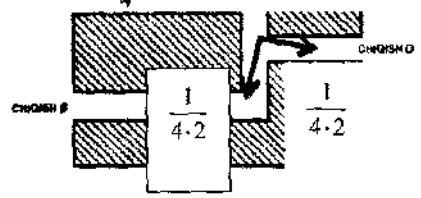


Yo'l 2 ga bo'lingan ...un ½; ½ qilindi.

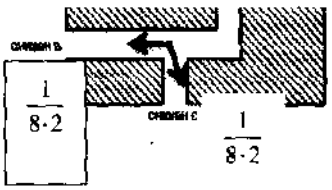
"CHIQISH E=$\frac{1}{2}$"



"CHIQISH A=$\frac{1}{4}$"



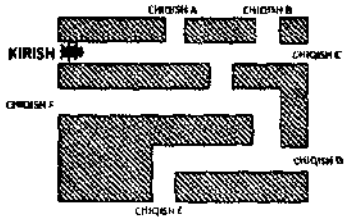
"CHIQISH D=$\frac{1}{8}$"



"CHIQISH B=$\frac{1}{16}$" "CHIQISH C=$\frac{1}{16}$"

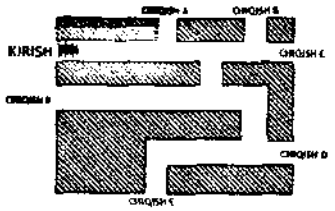
Javob: C)

5642. Rasmda labirint tasvirlangan. Tarakan labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, tarakanning labirintning B joyidan chiqishi ehtimolini toping



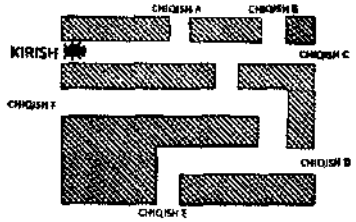
A) 1/16 B) 1/8 C) 1/4 D) 1/12

5643. Rasmda labirint tasvirlangan. Tarakan labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, tarakanning labirintning F joyidan chiqishi ehtimolini toping



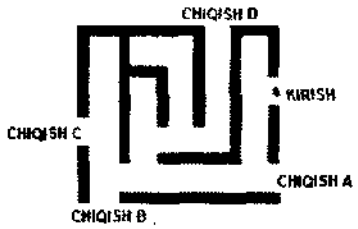
A) 1/16 B) 1/8 C) 1/6 D) 1/12

5644. Rasmda labirint tasvirlangan. Tarakan labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, tarakanning labirintning E joyidan chiqishi ehtimolini toping



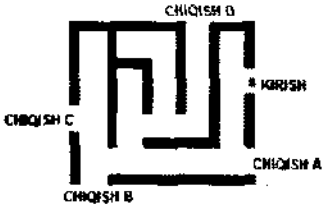
A) 1/16 B) 1/8 C) 1/6 D) 1/12

5645. Rasmda labirint tasvirlangan. O'rgimchak labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, o'rgimchakning labirintning A joyidan chiqishi ehtimolini toping



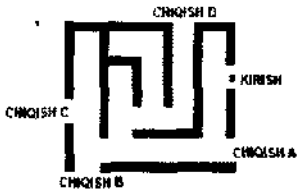
A) 1/16 B) 1/4 C) 1/64 D) 1/32

5646. Rasmda labirint tasvirlangan. O'rgimchak labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, o'rgimchakning labirintning B joyidan chiqishi ehtimolini toping



A) 1/16 B) 1/4 C) 1/64 D) 1/32

5647. Rasmda labirint tasvirlangan. O'rgimchak labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, o'rgimchakning labirintning D joyidan chiqishi ehtimolini toping



A) 1/16 B) 1/4 C) 1/64 D) 1/32

Aralash bo'lim

5648. $7!-5!$ ni hisoblang.

A) 5040 B) 120 C) 512 D) 4920

5649. $A_6^3 \cdot P_2$ ni hisoblang.

A) 540 B) 240 C) 672 D) 336

5650. 5 nafar mehmonni 5 ta stulga o'tkazish variantlari nechta?

A) 80 B) 120 C) 512 D) 65

5651. O'yin boshlanganda 10 nafar voleybol o'yinchidan nechta usul bilan 6 nafarini o'yinga tushirish mumkin?

A) 210 B) 220 C) 40 D) 120

5652. Tijorat banki boshqarmasi turli lavozimlarga 10 ta nomzoddan 3 tasini tanlamoqda. Har bir nomzod bir xil imkoniyatga ega. 10 ta nomzoddan 3 kishidan iborat nechta guruh tuzish mumkin?

A) 800 B) 720 C) 780 D) 120

5653. Aviakompaniya Samarqand — Toshkent yo'nalishida oltita. Toshkent — Anqara yo'nalishida esa ikkita reysga ega. Agar reyslar har xil kunlarda bajarilsa, Samarqanddan Anqaragacha nechta usul bilan chipta buyurish mumkin?

A) 10 B) 15 C) 9 D) 12

5654. Savatda banan, olma, apelsin va mandarin bor. To'rtta qiz bittadan meva olmoqchi. Bunday taqsimlashning nechta varianti bor?

A) 60 B) 12 C) 24 D) 120

5655. Seyfning shifrli kodi olti xonali sondan iborat. Kod- lashtirganda nechta turli kombinatsiya tuzish mumkin?

A) 10^3 B) 10^5 C) 10^4 D) 10^6

5656. 6 ta katakdan ikkitasi qizil rangda, qolgan to'rtta katak esa oq, qora, yashil va ko'k rangga (har biri bitta rangga) bo'yalishi kerak. Bunday ishni nechta usul bilan amalga oshirish mumkin?

A) 880 B) 360 C) 720 D) 650

5657. O'yin kubigi bir marta tashlanganda juft raqam tushishining ehtimolligini toping.

A) 0,5 B) 0,6 C) 0,4 D) 0,2

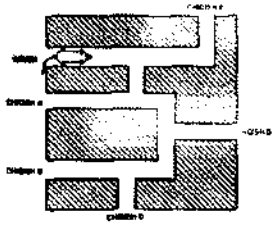
5658. Savatda "O'zbekiston" so'zini tashkil qiladigan harflar yozilgan kartochkalar yotibdi. Tasodifan olingan kartochkada "unli" harfi bo'lish ehtimolligini toping.

A) 0,4 B) $\frac{1}{5}$ C) $\frac{3}{5}$ D) 0,5

5659. Savatdagi mevalarning 30% i banan va 60% i olma. Tasodifan olingan meva banan yoki olma bo'lish extimolligini toping.

A) 0,5 B) 0,6 C) 0,9 D) 0,2

5660. Rasmda labirint tasvirlangan. Sichqon labirintning «KIRISH» qismidan harakatlana boshladi. Agar u orqaga qaytmasa va har bir yo'ldan faqat bir marta o'tishi mumkin bo'lsa, sichqonning labirintning D joyidan chiqishi ehtimolini toping.



A) 0,125 B) 0,25 C) 0,0625 D) 0,375

TO'PLAM TUSHUNChASI

✓ $C=\{x>13 : x\in N\}$ dan $n(C)$ ni toping.

A) 5 B) –5 C) 3 D) ∞

Yechimi:

To'plam matematikaning boshlang'ich tushunchalaridan bo'lib, uni o'zidan soddaroq tushunchalar orqali ta'riflab bo'lmaydi.

To'plamni tashkil etgan obyektlar uning *elementlari* deyiladi.

To'plam, odatda, qulaylik uchun, lotin alifbosining bosh harflari. ***masalan: A,B,C,...***, uning elementlari esa kichik harflari. ***masalan: a,b,c,...*** bilan belgilanadi.

Elementlari ***a,b,c,...*** bo'lgan to'plam qavslar yordamida $A=\{a,b,c,...\}$ kabi yoziladi.

Masalan: C={0, 1, 2, 3, 4, 5, 6, 7, 8, 9} – o'nlik sanoq sistemasidagi raqamlar to'plami. V={a, e, i, o, u} - ingliz tilidagi unli harflar to'plami.

x ning A to'plamning elementi (belgilanishi)

$\Downarrow$

$x\in A$ (*o'qilishi: x element A ga tegishli*)

x ning A to'plamning elementi emasligi

$\Downarrow$

$x\notin A$ (*o'qilishi: x element A ga tegishli emas*)

Masalan: $A=\{1, 2, 3, 4, 5, 6, 7\}$ uchun $4\in A$ ammo $9\notin A$ (*chunki 9 soni A to'plamda yo'q*).

Agar to'plamni tashkil qilgan elementlar chekli sonda bo'lsa, bunday to'plam **chekli to'plam**, aks holda **cheksiz to'plam** deyiladi.

Masalan: $A=\{2, 3, 5, 8, 13, 21\}$ *to'plam chekli*, N={1,2,3,..., n,...} - barcha natural sonlar to'plami esa *cheksiz to'plamdir*. ***n(A)*** deb chekli A to'plamning barcha elementlari sonini belgilasak, $A=\{2, 3, 5, 8, 13, 21\}$ to'plamning barcha elementlari soni 6 ga teng bo'lgani uchun, ***n(A)=6*** boladi.

$C=\{x>13 : x\in N\}=\{14;15;16;17;18;19...\}$ $n(C)=\infty$.

Birorta ham elementga ega bo'lmagan to'plam **bo'sh to'plam** deyiladi va $\varnothing$ kabi belgilanadi.

$\varnothing$ to'plam ham chekli hisoblanadi va uning uchun **n(∅)= 0.**

5661. "8 soni B to'plamning elementi" ni toping.

A) $8\in B$ B) $8\in C$ C) $8\notin C$ D) $8\notin B$

5662. "11 soni E to'plamning elementi emas" ni toping.

A) $11\in E$ B) $11\notin E$ C) $11\notin C$ D) $11\notin B$

5663. "29 soni D to'plamning elementi " ni toping.

A) $9\in E$ B) $29\in D$ C) $29\notin D$ D) $9\in D$

5664. " s harfi D to'plamning elementi emas" ni toping.

A) $s\notin E$ B) $s\in D$ C) $s\notin D$ D) $s\in D$

5665. $A=\{6;7;9;11;12\}$ to'plamlaming elementlari sonini toping.

A) 8 B) 13 C) 5 D) 4

5666. $B=\{0;5,5;2,9;1,1;65\}$ to'plamlaming elementlari sonini toping.

A) 9 B) 5 C) 7 D) 8

5667. $C=\{2;6;5;9;8,3;18;44;92;3,3\}$ dan $n(C)=?$

A) 9 B) 5 C) 7 D) 8

5668. $Z=\{0;\pm1;\pm2;\pm3...\}$ dan $n(Z)=?$.

A) 7 B) 5 C) ∞ D) $-\infty$

5669. $Q=\left\{\frac{m}{n};\ m\in N;\ n\in Z..\right\}$ dan $n(Q)=?$.

A) 7 B) 5 C) $-\infty$ D) ∞

5670. $S=\{\varnothing\}$ dan $n(S)=?$.

A) 2 B) 1 C) ∞ D) 0

5671. $A=\{x\le10 : x\in N\}$ dan $n(A)=?$.

A) 10 B) 9 C) ∞ D) 0

5672. $A=\{x>10 : x\in N\}$ dan $n(A)=?$.

A) 10 B) 9 C) ∞ D) 0

5673. $A=\{x\ge10 : x\in N\}$ dan $n(A)=?$.

A) 10 B) 9 C) ∞ D) 0

5674. 17 dan kichik bo'lgan barcha natural sonlar to'plamini sonini toping.

A) ∞ B) 17 C) 0 D) 16

5675. 17 dan kichik bo'lmagan barcha natural sonlar to'plamini sonini toping.

A) ∞ B) 17 C) 0 D) 16

5676. 23 dan kichik bo'lgan barcha natural sonlar to'plamini sonini toping.

A) ∞ B) 23 C) 0 D) 22

5677. 23 dan kichik bo'lmagan barcha natural sonlar to'plamini sonini toping.
A) ∞ B) 17 C) 0 D) 16

5678. A={6,11} , B={11, 6},C= {11, 6, 6,11} dan *n(A); n(B); n(C)* larni taqqoslang.
A) $n(A)<n(B)<n(C)$ B) $n(A)>n(B)>n(C)$
C) $n(A)=n(B)=n(C)$ D) $n(A)=n(B)<n(C)$

5679. $M=\{2;3;5;7;8;9\}$ va $N=\{3;4;6;9;10\}$ to'plamlar uchun quyidagi tasdiqlardan qaysilari to'g'ri?
1) $3\in M$ 2) $7\notin M$ 3) $2\in M$ 4) $10\notin M$
5) $3\in N$ 6) $6\notin N$ 7) $8\in N$ 8) $4\notin M$
A) 1; 3; 4; 5; 8 B) 1; 2; 4; 5; 8
C) 1; 3; 4; 5; 6 D) barchasi

✓ $A=\{a;b\}$ ni nechta qism to'plami bor?
A) 5 B) 4 C) 3 D) 2

Yechimi:
Agar *A* to'plamning hamma elementlari *B* to'plamga tegishli bo'lsa, *A* to'plam *B* to'plamning *qism to'plami* deyiladi. va $A\subseteq B$ kabi yoziladi.
Bunday holatda "*A to'plam B dayotadi*" yoki "*A to 'plam B ning qismi*" ham deb yuritiladi.
Masalan: A={2, 3, 5} ; B= {1, 2, 3, 4, 5, 6}, $A\subseteq B$ chunki birinchi to'plamning hamma elementlari ikkinchi to'plamning ham elementlari bo'ladi.
C={3, 8,6; to'plam D={1,2,3,4,5,6} to'plamning qism to'plami emas $A\not\subset B$

$\{a\}$ to'plam Z va $\{a\}$, ya'ni 2 ta qism to'plami bor.
$\{a;b\}$ to'plam esa 4 ta : $\varnothing$, $\{a\}$, $\{b\}$,$\{a;b\}$ qism to'plamlarga ega.
QISM TO'PLAMLAR SONINI TOPISH FORMULASI
$\{a;b\}\Rightarrow 2^2=$ $\Rightarrow 2^3=$
$\{a;b;c;n\}\Rightarrow 2^4=$ $\{a;b;\ldots;m\}\Rightarrow 2^n=$

5680. "B: A={1,2, 3,4, 5, 6} to'plamning qism to'pl
A) $A\subseteq B$ B) $B\subseteq A$
C) $A\not\subset B$ D) $A\subset B$

5681. "C D={1; 2; 3; 4; 5; 6} to'plamning emas" ni toping.
A) $A\not\subset B$ B) $C\subseteq D$
C) $C\not\subset D$ D) $D\not\subset C$

5682. "S= E={a,b, c,d, e, n, m} to'plamning qism ni toping
A) $S\subseteq E$ B) $E\subseteq S$
C) $S\not\subset E$ D) $S\subset E$

5683. "N= M={ a, c,d, e, n, m } to'plamning emas" ni toping.
A) $A\not\subset B$ B) $M\subseteq N$
C) $M\not\subset M$ D) $N\not\subset M$

5684. $M=$ to'plamlar uchun qaysi tasdiq to'g'ri"
A) $M\subseteq N$ B) $N\subseteq M$
C) $B\not\subset E$ D) $N\not\subset M$

5685. $D=\{-2;-1;0;1\}$, $B=\{-3;-2;0;1\}$ va $E=\{-4;-3;-2;-1;0;1\}$ to'plamlar uchun qaysi tasdiq to'g'ri?
A) $E\subseteq D$ B) $D\subseteq B$
C) $B\not\subset E$ D) $D\not\subset B$

5686. $C=\{1;2;3\}$ ning qism to'plamlari nechta?
A) 8 B) 16 C) 32 D) 4

5687. $A=\{-1;2;33;24\}$ ning qism to'plamlari nechta?
A) 8 B) 16 C) 32 D) 4

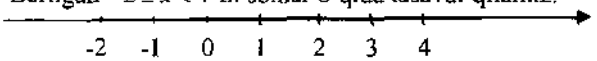
5688. 5 ta elementli to'plamning qism to'plamlari nechta?
A) 8 B) 16 C) 32 D) 4

5689. $A=\{ingliz\ tili\ harflari\}$ $C=\{unli\ harflar\}$ to'plamlar uchun qaysi tasdiq to'g'ri?
A) $M\subseteq N$ B) $C\subseteq A$
C) $C\not\subset A$ D) $A\subseteq C$

5690. $B=\{Butun\ sonlar\}$ $E=\{manfiy\ sonlar\}$ to'plamlar uchun qaysi tasdiq to'g'ri?
A) $A\subseteq B$ B) $B\subseteq E$
C) $E\not\subset B$ D) $E\subseteq B$

✓ $A=\{x|-2\le x<4, x\in Z\}$ *n(A)* ni toping?
A) 5 B) 4 C) 3 D) 2

Yechimi:
Bizga ma'lumki *N,Z,Q,R* kabi sonlar to'plami bor.
1. **Natural sonlar to'plami** - *N*: $N=\{1, 2, 3, \ldots\}$.
2.**Butun sonlar to'plami** - *Z*
$Z=\{\ldots, -3,-2,-1, 0, 1, 2, 3, \ldots\}$.
3.**Ratsional sonlar to'plami** - *Q*
$Q=\left\{\frac{p}{q};\ p, q\in Z,\ q\neq 0\right\}$.
4. **Irratsional sonlar to'plami** - *I*. Cheksiz davriy bo'lmagan o'nli kasr ko'rinishidagi sonlarga irratsional sonlar deyiladi. **Masalan:**
$\pm 0{,}01001000100001\ldots$; $\pm 0{,}51511511311111\ldots$; π, e, $\sqrt{2}$, $\sqrt{3}$,....
5. **Haqiqiy sonlar to'plami** - *R*: $R=Q\cup I$.
Berilgan $-2\le x<4$ ni sonlar o'qida tasavur qilamiz.



$A=\{-2;-1;0;1;2;3\}$ $n(A)=6$
Agar $A=\{x|-2\le x<4, x\in N\}$ bo'lganda :
$A=\{1;2;3\}$ $n(A)=3$
Agar $A=\{x|-2\le x<4, x\in Z\}$ bo'lganda :
$A=\{-2;-1;0;1;2;3\}$ $n(A)=6$
Agar $A=\{x|-2\le x<4, x\in Q\}$ bo'lganda :
$A=\{-2;-1,9;-1,8\ldots0..1;1,1;\ldots3,9\ldots.\}$ $n(A)=\infty$

5691. $A=\{x|3<x\le 10, x\in Z\}$ to'plamning elementlarini to'liq yozilgan javobni toping?

A) $\{4;5;6;7;8;9\}$ B) $\{4;5;6;7;8;9;10\}$

C) $\{5;6;7;8;9;10\}$ D) $\{4;5;6;7;9;10\}$

5692. $A=\{x|-2<x\le 8, x\in N\}$ to'plamning elementlarini to'liq yozilgan javobni toping?

A) $\{1;2;3;4;6;7;8\}$ B) $\{0;1;2;3;4;5;6;7;8\}$

C) $\{1;2;3;4;5;6;7;8\}$ D) $\{1;2;3;4;5;6;7\}$

5693. $A=\{x|-2<x\le 8, x\in Z\}$ to'plamning elementlarini to'liq yozilgan javobni toping?

A) $\{-1;0;1;2;3;4;6;7;8\}$ B) $\{0;1;2;3;4;5;6;7;8\}$

C) $\{-1;1;2;3;4;5;6;7\}$ D) $\{-1;0;1;2;3;4;5;6;7;8\}$

5694. $A=\{x|-3\le x\le 1, x\in Z\}$ to'plamning elementlarini to'liq yozilgan javobni toping?

A) $\{-3;-2;-1;0\}$ B) $\{-3;-2;-1;0;1\}$

C) $\{-2;-1;0;1\}$ D) $\{-3;-2;0;1\}$

5695. Quyidagi to'plamlarning qaysi biri chekli?

A) $A=\{x|-2\le x\le 1, x\in Z\}$ B) $A=\{x|-2\le x\le 1, x\in R\}$

C) $A=\{x|x\ge 5, x\in Z\}$ D) $A=\{x|0\le x\le 1, x\in Q\}$

5696. Quyidagi to'plamlarning qaysi biri cheksiz?

A) $A=\{x|-2\le x\le 1, x\in Z\}$ B) $A=\{x|-2\le x\le 1, x\in N\}$

C) $A=\{x|0<x\le 5, x\in Z\}$ D) $A=\{x|0\le x\le 1, x\in Q\}$

5697. Quyidagi to'plamlarning qaysi biri chekli?

A) $A=\{x|8\le x\le 9, x\in Q\}$ B) $A=\{x|0\le x\le 9, x\in R\}$

C) $A=\{x|x\ge 5, x\in Z\}$ D) $A=\{x|0\le x\le 1, x\in N\}$

5698. Quyidagi to'plamlarning qaysi biri cheksiz?

A) $A=\{x|-2<x\le 1, x\in Z\}$ B) $A=\{x|-1\le x\le 7, x\in R\}$

C) $A=\{x|5<x\le 6, x\in Z\}$ D) $A=\{x|0\le x\le 1, x\in N\}$

5699. "-100 dan katta hamda 100 dan kichik bo'lgan barcha butun sonlar to'plami" qaysi javobda o'z ifodasini topgan?

A) $A=\{x|-100<x\le 100, x\in N\}$

B) $A=\{x|-100\le x\le 100, x\in Z\}$

C) $A=\{x|-100\le x\le 100, x\in Q\}$

D) $A=\{x|-100\le x\le 100, x\in R\}$

5700. "1000 dan katta bo'lgan barcha haqiqiy sonlar to'plami" qaysi javobda o'z ifodasini topgan?

A) $A=\{x|x\le 1000, x\in Q\}$

B) $A=\{x|x\ge 1000, x\in R\}$

C) $A=\{x|x\le 1000, x\in R\}$

D) $A=\{x|x\ge 1000, x\in Z\}$

5701. "2 dan katta yoki teng hamda 3 dan kichik yoki teng bo'lgan barcha ratsional sonlar to'plami" qaysi javobda o'z ifodasini topgan?

A) $A=\{x|2<x<3, x\in Q\}$ B) $A=\{x|2<x<3, x\in R\}$

C) $A=\{x|2\le x\le 3, x\in Q\}$ D) $A=\{x|2\le x<3, x\in Q\}$

5702. $M=\{x|2\le x\le 3, x\in R\}$ $N=\{x|x\in R\}$ to'plamlar uchun qaysi tasdiq to'g'ri?

A) $N\subseteq M$ B) $M\subseteq N$

C) $B\not\subset E$ D) $N\not\subset M$

5703. $D=\{x|3\le x\le 9, x\in Q\}$, $B=\{x|0\le x\le 10, x\in R\}$ va to'plamlar uchun qaysi tasdiq to'g'ri?

A) $E\subseteq D$ B) $D\subseteq B$

C) $B\not\subset E$ D) $D\not\subset B$

5704. $C=\{x|0\le x\le 5, x\in Z\}$ ning qism to'plamlari nechta?

A) 64 B) 16 C) 32 D) 4

5705. $S=\{x|-2\le x\le 2, x\in N\}$ ning qism to'plamlari nechta?

A) 64 B) 16 C) 32 D) 4

5706. $\{x|\,x\in N,\ -6\le x\le 5\}$ ning qism to'plamlari nechta?

A) 64 B) 16 C) 32 D) 4

5707. $\{x|\,x\in N,\ x^2<21\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 64 B) 16 C) 32 D) 4

5708. $\{x|\,x\in N,\ x^2<26\}$ to'plamning nechta qism-to'plamlari mavjud?

A) 64 B) 16 C) 32 D) 4

5709. $\{x|\,x\in N,\ 2\le x^2\le 43\}$ to'plamning nechta qism-to'plamlari mavjud?

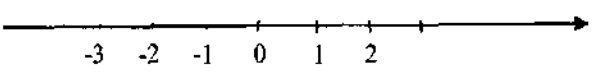
A) 64 B) 16 C) 32 D) 4

✓ $A=\{x|-3\le x\le 1, x\in Z\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 5 B) 32 C) 16 D) 8

Yechimi:

Berilgan $-3\le x\le 1$ ni sonlar o'qida tasavur qilamiz.



Agar $A=\{x|-3\le x\le 1, x\in Z\}$ bo'lganda :

$A=\{-3;-2;-1;0;1\}\ \Rightarrow 2^4=16ta$

KESISHMAYDIGAN QISM TO'PLAMLAR SONINI TOPISH FORMULASI

$\{a;b\}\Rightarrow 2^1 ta$ $\{a;b;c\}\Rightarrow 2^2 ta$

$\{a;b;c;n\}\Rightarrow 2^3 ta$ $\underbrace{\{a;b....m\}}_{n}\Rightarrow 2^{n-1} ta$

5710. $\{x \mid x \in N,\ -2 < x \le 5\}$ to'plamni **nechta** usul bilan ikkita **kesishmaydigan** qism-to'plamlarga ajratish mumkin?

A) 8 B) 16 C) 32 D) 4

5711. $\{x \mid x \in N,\ -3 < x \le 5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 8 B) 16 C) 32 D) 4

5712. $\{x \mid x \in N,\ -4 \le x < 5\}$ to'plamni nechta usul bilan ikkita kesishmaydigan qism-to'plamlarga ajratish mumkin?

A) 8 B) 16 C) 32 D) 4

✓ $A=\{2;3;5;7;8;9\}$ va $B=\{3;4;6;9;10\}$ to'plamlar uchun $n(A \cap B)$ ni toping.

A) 5 B) 4 C) 3 D) 2

Yechimi:

A, B to'plamlarning **birlashmasi deb** bu to'plamlardan kamida bittasining elementi bo'lgan elementlardan tashkil topgan to'plamga aytiladi.

A, B to'plamlarning birlashmasi $A \cup B$ kabi belgilanadi.

Masalan: P ={1; 3; 4} va Q ={2; 3; 5} uchun $P \cup Q = \{1,2,3,4,5\}$ *(ikkalasida "3" qatnashgani uchun 1 tasi olingan)*

A, B to'plamlarning **kesishmasi deb** bu to'plamlarning umumiy elementlaridan tashkil topgan to'plamga aytiladi.

A, B to'plamlarning kesishmasi $A \cap B$ kabi belgilanadi.

Masalan, P={ 1; 3; 4} va Q={2; 3; 5} uchun $P \cap Q = \{3\}$

$A=\{2;3;5;7;8;9\}$ va $B=\{3;4;6;9;10\}$ to'plamlar uchun $A \cap B = \{3;9\}$ $n(A \cap B) = 2$

5713. $A=\{6,7,9,11,12\}$ $B=\{5;8;10;13;9\}$ to'plamlar uchun $A \cap B$ ni toping.

A) {1} B) {9} C) {6;9} D) {5;9}

5714. $C=\{6,7,9,11,12\}$ $D=\{5;8;10;13;9\}$ to'plamlar uchun $C \cup D$ ni toping.

A) {1;2;3;4;5;6;7;8;9} B) {5;6;7;8;9;10;11;13}

C) {1;2;3;4;5;7;8;9} D) {5;6;7;8;9;10;11;12;13}

5715. $N=\{1,2,3,4\}$ $D=\{5;6;7;8\}$ to'plamlar uchun $N \cup D$ ni toping.

A) {1;2;3;4;5;6;7;8} B) {2;3;4;5;6;7;8;9}

C) {1;2;3;4;5;7;8;9} D) {1;2;3;4;5;6;7;8;9;10}

5716. $N=\{1,2,3,4\}$ $D=\{5;6;7;8\}$ to'plamlar uchun $N \cap D$ ni toping.

A) {0} B) ∅ C) {1} D) {1;3;5;7}

5717. $Q=\{1;2;3;4;5;6;7;8;9\}$ $P=\{1;3;5;7\}$ to'plamlar uchun $P \cap Q$ ni toping.

A) {1;3;5;9} B) {1;2;5;7}

C) {1;3;5;7} D) {1;3;6;7}

5718. $Q=\{1;2;3;4;5;6;7;8;9\}$ $P=\{1;3;5;7\}$ to'plamlar uchun $P \cup Q$ ni toping.

A) {2;3;4;5;6;7;8;9} B) {1;2;3;4;5;6;7;8;9}

C) {1;2;3;4;5;7;8;9} D) {1;2;3;4;5;6;7;8;9;10}

5719. $A=\{6;7;9;11;12\}$ $B=\{1;2;3;4;5;6;7;8;9\}$ to'plamlar uchun $n(A \cap B)$ ni toping.

A) 3 B) 4 C) 2 D) 5

5720. $A=\{6;7;9;11;12\}$ $B=\{1;2;3;4;5;6;7;8;9\}$ to'plamlar uchun $n(A \cup B)$ ni toping.

A) 8 B) 9 C) 11 D) 10

Mulohazalar

✓ Quyidagilardan qaysi biri mulohaza bo'ladi?

1) 20:4=80; 2) 25·8=200;

3) Mening qalamim qayerda?

4) Sening ko'zlaring moviy rangda.

A) 1; 2 B) 1;3 C) 3; 4 D) 2; 4

Yechimi:

Rost yoki *yolg'on* bo'lgan darak gap *mulohaza* deyiladi.

Savol shaklidagi gaplar(so'roq gaplar), shaxsning munosabatini bildiruvchi darak gaplar, masalan, "Yashil rang yoqimlidir" **mulohaza bo'la olmaydi.**

Ayrim mulohazalarning rost-yolg'onligi bir qiymatli aniqlanmaydi.

Masalan, "Bu yozuvchi Toshkentda tavallud topgan" mulohaza tayin bir yozuvchiga nisbatan rost, boshqasiga nisbatan yolg'on bo'lishi mumkin.

1) 20:4=80 – Bu mulohaza bo'ladi, chunki ta'rifda aytilganidek *rost yoki yolg'on ligini aniq* aytolimiz. U yolg'on, chunki 20:4=5 bo'ladi;

2) 25·8=200 bu mulohaza va u rost;

3) "Mening qalamim qayerda?" bu so'roq gap bo'lgani uchun, u mulohaza bo'lmaydi;

4) "Sening ko'zlaring moviy rangda" bu mulohaza, uning rost-yolg'onigi bir qiymatli aniqlanmaydi, chunki ayrim insonlarga nisbatan u yolg'on, ayrimlariga nisbatan esa rost. bu mulohaza bo'lmaydi;

Javob: 1; 2

5721. Quyidagilardan qaysi biri mulohaza bo'ladi?

1) 11 – 5=7; 2) 12 – juft son;

3) 37 - tub son;

4) Sening ukang 13 yoshda.

A) 1; 2 B) 1; 2; 3 C) 3; 4 D) 4

5722. Quyidagilardan qaysi biri mulohaza bo'lmaydi?
1) Sening bo'ying necha santimetr?;
2) Laylo "TESTOLOG SERVIS" da o'qiydi ;
3) Madina yaxshi kuylaydi;
4) Sen Samarqandda tug'ilgansan.
A) hech biri B) 1; 2; 3 C) 3; 4 D) barchasi

5723. Quyidagilardan qaysi biri mulohaza bo'ladi?
1) Senga tarixiy kitoblar yoqadimi?;
2) $\sqrt{15}$ – irratsional son ;
3) 15 -ratsional son ;
4) shanba kuni qor yog'adi.
A) 2; 3 B) 2; 3; 4 C) 1; 4 D) barchasi

5724. Quyidagilardan qaysi biri mulohaza bo'lmaydi?
1) Qarama-qarshi burchaklar o'zaro teng ;
2) To'rtburchak parallelogramm emas;
3) Barcha kvadratlar to'rtburchak;
4) Parallelogramm 4 ta tomonga ega .
A) 3; 4 B) 1; 2; 3 C) 1; 2 D) barchasi

✓ Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?
1) p : Seshanba kuni yomg'ir yog'di
$\neg$ p : Seshanba kuni yomg'ir yog'madi;
2) q: Madinaning ko'zi moviy
$\neg q$: Madinaning ko'zi moviy emas ;
3) r: $x>1$ $\neg r$: $x<1$
4) s: Men bugun qora choy ichdim;
$\neg s$: Men bugun ko'k choy ichdim;
A) 1; 2 B) 1;3 C) 3; 4 D) 2; 4
Yechimi:

Biz mulohazalarni p, q, r ... harflar bilan belgilaymiz.

Masalan, p: Seshanba kuni yomg'ir yog'di;

q: 20:4=5; r: x – juft son.

p mulohaza uchun "**p emas**" yoki "**p ekani noto'g'ri**" shakldagi mulohaza p ning *inkori* deyiladi va $\neg p$ kabi belgilanadi. Masalan:

1) p : Seshanba kuni yomg'ir yog'di
$\neg p$: Seshanba kuni yomg'ir yog'madi;

2) q: Madinaning ko'zi moviy
$\neg q$: Madinaning ko'zi moviy emas ;
Quyidagilar esa mulohaza inkori emas
3) r: $x>1$; $\neg$r : $x<1$
Agar bu mulohaza qilmoqchi bo'linsa
r: $x>1$; $\neg$r : $x\le 1$ qilish lozim edi.

4) s: Men bugun qora choy ichdim;
$\neg s$: Men bugun ko'k choy ichdim;
Agar buni ham mulohaza qilmoqchi bo'linsa
s: Men bugun qora choy ichdim;
$\neg s$: Men bugun qora choy ichdimadim; qilish lozim edi.

Ravshanki,

p: rost
$\neg p$: yolg'on

p: yolg'on
$\neg p$: rost

mulohaza bo'ladi. Bu ma'lumot *rostlik jadvali* yordamida sharhlanadi. (T va F harflari, mos ravishda, inglizcha "true" (rost), "false" (yolg'on) so'zinning bosh harflaridir.)

inkor amalining rostlik jadvali ⇒

p	$\neg p$
T	F
F	T

⇔

p	$\neg p$
1	0
0	1

Izoh: rost mulohazaga "1", yolg'on mulohazaga "0" qo'yish mumkin.

5725. A mulohaza "16— juft son", B mulohaza "31— tub son". Ushbu mulohazalar asosida to'g'ri javobni toping.
A) A rost va B yolg'on B) A va B yolg'on
C) A va B rost D) A yolg'on va B rost.

5726. A mulohaza "39 — murakkab son", B mulohaza "51 — tub son". Ushbu mulohazalar asosida to'g'ri javobni toping.
A) A rost va B yolg'on B) A va B yolg'on
C) A va B rost D) A yolg'on va B rost.

5727. A mulohaza "$\sqrt{2}$ — irratsional son", B mulohaza "57 — tub son". Ushbu mulohazalar asosida to'g'ri javobni toping.
A) A rost va B yolg'on B) A va B yolg'on
C) A va B rost D) A yolg'on va B rost.

5728. A mulohaza "$\sqrt{25}$ —irratsional son", B mulohaza "11—ratsional son". Ushbu mulohazalar asosida to'g'ri javobni toping.
A) A rost va B yolg'on B) A va B yolg'on
C) A va B rost D) A yolg'on va B rost.

5729. Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?
A) p: $x\ge 1$; $\neg$p : $x\le 1$
B) r: Akbar futbol bilan shug'ullanadi;
$\neg r$: Akbar musiqa bilan shug'ullanadi;
C) q: ixtiyoriy ikkita juft sonlar ayirmasi toq bo'ladi;
$\neg q$: ixtiyoriy ikkita juft sonlar ayirmasi toq bo'lmaydi;
D) s: Men bugun qora choy ichdim;
$\neg s$: Men bugun ko'k choy ichdim;

5730. Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?
A) p: $x\ge 5$; $\neg$p : $x<5$ B) $r=\{qovunlar;\ tarvuzlar\}$
r: qovun ; $\neg r$: xandalak;
C) q: Madinaning bo'yi 140 sm dan baland ;
$\neg q$: Madinaning bo'yi 140 sm dan past;
D) s: ketma-ket natural sonlar ko'paytmasi doimo juft bo'ladi;
$\neg s$: ketma-ket natural sonlar ko'paytmasi barchasi juft bo'ladi;

5731. Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?
A) p: $x\ge 5$; $\neg$p : $x<3$ B) $r=\{qovunlar;\ tarvuzlar\}$
r: qovun ; $\neg r$: tarvuzlar;
C) q: $x>2$; $\neg$q : $x=1$ $(x\in N)$
D) $s=\{o'quvchilar\}$ s: o'quvchi bola;
$\neg s$: ishyoqmas o'quvchi bola;

5732. Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?

A) *s:* Men Samarqandda bo'lganman;
$\neg s$: Men hech qachon Samarqandda bo'lmaganman.

B) *s:* ketma-ket natural sonlar ko'paytmasi doimo juft bo'ladi;
$\neg s$: ketma-ket natural sonlar ko'paytmasi doimo toq bo'ladi;

C) $r = \{qo'ylar;\ otlar\}$
r: qo'ylar; $\neg r$: otlar;

D) barchasi

5733. Quyidagi mulohazalardan qaysi biri inkor mulohaza bo'ladi?

A) $p: x \geq 5;\ \neg p: x < 3$

B) $r = \{qovunlar;\ tarvuzlar\}$
r: qovun ; $\neg r$: xandalak;

C) $q: x \geq 2;\ \neg q: x = 1\ (x \in N)$

D) $s = \{o'quvchilar\}$ *s:* o'quvchi bola;
$\neg s$: ishyoqmas o'quvchi bola;

5734. Quyidagi jadvallardan qaysi biri inkor amalining rostlik jadvali bo'ladi?

A)

s	$\neg s$
F	F
F	T

B)

s	$\neg s$
T	F
F	T

C)

s	$\neg s$
T	F
T	T

D)

s	$\neg s$
T	F
F	F

5735. Quyidagi jadvallardan qaysi biri inkor amalining rostlik jadvali bo'ladi?

A)

r	$\neg r$
1	1
0	1

B)

r	$\neg r$
1	0
0	0

C)

r	$\neg r$
1	0
0	1

D)

r	$\neg r$
0	0
0	1

✓ "*q*: 13 - tub son, *p*: 13 - toq son" bo'lsa, $p \wedge q$ mulohazaning **rost yoki** yolg'on ekanligini aniqlang.

A) rost
B) yolg'on
C) rost ham, **yolg'on ham emas.**
D) soda mulohazalardan **bazilarini** qiymatini aniqlab bo'lmaydi.

Yechimi:

Agar ikki mulohaza "va" so'zi bilan bog'lansa, hosil bo'lgan yangi mulohaza berilgan mulohazalar konyunksiyasi **deyiladi** (**"va"**, *"hamda", "ammo")*

p, q mulohazalarning **konyunksiyasi** $p \wedge q$ kabi belgilanadi. **Masalan,**

***p*: Elder tushlikda palov yedi:**
***q*: Eldor tushlikda somsa yedi.**

Mulohazalarning **konyunksiyasi** quyidagicha bo'ladi:
$p \wedge q$ **: Eldor tushlikda palov va somsa yedi.**

Ko'rinib turibdiki, $p \wedge q$ **mulohaza** *Eldor tushlikda ham palov, ham somsa yegan***da, ya'ni** *p, q* mulohazalarning ikkalasi ham rost **bo'lgandagina** rost bo'ladi. Agar *p, q* mulohazalarning birortasi yolg'on bo'lsa, u holda $p \wedge q$ mulohaza rost **bo'lmaydi.**

p, q mulohazalarning konyunksiyasi quyidagi rostlik jadvaliga ega:

p	*q*	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

p	*q*	$p \wedge q$
1	1	1
1	0	0
0	1	0
0	0	0

$\underbrace{q: 13 - \text{tub son}}$, $\underbrace{p: 13 - \text{toq son}}$ bo'lsa,

$p \wedge q$
$1 \wedge 1 = 1$

Javob: **rost**

Izoh: *konyuksiyani = ko'paytirish* deyilsa ham bo'ladi $p \wedge q$ ni jadvalini yodlash imkoni beradi. Ya'ni

$1 \cdot 1 = 1$
$1 \cdot 0 = 0$
$0 \cdot 1 = 0$
$0 \cdot 0 = 0$

5736. *p* mulohaza "Madina - terapevt", *q* mulohaza "Munisa - stomatolog". *p, q* mulohazalarning konyunksiyasini to'g'ri yozilgan javobni aniqlang.

A) Madina – terapevt va stomatolog
B) Munisa – stomatolog va terapevt
C) Madina va Munisa doktor
D) Madina va Munisa jarroh.

5737. *s* mulohaza "*x* son 15 dan katta", *r* mulohaza "*x* son 30 dan kichik". *s, r* mulohazalarning konyunksiyasini to'g'ri yozilgan javobni aniqlang.

A) *x* son 30 dan katta va 15 dan kichik
B) *x* son 15 dan katta va 30 dan kichik
C) *x* son musbat
D) *x* son manfiy .

5738. *q* mulohaza "havo bulutli", *r* mulohaza "yomg'ir yog'moqda". *q, r* mulohazalarning konyunksiyasini to'g'ri yozilgan javobni aniqlang.

A) havo bulutli va yomg'ir yog'ada
B) bulutli va yomg'ir yog'moqda
C) havo bulutli va yomg'ir yog'ganda
D) havo bulutli va yomg'ir yog'moqda.

5739. *s* mulohaza "Olimning sochlari qora ", *r* mulohaza "Olimning ko'zlari moviy ". *s, r* mulohazalarning konyunksiyasini to'g'ri yozilgan javobni aniqlang.

A) sochlari qora va ko'zlari moviy
B) Olimning sochlari qora va ko'zlari moviy
C) Olimning sochlari qora *va* moviy
D) Olimning ko'zlari moviy va qora

5740. *s* mulohaza "$x > 7$", *r* mulohaza "$x < 26$". *s, r* mulohazalarning konyunksiyasini to'g'ri yozilgan javobni aniqlang.

A) $7 < x < 26$ B) $6 < x < 20$
C) $7 < x \leq 26$ D) $x < 7 < 26$

5741. "q: $39 < 27$, p: $16 > 23$" bo'lsa, $p \wedge q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5742. "r: $6+9=15$, p: $5+8=12$" bo'lsa, $r \wedge q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5743. "q: 12 soni 3 ga bo'linadi, p: 12 soni 4 ga bo'linadi" bo'lsa, $p \wedge q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5744. "s: kvadrat to'rtta tomonga ega, p: uchburchak beshta tomonga ega" bo'lsa, $s \wedge q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5745. Quyidagi jadvallardan qaysi biri konyunksiya amalining rostlik jadvali bo'ladi?

A)

p	q	$p \wedge q$
T	T	T
F	T	F
F	T	F
F	F	F

B)

p	q	$p \wedge q$
T	F	T
T	F	F
F	T	F
F	F	F

C)

p	q	$p \wedge q$
T	T	T
T	F	F
F	T	F
F	F	F

D)

p	q	$p \wedge q$
T	T	T
T	F	T
F	T	F
F	F	F

5746. Quyidagi jadvallardan qaysi biri konyunksiya amalining rostlik jadvali bo'ladi?

A)

p	q	$p \wedge q$
1	1	0
1	0	1
0	1	0
0	0	0

B)

p	q	$p \wedge q$
1	1	1
1	0	0
0	1	0
0	0	0

C)

p	q	$p \wedge q$
1	1	1
0	0	0
0	1	0
0	0	0

D)

p	q	$p \wedge q$
1	1	1
1	0	1
0	1	0
0	0	0

✓ " p: $-8>-5$, q: $-5<0$." bo'lsa, $p \vee q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

Yechimi:

Agar ikki mulohaza "*yoki*" so'zi bilan bog'lansa, hosil bo'lgan yangi mulohaza berilgan mulohazalarning dizyunksiyasi deyiladi.

p, q mulohazalarning dizyunksiyasi $p \vee q$ kabi belgilanadi. Masalan,

p: Eldar bugun kutubxonaga bordi;
q: Eldor bugun teatrga bordi.

Mulohazalaming dizyunksiyasi quyidagicha ifodalanadi:
$p \vee q$: **Eldor bugun yoki kutubxonaga yoki teatrga bordi.**

Ko'rinib turibdiki. $p \vee q$ mulohaza *Eldor bugun kutubxona yoki teatrdan* biriga yoki ikkalasiga **borganda rost** bo'ladi.

p, q mulohazalarning dizyunksiyasi quyidagi rostlik jadvaliga ega:

p	q	$p \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

p	q	$p \vee q$
1	1	1
1	0	1
0	1	1
0	0	0

Agar p, q mulohazalaming ikkalasi yolg'on bo'lsa, u holda $p \vee q$ mulohaza rost bo'lmaydi.

$\underbrace{p: -8>-5}_{0}$ $\underbrace{q: -5<0}_{1}$ bo'lsa,

$p \vee q$ *Javob:* **rost**

$0 \vee 1 = 1$

Izoh: *dizyunksiya* = *qo'shish* deyilsa ham bo'ladi $p \vee q$ ni jadvalini yodlash imkoni beradi. Ya'ni

$1+1=1$
$1+0=1$
$0+1=1$
$0+0=0$

5747. p mulohaza "Sardor ertaga suzishga boradi ", q mulohaza "Sardor ertaga futbolga boradi ". p, q mulohazalarning dizyunksiyasini to'g'ri yozilgan javobni aniqlang.
A) Sardor ertaga suzishga bormaydi
B) Sardor ertaga suzishga va futbolga boradi
C) Sardor ertaga yoki suzishga, yoki futbolga boradi
D) Sardor ertaga suzishga boradi, ammo futbolga bormaydi.

5748. r mulohaza "Sardor olmani yaxshi ko'radi ", q mulohaza "Sardor uzumni yaxshi ko'radi ". r, q mulohazalarning dizyunksiyasini to'g'ri yozilgan javobni aniqlang.
A) Sardor olmani yaxshi ko'rmaydi
B) Sardor olmani va uzumni yaxshi ko'radi.
C) Sardor olmani yaxshi ko'radi, ammo uzumni yomon ko'radi.
D) Sardor olmani yoki uzumni yaxshi ko'radi.

5749. Dizyunksiyasini to'g'ri yozilgan javobni aniqlang.
A) *s:* Salim uyda *p:* Salim uyda emas
B) Akmal va Sunnat ikkalasi o'qituvchi.
C) Ra'no yoki metroda yoki avtobusda keladi.
D) Bobir kuchli, ammo A'lo undan kuchliroq.

5750. Dizyunksiyasini to'g'ri yozilgan javobni aniqlang.
A) *s:* Salim uyda *p:* Salim uyda emas
B) Akmal va Sunnat ikkalasi o'qituvchi.
C) Mablag' osonlikcha topilmaydi.
D) Bobir yoki Akmal sportning bu turini tanladi.

5751. "*q*: 24 soni 4 ga bo'linadi, *p*: 24 soni 6 ga bo'linadi" bo'lsa, $p \vee q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5752. "$s: (a-b)^3=(a-b)\left(a^2+ab+b^2\right)$,
$p: a^3+b^3=a^3+3a^2b+3ab^2+a^3$" bo'lsa, $s \vee q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5753. "*r*: 5 va 9 sonlarining o'rta arifmetigi 7 ga teng, 8 va 14 sonlarining o'rta arifmetigi 10 ga teng" bo'lsa, $r \vee q$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5754. Quyidagi jadvallardan qaysi biri dizyunksiya amalining rostlik jadvali bo'ladi?
A)

p	q	$p \vee q$
T	F	T
T	F	T
F	T	T
F	F	F

B)

p	q	$p \vee q$
T	F	T
T	F	T
F	T	T
F	F	F

C)

p	q	$p \vee q$
T	T	T
T	F	T
F	T	T
F	F	F

D)

p	q	$p \vee q$
T	F	T
T	F	F
F	T	T
F	F	F

5755. Quyidagi jadvallardan qaysi biri dizyunksiya amalining rostlik jadvali bo'ladi?
A)

p	q	$p \vee q$
1	1	0
1	0	1
0	1	0
0	0	0

B)

p	q	$p \vee q$
1	1	1
1	0	1
0	1	1
0	0	0

C)

p	q	$p \vee q$
1	1	1
1	0	1
0	1	0
0	0	0

D)

p	q	$p \vee q$
1	1	1
0	0	0
0	1	1
0	0	0

✓ "*s*: 2, 3, 5 sonlari tub sonlar, *r*: Har qanday son musbat" bo'lsa, $s \vee \neg r$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost
B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.
Yechimi:
Amalar bajarish tartibi: $\neg; \wedge; \vee$
Ya'ni 1-inkor, 2-konyuksiya, 3-dizyunksiya
s: 2, 3, 5 sonlari tub sonlar–1 (rost)
r: Har qanday son musbat – 0 (yolg'on)

$s \vee \neg r$

$1 \vee \neg 0$

$1 \vee 1 = 1$

Javob: ***rost (true)***

5756. "*s*: 5 soni 25 va 70 sonlarining eng katta umumiy bo'luvchisi, *r*: 0 soni musbat" bo'lsa, $s \wedge \neg r$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5757. "*p*: Barcha tub sonlar toq, *r*: Shunday tub son mavjud-ki, u juft" bo'lsa, $\neg p \vee r$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5758. "*p*: Irrasional sonlar mavjud, *r*: Barcha sonlar rasional" bo'lsa, $\neg p \wedge r$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5759. "*s*: 5 soni 25 va 70 sonlarining eng katta umumiy bo'luvchisi, *r*: 0 soni musbat" bo'lsa, $s \wedge \neg r$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5760. "*q*: Agar 12 soni 6 ga bo'linsa, u holda 12 soni 3 ga bo'linadi, *s*: Agar 12 soni 6 ga bo'linsa, u holda 12

soni 2 ga bo'linadi " bo'lsa, $\neg(q \vee s)$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5761. " q : Agar 15 soni 3 ga bo'linsa, u holda 15 soni 6 ga bo'linadi, s : Agar 15 soni 3 ga bo'linsa, u holda 15 soni 5 ga bo'linadi " bo'lsa, $\neg(q \wedge s)$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5762. " q : Siz qaysi oliygohda o'qiysiz ? , s : 2<0 " bo'lsa, $\neg(q \wedge s)$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5763. A mulohaza "true", B mulohaza "false" $\neg A \vee \neg B$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5764. A mulohaza "true", B mulohaza "false" $\neg A \wedge \neg B$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5765. A mulohaza "rost", B mulohaza "yolg'on" $A \wedge A$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5766. A mulohaza "rost", B mulohaza "yolg'on" $B \vee B$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5767. A mulohaza "yolg'on" , B mulohaza "rost" $(A \vee B) \vee \neg B$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5768. A mulohaza "rost", B mulohaza "yolg'on" $(A \vee B) \wedge \neg A$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5769. A mulohaza "rost", B mulohaza "yolg'on" $(A \wedge B) \wedge \neg A$ mulohazaning rost yoki yolg'on ekanligini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

Mantiqiy bog'lovchilar (inkor, konyunksiya, dizyunksiya) **ustida rostlik jadvallari**

✓ $s \vee \neg r$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost D) 2 ta yolg'on, 2 ta rost
Yechimi:
1-qodam:
Birinchi va ikkinchi ustunlar s va r larning mumkin bo'lgan rostlik qiymatlaridan tashkil topgan jadvalni yozamiz.

s	r	$\neg r$	$s \vee \neg r$
1	1		
1	0		
0	1		
0	0		

2-qodam:
Uchinchi ustundagi r ning rostlik qiymatlariga qarab $\neg r$ ning rostlik qiymatlarini yozamiz:

s	r	$\neg r$	$s \vee \neg r$
1	1	**0**	
1	0	**1**	
0	1	**0**	
0	0	**1**	

3-qodam:
To'rtinchi ustundagi s va $\neg r$ ning rostlik qiymatlariga qarab $s \vee \neg r$ ning rostlik qiymatlarini yozamiz:

s	r	$\neg r$	$s \vee \neg r$
1	1	**0**	**1**
1	0	**1**	**1**
0	1	**0**	**0**
0	0	**1**	**1**

*Javob: **3 ta rost 1 ta yolg'on***

5770. $s \wedge \neg r$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5771. $\neg p \vee r$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5772. $\neg p \wedge r$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5773. $\neg(q \vee s)$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5774. $\neg(q \wedge s)$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5775. $\neg p \vee \neg s$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5776. $\neg p \wedge \neg s$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5777. $p \vee p$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 2 ta yolg'on, 2 ta rost
D) 1 ta yolg'on, 1 ta rost

5778. $p \wedge p$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 1 ta rost
D) 2 ta yolg'on, 2 ta rost

5779. $(p \vee r) \vee \neg p$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 2 ta yolg'on, 2 ta rost

5780. $(s \vee r) \wedge \neg s$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 4 ta yolg'on

5781. $(s \wedge q) \wedge \neg s$ mulohazaning rostlik jadvalida aniqlangan javobni toping.
A) 4 ta rost
B) 3 ta yolg'on, 1 ta rost
C) 1 ta yolg'on, 3 ta rost
D) 4 ta yolg'on

Aralash bo'lim

5782. Konyunksiyani to'g'ri yozilgan javobni aniqlang.
A) *s:* Salim uyda *p:* Salim uyda emas
B) Akmal yoki Sunnat sportning bu turi bilan shug'ullanadi.
C) Ra'no yoki metroda yoki avtobusda keladi.
D) Bobir kuchli, ammo Akmal undan kuchliroq.

5783. A mulohaza "true", B mulohaza "false" bo'lsa, ularning dizyunksiyasini aniqlang.
A) true B) false
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

5784. A mulohaza "false", B mulohaza "false" bo'lsa, ularning konyunksiya aniqlang.
A) rost B) yolg'on
C) rost ham, yolg'on ham emas.
D) soda mulohazalardan bazilarini qiymatini aniqlab bo'lmaydi.

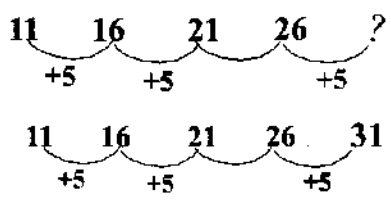
Ketma-ketlik, qonuniyat, mantiq, algoritm.

✓ Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

11 16 21 26 ?

A) 29 B) 31 C) 30 D) 45

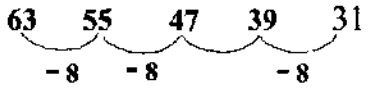
Yechimi:
Bu yerda bir xil "5" son qo'shilib ketayapti



Izoh: har doim ham "+"(qo'shish) bo'lmaydi

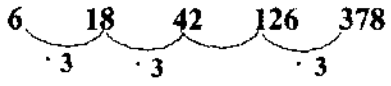
63 55 47 39 ?

Yechimi:



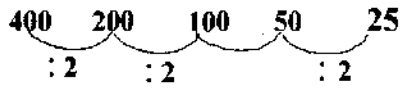
6 18 42 126 ?.

Yechimi:



400 200 100 50 ?

Yechimi:



5785. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

10 13 16 19 ?

A) 21 B) 22 C) 23 D) 24

5786. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

7 14 21 28 ?

A) 33 B) 34 C) 32 D) 35

5787. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

13 26 39 52 ?

A) 69 B) 62 C) 65 D) 64

5788. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

50 46 42 38 ?

A) 30 B) 32 C) 34 D) 36

5789. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

3 6 12 24 48 ?

A) 70 B) 72 C) 94 D) 96

5790. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

80 40 20 10 ?

A) 2 B) 1 C) 3 D) 5

5791. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

4 8 16 32 ?

A) 64 B) 48 C) 24 D) 68

5792. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

50 47,75 45,5 43,25 ?

A) 36 B) 41 C) 32 D) 54

5793. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

2 –3 –8 –13 ? –23

A) –18 B) –21 C) –24 D) 18

5794. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

2 4 16 256 ?

A) 65536 B) 2056- C) 1024 D) 512

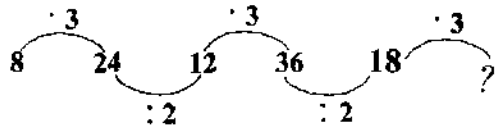
✓ Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

8 24 12 36 18 ?

A) 29 B) 31 C) 54 D) 45

Yechimi:

Bu yerda 2 xil (* va :) amallar bor:



5795. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

30 20 27 17 24 ?

A) 34 B) 17 C) 14 D) 31

5796. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

20 29 23 32 26 ?

A) 20 B) 29 C) 33 D) 35

5797. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

3 9 6 18 15 45 ?

A) 42 B) 21 C) 3 D) 135

5798. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

(1; 14) (3; 12) (5; 10) (7; 8) ?

A) (8; 7) B) (9; 6) C) (10; 5) D) (14; 1)

5799. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

–2 2 5 –5 -2 ?

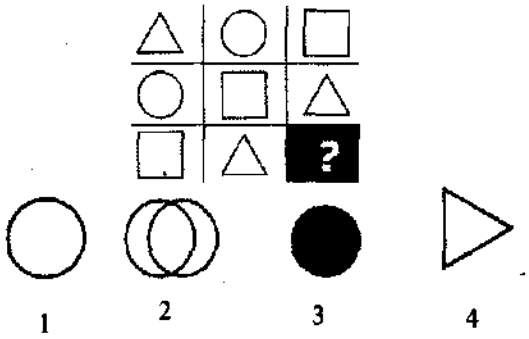
A) 2 B) 4 C) 3 D) 5

5800. Berilgan qonuniyat bo'yicha davom ettirilsa, qaysi son "?" (so'roq belgisi)ning o'rniga mos kelishini aniqlang.

2 4 12 48 240 ?

A) 1440 B) 1680 C) 24 D) 5820

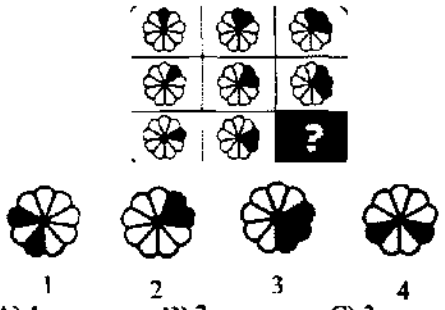
5801. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

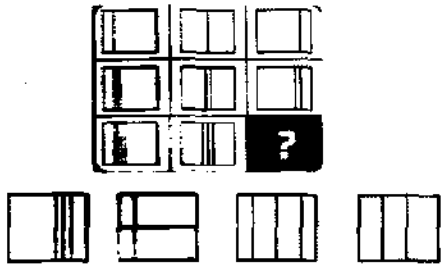
5802. Berilgan qonuniyat bo'yicha "?" (so'roq belgisi)ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

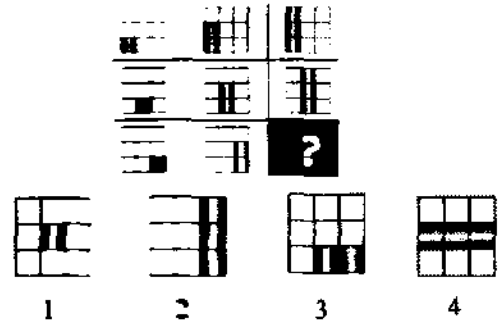
5803. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

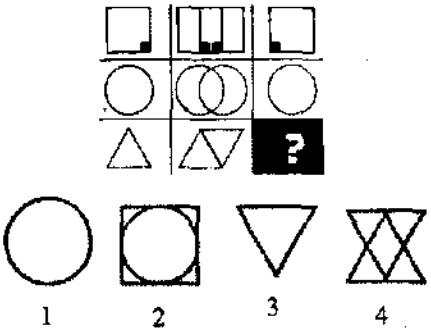
5804. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

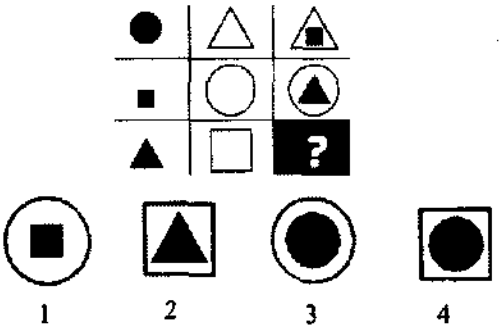
5805. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

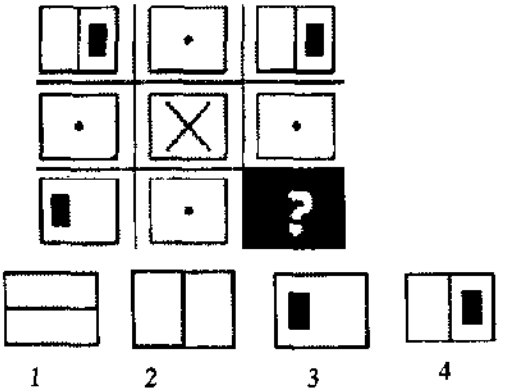
5806. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 3 D) 4

5807. Berilgan qonuniyat bo'yicha "?"(so'roq belgisi) ning o'rniga mos shaklni aniqlang.



1 2 3 4

A) 1 B) 2 C) 4 D) 3

Ma'lumotlar tahlili

✓ *Tenis o'yini* musobaqasida 11-sinfning 9 nafar o'quvchisi, mos ravishda, 15; 12; 14; 15; 12; 15; 14; 12; 11 ochko to'pladi. Ular olgan ochkolarning absolut chastotasini aniqlang .

1) 3 ; 3; 3; 2) 4; 4; 1 3) 3; 2; 3; 1 4) 3;1; 1 4

A) 1 B) 2 C) 3 D) 4

Yechimi:

Berilgan sonlar qatorida biror-bir sonning *necha marta takroran uchrashini* ko'rsatuvchi son o'sha sonning **absolut chastotasi** deyiladi.

Ochkolar soni	Ochkolarning absolut chastotasi
15	3
14	2
12	3
11	1

Demak, **absolut chastotasi :** 3; 2; 3; 1 (yoki 1; 3; 2; 3)

5808. Shaxmat o'yini musobaqasida 6-sinfning 8 nafar o'quvchisi, mos ravishda, 13; 13; 12; 13; 10; 13; 12; 10 ochko to'pladi. Ular olgan ochkolarning absolut chastotasini aniqlang .

1) 3 ; 3; 1; 2) 4; 2; 2 3) 3; 2; 3; 4) 3;1; 4

A) 1 B) 2 C) 3 D) 4

5809. O'quvchining matematika darsidan olgan baholari: 5, 5, 5, 4, 3, 4, 5, 4, 5, 5. o'quvchilarning matematikadan olgan baholarining absolut chastotalarini quyidagi qaysi ko'rinishida yozamiz.

1) 3 ; 3; 4; 2) 6; 2; 2 3) 6; 3; 1; 4) 6;3; 2

A) 1 B) 2 C) 3 D) 4

5810. Mart oyining birinchi haftasidagi havoning o'rtacha sutkalik temperaturasi hafta kunlari bo'yicha mos ravishda 3 °C; 4°C; 5 °C; 8 °C; 6°C; 4°C; 7°C bo'ldi. Ular olgan natijalarining absolut chastotasini aniqlang

1) 1 ; 1; 1; 2; 2 2) 1; 1; 1; 1; 2; 1

3) 1; 3; 1; 1; 1 4) 1;3; 2; 1; 1

A) 1 B) 2 C) 3 D) 4

5811. Sonlar qatorining absolut chastotasini aniqlang :

3,5; 2,6; 3,5; 1,3; 2,6; 3,5;

1) 3 ; 2; 1; 2) 3; 4; 1 3) 3; 1; 1 4) 3;1; 4

A) 1 B) 2 C) 3 D) 4

5812. Sonlar qatorining absolut chastotasini aniqlang :

32,3; 27,1; 45; 27,1; 43,6; 32,3

1) 1 ; 2; 1; 2) 1; 1; 2; 2 3) 2; 2; 1; 2 4) 1;1; 4

A) 1 B) 2 C) 3 D) 4

5813. Ma'lumot qatorining absolut chastotasini aniqlang :

2; 5; 9; 1; 2; 3; 3; 5; 5; 5; 7; 3; 3

1) 1 ; 2; 4; 4; 1; 1 2) 1; 1; 2; 2

3) 4; 4; 1; 1 4) 1;1; 4; 4; 1; 1

A) 4 B) 2 C) 3 D) 1

5814. Yanvar oyining bir sutkasida havoning temperaturasi er-talab 2 °C, tushda 6 °C, tushdan keyin 4 °C, kechqurn 3 °C, tunda 0 °C bo'ldi.Sutka davomida havoning absolut chastotasi qanday?

1) 1 ; 2; 1; 2) 1; 1; 2; 2 3) 1; 1; 1; 1;1 4) 1;1; 4

A) 1 B) 2 C) 3 D) 4

✓ Tenis o'yini musobaqasida 11-sinfning 9 nafar o'quvchisi, mos ravishda, 15; 12; 14; 15; 12; 15; 14; 12; 11 ochko to'pladi. Ular olgan ochkolarning o'zgarish kengligini aniqlang .

A) 1 B) 2 C) 3 D) 4

Yechimi:

O'zgarish kengligi deb, berilgan sonlar qatoridagi eng *katta* son bilan eng *kichik* son <u>*ayirmasiga*</u> aytiladi.

Ochkolar soni	Ochkolarning absolut chastotasi
15	3
14	2
12	3
11	1

Demak, O'zgarish kengligi : 15–11=4

Izoh: jadval qilib yozish shart emas

5815. Shaxmat o'yini musobaqasida 6-sinfning 8 nafar o'quvchisi, mos ravishda, 13; 13; 12; 13; 10; 13; 12; 10 ochko to'pladi. Ular olgan ochkolarning o'zgarish kengligini aniqlang .

A) 1 **B) 2** C) 3 D) 4

5816. O'quvchining matematika darsidan olgan baholari: 5, 5, 5, 4, 3, 4, 5, 4, 5, 5. o'quvchilarning matematikadan olgan baholarining o'zgarish kengligini quyidagi qaysi ko'rinishida yozamiz.

A) 1 B) 2 C) 3 D) 4

5817. Mart oyining birinchi haftasidagi havoning o'rtacha sutkalik temperaturasi hafta kunlari bo'yicha mos ravishda 3 °C; 4°C; 5 °C; 8 °C; 6°C; 4°C; 7°C bo'ldi. Ular olgan natijalarining o'zgarish kengligini aniqlang.

A) 2 B) 5 C) 3 D) 4

5818. Sonlar qatorining o'zgarish kengligini aniqlang :

3,5; 2,6; 3,5; 1,3; 2,6; 3,5;

A) 2,2 B) 1,6 C) 0,9 D) 1,3

5819. Sonlar qatorining o'zgarish kengligini aniqlang :

32,3; 27,1; 45; 27,1; 43,6; 32,3

A) 17,7 B) 17,9 C) 1,4 D) 2,4

5820. Sonlar qatorining o'zgarish kengligini aniqlang :

5,9; 6,1; 4,85; 5,3; 4,9; 5,35.

A) 1,25 B) 1,05 C) 1 D) 0,55

5821. Ma'lumot qatorining o'zgarish kengligini aniqlang :

2; 5; 9; 1; 2; 3; 3; 5; 5; 5; 7; 3; 3

A) 1 **B) 2** C) 7 D) 8

5822. Yanvar oyining bir sutkasida havoning temperaturasi ertalab 2 °C, tushda 6 °C, tushdan keyin 4 °C, kechqurn 3 °C, tunda 0 °C bo'ldi. Sutka davomida havoning o'zgarish kengligi qanday?

A) 5 B) 2 C) 6 D) 4

5823. Futbol jamoasi ishqibozlari soni 1-o'yinda 18 000 nafar, 2-o'yinda 15 200 nafar, 3-o'yinda 16 900 nafar va 4-o'yinda 17 500 nafar bo'ldi. Futbol jamoasi ishqibozlari sonining o'zgarish kengligini toping.

A) 3800 B) 200 C) 1100 D) 2800

5824. Oyning Quyoshga qaragan tomonida temperatura 130 °C, qarama-qarshi tomonida esa –170 °C ga teng. o'zgarish kengligini toping.

A) 1 B) 200 C) 300 D) 40

5825. Sonlarning berilgan absolut chastotasi jadvaliga asosan o'zgarish kengligini toping.

sonlar	Absolut chastotasi
14,35	4
11.9	3
7,9	2

A) 2,45 B) 6,8 C) 6,4 D) 6,45

✓ Tenis o'yini musobaqasida 11-sinfning 9 nafar o'quvchisi. mos ravishda, 15; 12; 14; 15; 12; 15; 14; 12; 11 ochko to'pladi. Ular olgan ochkolarning modasini aniqlang.

A) 15 B) 15 va 12 C) 12 D) 11

Yechimi:

Ochkolar soni	Ochkolarning absolut chastotasi
15	3
14	2
12	3
11	1

Berilgan sonlar qatoridagi *absolut chastotasi* eng katta bo'lgan son sonlar qatorining **modasi** deyiladi. Demak, **modasi 15 va 12** (chunki ularda absolut chastotasi teng 3 dir)

5826. Shaxmat o'yini musobaqasida 6-sinfning 8 nafar o'quvchisi, mos ravishda, 13; 13; 12; 13; 10; 13; 12; 10 ochko to'pladi. Ular olgan ochkolarning modasini aniqlang.

A) 4 B) 10 C) 13 D) 12

5827. O'quvchining matematika darsidan olgan baholari: 5, 5, 5, 4, 3, 4, 5, 4, 5, 5. o'quvchilarning matematikadan olgan baholarining modasini quyidagi qaysi ko'rinishida yozamiz.

A) 6 B) 5 C) 3 **D) 4**

5828. Mart oyining birinchi haftasidagi havoning o'rtacha sutkalik temperaturasi hafta kunlari bo'yicha mos ravishda 3 °C; 4°C; 5 °C; 8 °C; 6°C; 4°C; 7°C bo'ldi. Ular olgan natijalarining modasini aniqlang :

A) 2 B) 5 C) 3 D) 4

5829. Sonlar qatorining modasini aniqlang :

3,5; 2,6; 3,5; 1,3; 2,6; 3,5;

A) 3,5 B) 2,6 C) 1,3 D) 3

5830. Sonlar qatorining modasini aniqlang :

32,3; 27,1; 45; 27,1; 43,6; 32,3

A) 32,3 B) 32,3 va 27,1 C) 45 D) 27,1

5831. Sonlar qatorining modasini aniqlang :

5,9; 6,1; 4,85; 5,3; 4,9; 5,35.

A) bu qatorning modasi yo'q B) 1,05

C) 1 D) 0,55

5832. Ma'lumot qatorining modasini aniqlang :

2; 5; 9; 1; 2; 3; 3; 5; 5; 5; 7; 3; 3

A) 3 B) 5 C) 7 D) 3 ; 5

5833. Yanvar oyining bir sutkasida havoning temperaturasi ertalab 2 °C, tushda 6 °C, tushdan keyin 4 °C, kechqurn 3 °C, tunda 0 °C bo'ldi. Sutka davomida havoning modasini qanday?

A) 5 B) 6 C) 4

D) Shu sutkadagi havo temperaturasining modasi yo'q

5834. Oyning Quyoshga qaragan tomonida temperatura 130 °C, qarama-qarshi tomonida esa –170 °C ga teng. modasini toping.

A) 1 B) 200

C) Ma'lumot asosida modasi yo'q D) 40

5835. Sonlarning berilgan absolut chastotasi jadvaliga asosan modasini toping.

sonlar	Absolut chastotasi
14,35	4
11,9	3
7,9	2

A) 14,45 B) 7,9 C) 11,9 D) 14,35

✓ Tenis o'yini musobaqasida 11-sinfning 9 nafar o'quvchisi, mos ravishda, 15; 12; 14; 15; 12; 15; 14; 12; 11 ochko to'pladi. Ular olgan ochkolarning medianasini aniqlang.

A) 15 B) 15 va 12 C) 13 D) 14

Yechimi:

Berilgan sonlarning *soni toq* bo'lsa, u holda ularning **medianasi** o'sha sonlarni tartib bilan joylashtirgandagi *eng o'rtada* turgan sondir.

Berilgan sonlar *soni juft* bo'lsa, u holda ularning **medianasi** o'sha sonlarni o'sish tartibida joylashtirganda o'rtada turgan ikki sonning *o'rta arifmetigiga* teng bo'ladi.

Ochkolar soni	Ochkolarning absolut chastotasi
15	3
14	2
12	3
11	1

Ular olgan natijalarini tartiblab teramiz va sanaymiz:

11; 12; 12; 12; 14; 14; 15; 15; 15

9 ta

11; 12; 12; 12; 14; 14; 15; 15; 15

4 ta **4 ta**

medianasi

Toq son (9 ta) bo'lganidan Demak, **medianasi 14 .**

J: D

Agar juft bo'lganda

10; 11; 12; 12; 12; 14; 14; 15; 15; 15

10 ta

10; 11; 12; 12; 12; 14; 14; 15; 15; 15

4 ta **4 ta**

medianasi

Agar jut son (10 ta) bo'lganida **medianasi** $\frac{12+14}{2}=13$.

5836. Shaxmat o'yini musobaqasida 6-sinfning 8 nafar o'quvchisi, mos ravishda, 13; 13; 12; 13; 10; 13; 12; 10 ochko to'pladi. Ular olgan ochkolarning medianasini aniqlang.

A) 11,5 B) 14 C) 12,5 D) 13

5837. O'quvchining matematika darsidan olgan baholari: 5, 5, 5, 4, 3, 4, 5, 4, 5, 5. o'quvchilarning matematikadan olgan baholarining medianasini quyidagi qaysi ko'rinishida yozamiz.

A) 6 B) 5 C) 3 D) 4

5838. Mart oyining birinchi haftasidagi havoning o'rtacha sutkalik temperaturasi hafta kunlari bo'yicha mos ravishda 3 °C; 4°C; 5 °C; 8 °C; 6°C; 4°C; 7°C bo'ldi. Ular olgan natijalarining medianasini aniqlang :

A) 2 B) 5 C) 3 D) 4

5839. Sonlar qatorining medianasini aniqlang :

3,5; 2,6; 3,5; 1,3; 2,6; 3,5;

A) 3,05 B) 2,6 C) 3,5 D) 3

5840. Sonlar qatorining medianasini aniqlang :

32,3; 27,1; 45; 27,1; 43,6; 32,3

A) 32,3 B) 32,3 va 27,1 C) 45 D) 27,1

5841. Ma'lumot qatorining medianasini aniqlang .

2; 5; 9; 1; 2; 3; 3; 5; 5; 5; 7; 3; 3

A) 2 B) 5 C) 7 D) 3

5842. Sonlarning berilgan absolut chastotasi jadvaliga asosan medianasini toping.

sonlar	Absolut chastotasi
14,35	4
11,9	3
7,9	2

A) 4 B) 7,9 C) 11,9 D) 14,45

5843. Ma'lumot qatorining medianasini aniqlang.

2; 3; 3; 3; 4; 4; 4; 5; 5; 5; 6; 6; 6; 7; 8; 8; 9

A) 4 B) 6 C) 3 D) 5

1-D	62-C	123-B	184-D	245-A	306-D	367-C	428-B	489-D
2-D	63-B	124-C	185-C	246-D	307-D	368-A	429-A	490-B
3-B	64-C	125-D	186-B	247-B	308-A	369-B	430-B	491-C
4-D	65-D	126-A	187-D	248-A	309-B	370-B	431-A	492-D
5-C	66-D	127-A	188-D	249-A	310-B	371-D	432-D	493-D
6-B	67-B	128-B	189-C	250-C	311-A	372-A	433-C	494-B
7-D	68-A	129-B	190-A	251-B	312-D	373-B	434-C	495-A
8-B	69-D	130-C	191-D	252-C	313-C	374-A	435-C	496-C
9-A	70-A	131-D	192-A	253-A	314-B	375-D	436-B	497-A
10-B	71-C	132-A	193-B	254-B	315-A	376-B	437-A	498-C
11-A	72-B	133-B	194-B	255-A	316-B	377-C	438-B	499-B
12-C	73-C	134-B	195-D	256-D	317-B	378-D	439-C	500-B
13-D	74-B	135-D	196-D	257-B	318-A	379-B	440-A	501-B
14-A	75-A	136-C	197-A	258-A	319-B	380-C	441-A	502-B
15-C	76-D	137-A	198-D	259-C	320-B	381-B	442-D	503-A
16-C	77-C	138-D	199-A	260-A	321-C	382-A	443-C	504-B
17-B	78-A	139-A	200-C	261-D	322-D	383-D	444-C	505-B
18-A	79-A	140-D	201-B	262-A	323-A	384-B	445-C	506-B
19-A	80-B	141-A	202-A	263-B	324-B	385-B	446-D	507-A
20-A	81-C	142-D	203-D	264-B	325-B	386-B	447-C	508-C
21-D	82-C	143-D	204-D	265-B	326-C	387-A	448-D	509-B
22-A	83-D	144-C	205-B	266-D	327-D	388-A	449-C	510-A
23-C	84-C	145-A	206-C	267-B	328-A	389-A	450-A	511-A
24-B	85-A	146-B	207-B	268-C	329-B	390-C	451-D	512-C
25-D	86-B	147-B	208-A	269-A	330-A	391-B	452-C	513-B
26-A	87-B	148-C	209-A	270-A	331-D	392-A	453-A	514-D
27-C	88-A	149-B	210-B	271-B	332-B	393-C	454-D	515-C
28-D	89-A	150-A	211-C	272-D	333-D	394-A	455-D	516-B
29-D	90-B	151-D	212-D	273-D	334-A	395-A	456-B	517-B
30-D	91-C	152-C	213-A	274-C	335-B	396-A	457-B	518-A
31-C	92-D	153-B	214-B	275-C	336-C	397-C	458-B	519-B
32-D	93-D	154-A	215-C	276-A	337-D	398-B	459-D	520-B
33-C	94-C	155-D	216-B	277-B	338-B	399-B	460-D	521-A
34-D	95-A	156-C	217-C	278-C	339-C	400-D	461-C	522-A
35-A	96-A	157-C	218-B	279-A	340-B	401-D	462-D	523-B
36-C	97-C	158-A	219-D	280-B	341-A	402-B	463-C	524-B
37-D	98-A	159-B	220-A	281-C	342-D	403-B	464-C	525-A
38-B	99-D	160-C	221-D	282-B	343-C	404-B	465-B	526-B
39-D	100-A	161-B	222-D	283-A	344-B	405-B	466-A	527-A
40-B	101-C	162-A	223-A	284-B	345-B	406-D	467-A	528-C
41-D	102-D	163-A	224-D	285-D	346-C	407-C	468-C	529-A
42-D	103-A	164-B	225-B	286-D	347-C	408-A	469-B	530-B
43-D	104-B	165-D	226-A	287-D	348-C	409-A	470-C	531-D
44-A	105-D	166-D	227-B	288-B	349-A	410-C	471-A	532-A
45-C	106-A	167-B	228-A	289-D	350-A	411-A	472-B	533-D
46-C	107-D	168-B	229-B	290-A	351-D	412-B	473-D	534-C
47-A	108-B	169-D	230-A	291-A	352-A	413-D	474-B	535-A
48-C	109-C	170-C	231-A	292-B	353-B	414-D	475-C	536-A
49-A	110-B	171-B	232-B	293-C	354-D	415-D	476-A	537-B
50-D	111-A	172-D	233-C	294-B	355-B	416-A	477-B	538-C
51-B	112-A	173-A	234-A	295-C	356-A	417-D	478-A	539-A
52-D	113-B	174-D	235-B	296-A	357-C	418-C	479-A	540-D
53-B	114-C	175-C	236-B	297-B	358-B	419-A	480-A	541-D
54-C	115-C	176-D	237-C	298-A	359-B	420-C	481-A	542-B
55-B	116-B	177-B	238-A	299-D	360-D	421-B	482-B	543-B
56-C	117-D	178-D	239-D	300-C	361-B	422-B	483-D	544-D
57-C	118-B	179-A	240-B	301-D	362-A	423-B	484-D	545-B
58-C	119-C	180-C	241-B	302-D	363-A	424-C	485-B	546-D
59-A	120-D	181-D	242-B	303-B	364-B	425-C	486-C	547-C
60-D	121-B	182-B	243-C	304-C	365-C	426-B	487-C	548-A
61-B	122-C	183-C	244-B	305-A	366-D	427-C	488-D	549-C

550-A 551-D 552-A 553-B 554-C 555-D 556-A 557-B 558-B 559-C 560-D 561-B 562-A 563-D 564-A 565-A 566-B 567-B 568-A 569-C 570-A 571-A 572-D 573-D 574-B 575-C 576-A 577-B 578-A 579-B 580-C 581-B 582-B 583-B 584-A 585-C 586-C 587-C 588-B 589-B 590-C 591-D 592-A 593-D 594-A 595-A 596-B 597-A 598-C 599-C 600-D 601-B 602-C 603-A 604-B 605-C 606-B 607-A 608-A 609-B 610-D

611-B 612-D 613-A 614-C 615-D 616-A 617-B 618-A 619-C 620-D 621-B 622-D 623-B 624-A 625-C 626-B 627-C 628-A 629-D 630-B 631-C 632-C 633-B 634-A 635-B 636-A 637-C 638-C 639-B 640-D 641-B 642-D 643-A 644-C 645-A 646-B 647-A 648-D 649-D 650-C 651-A 652-D 653-B 654-C 655-D 656-A 657-B 658-B 659-D 660-D 661-D 662-C 663-A 664-B 665-C 666-C 667-D 668-B 669-C 670-B 671-A

672-C 673-B 674-D 675-B 676-A 677-D 678-A 679-C 680-D 681-D 682-C 683-A 684-B 685-C 686-A 687-B 688-C 689-C 690-B 691-D 692-D 693-C 694-B 695-B 696-C 697-C 698-D 699-A 700-A 701-A 702-A 703-A 704-C 705-A 706-D 707-B 708-A 709-C 710-D 711-C 712-A 713-B 714-A 715-B 716-C 717-C 718-B 719-D 720-A 721-C 722-A 723-A 724-C 725-B 726-D 727-C 728-A 729-D 730-B 731-A 732-A

733-A 734-C 735-D 736-C 737-C 738-B 739-B 740-B 741-A 742-B 743-C 744-B 745-D 746-C 747-B 748-C 749-C 750-B 751-A 752-B 753-B 754-B 755-B 756-B 757-A 758-B 759-C 760-D 761-A 762-B 763-C 764-D 765-B 766-A 767-D 768-D 769-B 770-B 771-A 772-C 773-B 774-C 775-D 776-A 777-C 778-D 779-D 780-B 781-B 782-D 783-A 784-A 785-A 786-C 787-D 788-A 789-B 790-B 791-D 792-C 793-A

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6. 1996-2003 yillada jop etilgan "Axborotnomalar"
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Bosishga 20.10.2018 yilda ruxsat etildi.
Bichimi 84x108 1/16 ofset usulida chop etildi.
Adadi 2000 nusxa.

«YANGI NASHR» nashriyoti, MCHJ
100115 Toshkent, Chilonzor ko'chasi, 1-uy
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bosmaxonasida chop etildi.
Manzil: 100149, Toshkent shahar, Sergeli tumani,
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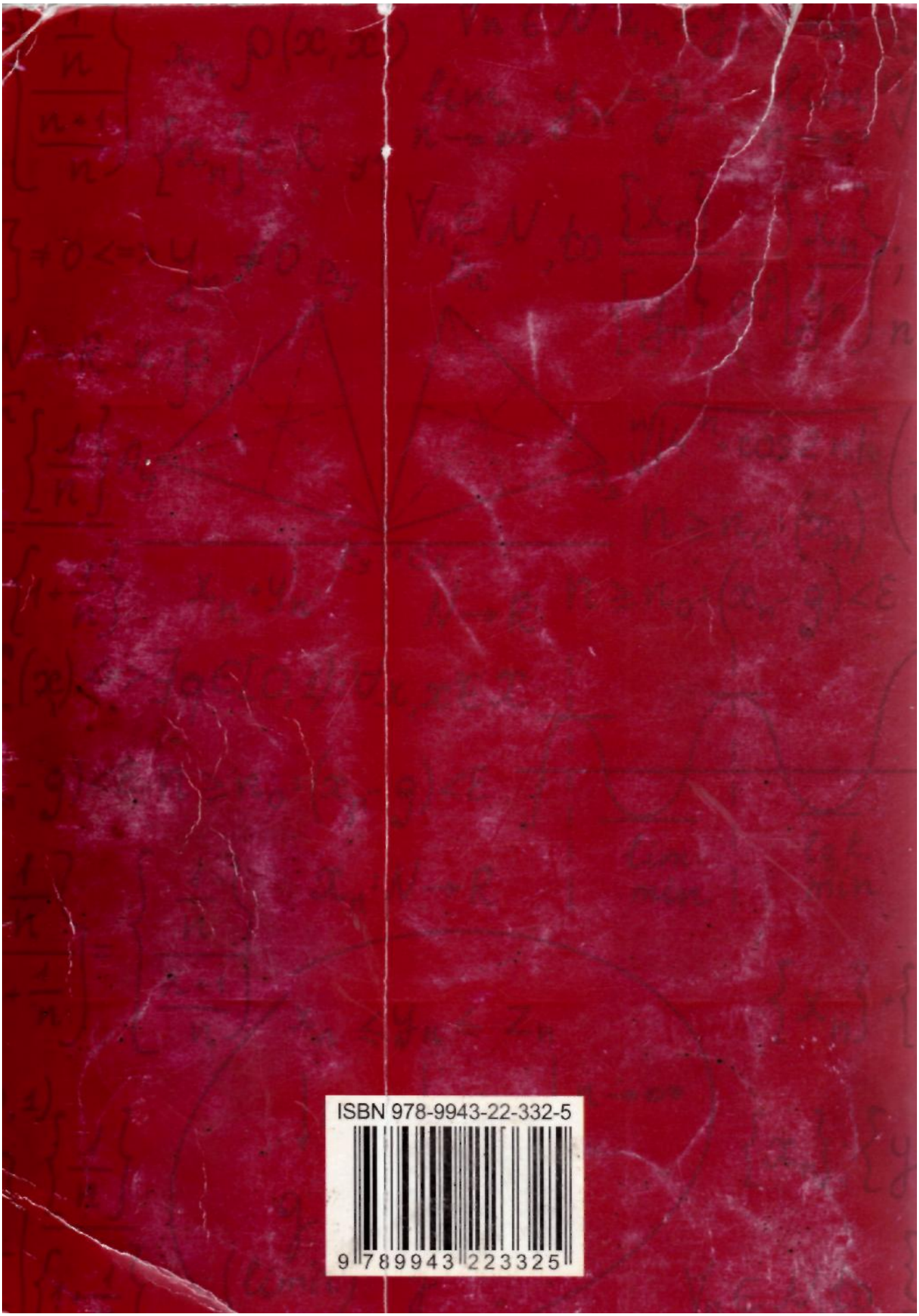
ISBN 978-9943-22-332-5