@Matematika kanali uchun

1. Uchta sonning uchinchisi ikkinchisidan nechta ortiq bolsa, ikkinchisi birinchisidan shuncha ortiq, bu sonlardan ikkita kichigining kopaytmasi 378, ikkita kattasining kopaytmasi 504 ekanligi ma'lum, shu uchta sondan birinchisini toping.
A) 18

2. Uchta sonning uchinchisi ikkinchisidan nechta ortiq bolsa, ikkinchisi birinchisidan shuncha ortiq, bu sonlardan ikkita kichigining kopaytmasi 108, ikkita kattasining kopaytmasi 180 ekanligi ma'lum, shu uchta sondan ikkinchisini toping.

3. Agar $|a| \neq |b| \neq |c|$ va $\frac{a}{b+c}+\frac{b}{c+a}+\frac{c}{a+b}=1$ bo'lsa, $\left(\frac{a^2}{b+c}+\frac{b^2}{c+a}+\frac{c^2}{a+b}\right):(a+b+c)$ ni qiymatini toping.
A) 2 B) 0,5 C) 0 D) 1

4. Agar $|a| \neq |b| \neq |c|$ va $\frac{a}{b+c}+\frac{b}{c+a}+\frac{c}{a+b}=0$ bo'lsa, $\left(\frac{a^2}{b+c}+\frac{b^2}{c+a}+\frac{c^2}{a+b}\right):(a+b+c)$ ni qiymatini toping.
A) -1

5. Agar $|a| \neq |b| \neq |c|$ va $\frac{a}{b+c}+\frac{b}{c+a}+\frac{c}{a+b}=-1$ bo'lsa, $\left(\frac{a^2}{b+c}+\frac{b^2}{c+a}+\frac{c^2}{a+b}\right):(a+b+c)$ ni qiymatini toping.
A) -2

6. Teng yonli trapetsiyaning pastki asosi 30 sm ga, ustki asosi esa 18 sm ga teng. Bu trapetsiyaning diagonallari o'zaro perpendikulyar. Uning yuzini toping.
A) 529 sm^2 B) 576 sm^2
C) 900 sm^2 D) 484 sm^2

7. Teng yonli trapetsiyaning pastki asosi 36 sm ga, ustki asosi esa 50 sm ga teng. Bu trapetsiyaning diagonallari o'zaro perpendikulyar. Uning yuzini toping.
A) 1849

8. Bir burchagi 60° bo'lgan to'g'ri bur-chakli uchburchakka tomoni 6 sm ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombning barcha uchlari uchburchakning tomonlarida yotadi. Uchburchakning yuzini toping.
A) $\frac{27\sqrt{3}}{2}\ sm^2$ B) $\frac{81\sqrt{3}}{4}\ sm^2$
C) $\frac{81\sqrt{3}}{8}\ sm^2$ D) $\frac{81\sqrt{3}}{2}\ sm^2$

9. Bir burchagi 60° bo'lgan to'g'ri bur-chakli uchburchakka tomoni 6 sm ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombning barcha uchlari uchburchakning tomonlarida yotadi. Uchburchakn perimetrini toping.

10. $y=4x^2$ va $y=-4x^2-8$ parabolalarga absissalar o'qi bilan o'tkir burchak tashkil qiladigan umumiy urinma o'tkazilgan. Shu urinmaning tenglamasini toping.
A) $y=-8x-4$ B) $y=8x-4$
C) $y=8x+4$ D) $y=16x-4$

11. Ifodani soddalashtiring:
$$\frac{27-\log_a^3 b^3}{(\log_a b+\log_b a+1)\cdot\log_a\frac{a}{b}}\cdot\log_{b^9} a$$
A) 3 B) 9 C) 6 D) 4

12. $\sqrt{4^8+2\cdot 6^8+9^8}-\sqrt{4^7+6^8+9^8}$ ni hisoblang.
A) 64 B) 512 C) 128 D) 256

13. $\sqrt{4^{19}+6^{20}+9^{20}}+\sqrt{4^{19}-6^{20}+9^{20}}$ ni hisoblang.

14. $\sqrt{4^{12}+6^{13}+9^{13}}-\sqrt{4^{12}-6^{13}+9^{13}}$ ni hisoblang.

15. $\int_0^1 x^9\cdot(x^5+1)^{2n}\cdot(x^5-1)^{2n}dx=a$ bo'lsa, $\frac{1}{a}$ =?
A) $2n+10$ B) $-(2n+10)$
C) $20n+10$ D) $-(20n+10)$

16. Bir nuqtadan aylanaga ikkita urinma o'tkazilgan. Har bir urinmaning uzunligi 20 sm, urinish nuqtalari orasidagi masofa 24 sm. Aylana uzunligini toping.
A) 15

17. Bir nuqtadan aylanaga ikkita urinma o'tkazilgan. Har bir urinmaning uzunligi 15 sm, urinish nuqtalari orasidagi masofa 14,4 sm. Tekislikning shu aylana bilan chegaralangan qismi yuzini toping.

18. Agar $f(x)=6+5tg^2 2x$ bo'lsa, $f'(\pi)$ ni toping.
A) 0 B) 2 C) 5 D) 1

19. Agar $f(x)=4+3tg^2 2x$ bo'lsa, $f'(\pi)$ ni toping.

20. Agar $f(x)=5-tg^2 2x$ bo'lsa, $f'(\pi)$ ni toping.

21. Agar $f(x)=5\cdot tg^2 2x$ bo'lsa, $f'(\pi)$ ni toping.
A) 20 B) 1 C) $tg\pi$ D) -1

22. Agar $f(x)=\frac{e^x}{\ln x}+\sqrt{sin3}$ bo'lsa, $f'(e)$ ni toping.
A) e B) $\frac{e^{e-1}\cdot(e-1)}{e}$ C) $e^{e-1}\cdot(e-1)$ D) e^e

23. Agar $f(x)=\frac{e^x}{\ln x}+\sqrt{\lg 2}$ bo'lsa, $f'(e)$ ni toping.
A) e B) $\frac{e^{e-1}\cdot(e-1)}{e}$ C) $e^{e-1}\cdot(e-1)$ D) e^e

24. Ifodani soddalashtiring:
$$sinx+\sin\left(x+\frac{2\pi}{3}\right)+\sin\left(x+\frac{4\pi}{3}\right)$$
A) 0 B) $sinx$ C) 1 D) $cosx$

25. $\int_1^2 \frac{3}{2x-1}dx$ ni hisoblang.
A) $\frac{3}{2}\ln 3$ B) $\ln 3$ C) $\ln 9$ D) 2

26. $\int_{-2}^{1}|x-2|dx$ ni hisoblang.

27. $\int_0^2(|x|+1)dx$ ni hisoblang.

28. a ning qanday qiymatlarida $\int_3^a (3x-1)\,dx = 4$ tenglik o'rinli bo'ladi?

A) ± 3 B) ± 5 C) $\frac{1\pm 2\sqrt{22}}{3}$ D) $\frac{2\pm\sqrt{22}}{3}$

29. $\begin{cases}(x+xy^2+y^2)(x+y^2)^2 = 225\\ (x-xy^2+y^2)(x+y^2)^2 = 25\end{cases}$ x va y ni toping.

30. Hisoblang: $\sqrt[3]{\frac{12}{5}\cdot\sqrt{\frac{244}{15(38^2-23^2)}}}$

31. Hisoblang: $\frac{(\sqrt{5}-\sqrt{11})(\sqrt{33}-\sqrt{15}+\sqrt{22}-\sqrt{10})}{\sqrt{75}-\sqrt{50}}$

A) 2,4 B) $-2,4$ C) 1,2 D) $-1,2$

32. Hisoblang: $\frac{(\sqrt{5}+\sqrt{11})(\sqrt{33}-\sqrt{15}+\sqrt{22}-\sqrt{10})}{\sqrt{75}+\sqrt{50}}$

A) 2,4 B) $-2,4$ C) 1,2 D) $-1,2$

33. $\int_0^{\frac{\pi}{2}} \sin\left(2x+\frac{\pi}{3}\right)dx$ integralni hisoblang.

A) 1,25 B) 1,5 C) 0,25 D) 0,5

34. $\int_0^{\frac{\pi}{2}} \frac{cosxdx}{1+\sin^2 x}$ integralni hisoblang.

35. $\int_0^{\frac{\pi}{2}} cos3xdx$ integralni hisoblang.

A) 0,6 B) $-0,(3)$ C) $-0,(6)$ D) 0,3

36. a ning qanday eng kichik butun qiymatida $-x^2-10x+5 < a$ tengsizlik x ning barcha qiymatlarida o'rinli bo'ladi?

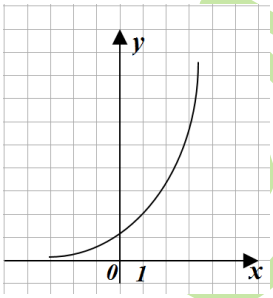
A) 31 B) 32 C) 30 D) 29

37. a ning qanday eng katta butun qiymatida $4x^2-4x+1-a > 0$ tengsizlik x ning barcha qiymatlarida o'rinli bo'ladi?

38. Ushbu $\frac{5}{|x+2|+2} > |x+2|-2$ tengsizlikni qanoatlantiruvchi butun sonlar nechta?

A) 4 ta B) 5 ta C) 6 ta D) 7 ta

39. Grafik ko'rinishida berilgan funksiyani toping.



A) $y = \log_2 x$ B) $y = 2^x$ C) $y = \left(\frac{1}{2}\right)^x$ D) $y = e^x$

40. To'g'ri berilgan integrallash formulalarini tanlang.

1) $\int \sin(kx+b)\,dx = -\frac{1}{k}\cos(kx+b)+C$

2) $\int \cos(b-kx)\,dx = -\frac{1}{k}\sin(b-kx)+C$

3) $\int \mathrm{tg}(kx+b)\,dx = \frac{1}{k}\ln|\cos(kx+b)|+C$

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

41. To'g'ri berilgan integrallash formulalarini tanlang.

1) $\int \sin(kx+b)\,dx = -\frac{1}{k}\cos(kx+b)+C$

2) $\int \cos(b-kx)\,dx = -\frac{1}{k}\sin(b-kx)+C$

3) $\int \mathrm{tg}(kx+b)\,dx = \frac{1}{k}\ln|\cos(kx+b)|+C$

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

42. Noto'g'ri berilgan integrallash formulalarini tanlang.

1) $\int \mathrm{tg}(kx+b)\,dx = -\frac{1}{b}\ln|\cos(kx+b)|+C$

2) $\int \cos(kx+b)\,dx = -\frac{1}{k}\sin(kx+b)+C$

3) $\int \sin(kx+b)\,dx = -\frac{1}{k}\cos(kx+b)+C$

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

43. To'g'ri berilgan integrallash formulalarini tanlang.

1) $\int \frac{1}{kx+b}dx = \frac{1}{b}\ln|kx+b|+C$

2) $\int \mathrm{a}^{b-kx}\,dx = -\frac{\mathrm{a}^{b-kx}}{k\cdot ln|a|}+C$

3) $\int \mathrm{e}^{b-kx}\,dx = -\frac{1}{k}\cdot\mathrm{e}^{b-kx}+C$

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

44. Hisoblang: $\sin\left(\frac{1}{2}ascsin\left(-\frac{2\sqrt{2}}{3}\right)\right)$

A) $-\frac{1}{\sqrt{3}}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

45. Hisoblang: $\sin\left(\frac{1}{2}ascsin\left(\frac{2\sqrt{2}}{3}\right)\right)$

A) $-\frac{1}{\sqrt{3}}$ B) $-\sqrt{3}$ C) $\sqrt{3}$ D) $\frac{1}{\sqrt{3}}$

46. $y = x^5 - 5x^4 - 2$ funksiyaning $(-1;1)$ oraliqdagi eng katta qiymatini toping.

A) -50 B) -1 C) -2 D) $\emptyset$

47. Tenglamani ildizlari ko'paytmasini toping.

$\left(\sqrt{5+\sqrt{24}}\right)^x + \left(\sqrt{5-\sqrt{24}}\right)^x = 10.$

A) 4 B) -4 C) -2 D) 2

48. Ifodani qiymatini toping. $\frac{\left(\frac{1}{18}\right)^5\cdot 64\cdot\left(\frac{1}{27}\right)^{-4}+\left(\frac{1}{6}\right)^{-2}}{\left(\frac{2}{3}\right)^{-2}}$

A) 18 B) 12 C) 24 D) 48

49. Ifodani soddalashtiring: $((cos\alpha-cos\beta)^2+(sin\alpha-sin\beta)^2):\left(4\sin^2\frac{\alpha-\beta}{2}\right)-3$

A) $\sin^2\frac{\alpha-\beta}{2}-3$ B) -2 C) $\sin^2\frac{\alpha-\beta}{2}$ D) 2

50. Ifodani soddalashtiring:

$((cos\alpha-cos\beta)^2+(sin\alpha-sin\beta)^2):\left(4\sin^2\frac{\alpha-\beta}{2}\right)$

51. Ifodani soddalashtiring:

$((cos\alpha-cos\beta)^2+(sin\alpha-sin\beta)^2):\left(8\sin^2\frac{\alpha-\beta}{2}\right)$

52. Ifodani soddalashtiring:

$1-(cos\alpha-cos\beta)^2+\frac{(sin\alpha-sin\beta)^2}{\left(2sin\frac{\alpha-\beta}{2}\right)^2}$

A) 0

53. Ifodani soddalashtiring:

$((sin\alpha)^{-1} + (\text{tg}\alpha)^{-1}) + \left(\text{tg}\frac{\alpha}{2}\right)^{-1}$

A) 1 B) -1 C) $\text{tg}\alpha$ D) $-\text{tg}\alpha$

54. Ifodani soddalashtiring:

$(sin\alpha)^{-1} + 2(\text{tg}\alpha)^{-1} + \left(\text{tg}\frac{\alpha}{2}\right)^{-1}$

55. Ifodani soddalashtiring:

$((sin\alpha)^{-1} + (\text{tg}\alpha)^{-1}) - \left(\text{tg}\frac{\alpha}{2}\right)^{-1}$

A) 1 B) 0 C) $ctg\frac{\alpha}{2}$ D) $\text{tg}\frac{\alpha}{2}$

56. Ifodani soddalashtiring:

$((sin\alpha)^{-1} + (\text{tg}\alpha)^{-1}) \cdot \left(\text{tg}\frac{\alpha}{2}\right)^{-1}$

A) $tg^2\frac{\alpha}{2}$ B) $2tg^2\frac{\alpha}{2}$ C) $ctg^2\frac{\alpha}{2}$ D) $2ctg^2\frac{\alpha}{2}$

57. Ifodani soddalashtiring:

$(4(sin\alpha)^{-1} \cdot 4(\text{tg}\alpha)^{-1}) : \left(\text{tg}\frac{\alpha}{2}\right)^{-1}$

58. Ifodani soddalashtiring: $\cos^4\alpha + \sin^2\alpha \cdot \cos^2\alpha$

59. Ifodani soddalashtiring: $7\sin^2\alpha - 1 + 7\cos^2\alpha$

60. Ifodani soddalashtiring: $7\sin^2\alpha - 5 + 7\cos^2\alpha$

A) 12 B) 2 C) $1 + \cos^2\alpha$ D) -12

61. Ifodani soddalashtiring: $-4\cos^2\alpha + 5 - 4\sin^2\alpha$

62. Ifodani soddalashtiring: $cosx + tgx \cdot sinx$

A) $cosx + sinx$ B) 1 C) $2cosx$ D) $\frac{1}{cosx}$

63. $sinx = \frac{1}{2}$ bo'lsa, $6{,}8 + 2\cos^2 x$ ni hisoblang.

64. $a = 6$ bo'lsa, ifodani soddalashtiring:

$$\frac{\left(25^{\frac{1}{2\log_{49}25}+2\log_2\log_2\log_2 a^{2\log_a 4}}\right)\cdot 4^{-\frac{2}{\log_3 4}} - a^2}{1-a}$$

A) 6 B) 8 C) 5 D) 7

65. $a = 4$ bo'lsa, ifodani soddalashtiring:

$\left(25^{\frac{1}{2}\log_{25}49+2\log_2\log_2\log_2 a^{2\log_a 4}}\right)\cdot 4^{-\frac{2}{\log_3 4}} - a^2$

66. Ifodani soddalashtiring:

$\sqrt[5]{b^5} - \sqrt[4]{b^4} + \sqrt[6]{b^6} - \sqrt[7]{b^7}$ bu yerda $b < 0$.

A) $4b$ B) $0; 4b$ C) $0; -4b$ D) 0

67. $x^3 = \left(\frac{1}{3}\right)^x + 1$ tenglamaning nechta yechimi bor?

A) 0 B) 1 C) 7 D) 4

68. Ushbu $\log_{x^2} 13 = \log_{4-3x} 13$ tenglamani ildizi 5 dan qancha kam?

A) 9 B) 5 C) 10 D) 12

69. $\frac{(5^x-25)(7^x-7)}{\sqrt{7-5x}} = 0$ tenglamani ildizi 5 dan qancha kam?

A) 4 B) 10 C) 6 D) 8

70. $\frac{(5^x-25)(7^x-49)}{\sqrt{7+5x}} = 0$ tenglamani ildizi 5 dan qancha kam?

71. Tenglamani ildizlari nisbatini toping:

$x^2 - 11 + \sqrt{x^2+11} = 20$

A) -1

72. Quyidagi tasdiqlardan qaysilari to'g'ri?

1) Trapetsiyaning o'rta chizig'i uning diagonallarini teng ikkiga bo'ladi;

2) Agar teng yonli trapetsiyaning diagonali uning katta asosidagi burchagi bissektrisasi bo'lsa, u holda katta asos yon tomonga teng bo'ladi;

3) Agar teng yonli trapetsiyaning diagonali uning kichik asosidagi burchagi bissektrisasi bo'lsa, u holda katta asos yon tomonga teng bo'ladi.

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

73. Quyidagilardan qaysi biri to'g'ri?

1) Agar $b > 0, a > c > 0$ bo'lsa, u holda $\frac{a}{b} > \frac{c}{b}$ bo'ladi;

2) Agar $a > 0, b > c > 0$ bo'lsa, u holda $\frac{a}{b} < \frac{a}{c}$ bo'ladi;

3) Agar $c > 0, 0 < a < b$ bo'lsa, u holda $\frac{a}{b} > \frac{a+c}{b+c}$ bo'ladi.

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

74. Quyidagilardan qaysi biri to'g'ri?

1) Agar $a > 0$ bo'lsa, u holda $a + \frac{1}{a} \geq 2$ bo'ladi;

2) Agar $ab > 0$ bo'lsa, u holda $\frac{a}{b} + \frac{b}{a} \geq 2$ bo'ladi;

3) Agar $ab < 0$ bo'lsa, u holda $\frac{a}{b} + \frac{b}{a} \leq -2$ bo'ladi.

75. Uchburchak katetlaridan biri 28 ga teng (16 lik sanoq sistemasi), ikkinchisi esa 2A ga (16 lik sanoq sistemasi). Uchburchakning gipotenuzasini 16 lik sanoq sistemasida toping.

76. Uchburchak uchlarining koordinatalari $A(-4;\ 2); B(6; 5); C(1; -4)$. A uchidan tushirilgan balandligi orqali o'tuvchi to'g'ri chiziq tenglamasini tuzing.

77. $A = \{3; 4; 5; 6; 7; 8; 9; 10; 11\}$ va $B = \{5; 6; 7; 8; 9; 11\}$ to'plamlar berilgan bo'lsa, A va B to'plamlar kesishmasining qism to'plamlari sonini toping.

A) 64

78. $A \cap B = \{b; c; d\}$, $A \cap C = \{a; b\}$ bo'lsa, $A \cap (B \cup C)$ to'plam elementlarini toping.

A) $\{c; d\}$ B) $\{a; b; c; d\}$ C) $\{a; c; d\}$ D) $\{b\}$

79. $A \cap B = \{b; c; d\}$, $A \cap C = \{a; d\}$ bo'lsa, $A \cap (B \cup C)$ to'plam elementlarini toping.

80. $A \cap B = \{b; c; d\}$, $A \cap C = \{b; d\}$ bo'lsa, $A \cap (B \cup C)$ to'plam elementlarini toping.

81. $2^{\sin^2 x} + 2^{\cos^2 x} = 3$ tenglamani yeching.

82. Teng yonli uchburchakning asosi 16 sm ga, yon tomoni esa 10 sm ga teng. Bu uchburchakka ichki va tashqi chizilgan aylanalar markazlari orasidagi masofani toping.

83. Teng yonli uchburchakning asosi 5 ga, yon tomoni 8 ga teng bo'lsa, unga ichki va tashqi chizilgan

aylanalar markazlari orasidagi masofani (sm) toping.
A) $\frac{8}{3}$ B) 5 C) $\frac{25}{3}$ D) 10

84. Teng yonli uchburchakning asosi 8 sm ga, yon tomoniga tushirilgan mediana 10 sm ga teng. Yon tomonini (sm) toping.
A) $2\sqrt{17}$ B) $4\sqrt{7}$ C) $4\sqrt{17}$ D) $6\sqrt{17}$

85. Teng yonli uchburchakning yon tomoni 20 ga, asosidagi burchak kosinusi $\frac{2\sqrt{6}}{5}$ ga teng bo'lsa, asosiga tushirilgan balandligini toping.

86. Og'ma prizmaning asosi parallelogramlardan iborat bo'lib, uning asosi tomonlari 5 va 4 ga va ular orasidagi burchak 45° ga teng. Yon qirrasi uzunligi 4 ga va asos tekisligi bilan 30° li burchak tashkil qiladi. Prizmaning hajmini toping.

87. Og'ma prizmaning asosi parallelogramlardan iborat bo'lib, uning asosi tomonlari 3 va 4 ga va ular orasidagi burchak 60° ga teng. Yon qirrasi uzunligi 4 ga va asos tekisligi bilan 30° li burchak tashkil qiladi. Prizmaning hajmini toping.

88. $\sqrt{x+\sqrt{4x+\sqrt{16x+\sqrt{\ldots+\sqrt{4^{10}x+3}}}}}=\sqrt{x}+1$ tenglamaning natural sonlardan iborat nechta ildizi mavjud?
A) 3 B) 2 C) 1 D) 0

89. Agar $m=acosx+bsinx$ va $n=-\sqrt{a^2+b^2}$ bo'lsa, x ning istalgan qiymati uchun quyidagilardan qaysi biri o'rinli?
A) $m>n$ B) $m<n$ C) $m\geq n$ D) $m\leq n$

90. $\sqrt{x^2-x-2}\geq 2x+3$ tengsizlikni qanoatlantiruvchi eng katta natural sonni toping.

91. Arifmetik progressiyaning oltinchi va o'ninchi hadlari yi'g'indisi 38 ga, to'qqizinchi va o'n birinchi hadlari yig'indisi esa 23 ga teng bo'lsa, arifmetik progressiyaning dastlabki o'n bechta hadlari yig'indisini toping.
A) 285

92. Ildizlari $x_1=\frac{1}{10+6\sqrt{2}}$ va $x_2=\frac{1}{10-\sqrt{72}}$ bo'lgan kvadrat tenglama tuzing.
A) $28x^2-20x+1$ B) $28x^2-20x-1$
C) $28x^2+20x+1$ D) $-28x^2-20x+1$

93. $[\pi^2]+[2{,}9]^2+[15,(99)]$ ni hisoblang. $[a]-a$ sonining butun qismi.

94. $y=x^2-4x+7$ funksiya grafigining $(1;1)$ nuqtaga nsbatan simmetrik bo'lgan tenglamasini tuzing.

95. $y=|3x+2|+|2x-3|$ funksiyaning eng kichik qiymati nimaga teng?

96. Agar $f(2x+1)=4x+5$ bo'lsa, $f(x)$ nimaga teng?

97. $y=4x-x^2$ va $y=x^2-6x+k$ funksiyalarga o'tkazilgan umumiy urinma $M(1;3)$ nuqtadan o'tsa, k ning qiymatini toping.

98. Funksiyaning monoton o'sish oralig'ini toping.
$y=|x-4|-x^2$

99. a ning qanday qiymatlaridа $x^2-x+a=0$ va $ax^2-x+3=0$ tenglamalar kamida bitta umumiy ildizga ega bo'ladi?

100. $\begin{cases} x+y=a-1 \\ xy=a^2-7a+14 \end{cases}$ sistemada x^2+y^2 minimum qiymat qabul qilsa, a ning qiymatini toping.

101. $\begin{cases} 6sinx+7\log_y 3=-10 \\ -5sinx+2\log_y 3=0{,}5 \end{cases}$ sistemani yeching.

102. $sinx=\frac{1}{x}$ tenglama $[-2\pi;2\pi]$ oraliqda nechta yechimga ega?

103. $(x-3a)(x-a-3)<0$ bo'lib, $1\leq x\leq 3$ oraliqda bajarilsa, a ning nechta butun qiymati mavjud?

104. Tengsizlikni yeching: $|3-|x-2||\leq 1$

105. Tengsizlikni yeching: $\frac{1}{x-1}+\frac{3}{|x|+1}\geq\frac{1}{|x|-1}$

106. Tengsizlikni yeching: $log^2_{0,2}(x+1)<4$

107. Tengsizlikni yeching: $\log_{x-2}(2x-7)>1$ a

108. Tengsizlikni yeching: $\left(\log_{0,2}(x-1)\right)^2>4$
A) $(0;1{,}04)\cup(5;\infty)$ B) $(26;\infty)$
C) $(1;1{,}04)\cup(26;\infty)$ D) $(1;26)$

109. Tengsizlikni yeching: $\frac{3x^2-6x+13}{\log_{0,2}(x^2+4)}<0$

110. Tengsizlikni yeching: $2^{\sqrt{x+1}}-6>2^{4-\sqrt{x+1}}$

111. $2^{\sqrt{x+1}}-6\leq 2^{4-\sqrt{x+1}}$ engsizlikni qanoatlantiruvchi butun sonlar nechta?
A) 10 ta B) 7 ta C) 9 ta D) 8 ta

112. Tengsizlikni yeching: $2^{\log_{0,2}x\,\cdot\,2\log_{0,2}5x}\geq 1$

113. $2^{\log_{0,8}(x)\,\cdot\,2\log_{0,8}(1,25x)}>1$ tengsizlikni yeching.
A) $(1;\infty)$ B) $(0{,}8;1)$
C) $(0;0{,}8)\cup(1;\infty)$ D) $(0;1{,}25)\cup(3;\infty)$

114. $2^{\sqrt{x+1}}\geq 2^{4-\sqrt{x+1}}$ tengsizlikni nechta butun son qanoatlantirmaydi?

115. Aniqlanish sohasini toping: $y=\sqrt{\frac{|x+2|-3}{x^2+2}}$

116. Agar $a^2<a$ va $x=a^{1997}, y=a^{1982}, z=a^{2018}$ bo'lsa, x,y,z munosabatlarni kamayish tartibida yozing.

117. $(\log_2(x+2)-3)(\log_2(x+2)+4)>0$ tengsizlikni yeching.

118. $2^x=x+2$ tenglama nechta yechimga ega?

119. $f(x)=6^x$ bo'lsa, $\left(f(-2)\cdot f\left(\frac{1}{2}\right)\right)^2$ ning qiymatini toping.

120. $f(x)=10^x$ bo'lsa, $5f(-3)+8f(-2)+f(-1)+2f(0)$ ning qiymatini toping.

121. $f(x)=\frac{3^{x+1}+3^{x+3}+3^{x+2}}{5^{x+2}+14\cdot 5^x}$ berilgan bo'lsa, $9f(-2)$ ni toping.

122. $6^x-6^{-x}=6$ bo'lsa, $(6^x-6)\cdot 6^x$ nimaga teng?

123. $\frac{2^a+4\cdot 2^b}{2^a-2\cdot 2^b}=-7$ bo'lsa, 2^{a-b} ning qiymatini toping.

124. $f(x)=\frac{7\cdot 2^x+5\cdot 2^{-2x}}{2}$ va $g(x)=\frac{7\cdot 2^x-5\cdot 2^{-2x}}{2}$ tengliklardan foydalanib, $f^2(x)-g^2(x)$ ayirmani toping.

125. $f(x)=7^x$, $g(x)=8^x$ va $h(x)=9^x$ bo'lsa, $f(44), g(33), h(22)$ larni kamayish tartibida yozing.

126. $f(x)=\left(2^{\frac{3x}{2}}-3^{\frac{3x}{2}}\right)+\frac{2\left(2^x+3^x+6^{\frac{x}{2}}\right)}{\left(2^{\frac{x}{4}}-3^{\frac{x}{4}}\right)^2+\left(2^{\frac{x}{4}}+3^{\frac{x}{4}}\right)^2}+5\cdot 2^{\frac{x}{2}}$ bo'lsa, $f(2)$ ni toping.

127. Agar $5^x-5^y=3, x+y=3$ bo'lsa, $5^{2x}+5^{2y}+25^x\cdot 5^y-25^y\cdot 5^x$ ning qiymati nimaga teng?

128. $\left(5^{\log_3 5}\right)^{\log_5 3}$ ni hisoblang.

129. $\sqrt{\log_{16} 4+\log_{16} 24-\log_{16} 6}$ ni hisoblang.

130. Perimetri 40 sm bo'lgan parallelogramda diagonallar o'tkazilgan. Ikkita qo'shni uchburchaklar perimetrlari orasidagi ayirma 10 sm ga teng. Parallelogramning katta tomonining uzunligini toping.
A) 10 sm B) 20 sm C) 5 sm D) 15 sm

131. Perimetri 32 sm bo'lgan parallelogramda diagonallar o'tkazilgan. Ikkita qo'shni uchburchaklar perimetrlari orasidagi ayirma 8 sm ga teng. Parallelogramning kichik tomonining uzunligini toping.
A) 4 sm B) 3 sm C) 5 sm D) 12 sm

132. Perimetri 36 sm bo'lgan parallelogramda diagonallar o'tkazilgan. Ikkita qo'shni uchburchaklar perimetrlari orasidagi ayirma 10 sm ga teng. Parallelogramning tomonlari uzunliklarini toping.

133. Tenglamalar sistemasini yeching: $\begin{cases}2^x\cdot 7^y=28\\2^x+7^y=11\end{cases}$
A) $(2;1)$; $(\log_2 7\,;2\log_7 2)$
B) $(2;1)$; $(\log_2 7\,;2\log_2 7)$
C) $(-2;1)$; $(\log_2 7\,;2\log_7 2)$
D) $(2;2)$; $(\log_2 7\,;2\log_7 2)$

134. Tenglamalar sistemasini yeching:
$\begin{cases}11^x+8^y=75\\3\cdot 11^x+8^y=97\end{cases}$

135. $\frac{x^7-4x^5+4x^2-7x-2}{x^7-4x^5+3x^2-4x-4}=1$ tenglamani barcha ildizlari yig'indisini (agar u bitta bo'lsa, shu ildizni o'zini) toping.
A) 2 B) -1 C) 3 D) 1

136. $y=\arcsin\left(|x|+\left|x-\frac{1}{2}\right|\right)$ funksiyaning qiymatlar sohasini toping.

137. $y=\frac{\sin(ctgx+1)+\cos(tgx+1)}{2}$ funksiyaning qiymatlari sohasini toping.
A) $\left[-\sqrt{2};\,-1\right)\cup(-1;0)\cup(0;1)\cup\left(1;\,\sqrt{2}\right)$
B) $\left[-\sqrt{2};\,-1\right)\cup(-1;1)\cup\left(1;\,\sqrt{2}\right)$
C) $\left[-\sqrt{2};\,\sqrt{2}\right]$
D) $\left[-\sqrt{2};\,0\right)\cup\left(0;\,\sqrt{2}\right)$

138. 5 ta har xil ruchka va 4 ta har xil daftardan necha xil usul bilan ikkalasidan ham bittadan qatnashadigan qilib tanlab olish mumkin?

139. Agar $\vec{a}(1;5)$ va $\vec{b}(2;7)$ bo'lsa, $\vec{a}-\vec{b}$ ni toping.
A) $(-1;-2)$ B) $(1;2)$ C) $(1;-2)$ D) $(-1;2)$

140. Agar $\vec{a}(5;4)$ va $\vec{b}(4;3)$ bo'lsa, $\vec{a}-\vec{b}$ ni toping.

141. $\vec{a}(-1;5;x)$ va $\vec{b}(-1;-2;-5)$ vektorlar uchun $\vec{a}\perp\vec{b}$ bo'lsa, x ni toping.

142. Uchta yashikda 85,6 kg olma bor. Ikkinchi yashik birinchisining 0,8 qismini, uchinchi yashikdagi olmalar ikkinchi yashikdagi olmalarning 42,5% ini tashkil qiladi. Birinchi yashikda qancha olma bor?

143. Uch yashikda 64,2 kg meva bor. 2- yashikdagi meva birinchi yashikdagi mevaning 0,8 qismini tashkil qiladi. 3- yashikda esa 2- yashikdagining 42,5% miqdoricha meva bor. Birinchi yashikda qancha meva bor?
A) 24 kg B) 28 kg C) 30 kg D) 36 kg

144. Arifmetik progressiyada $9a_{11}=a_{19}$ bo'lsa, uning dastlabki 19 ta hadining yig'indisini toping.

145. Arifmetik progressiyada $a_{13}=6a_8$ bo'lsa, S_{13} ni toping.
A) 0 B) 4 C) 26 D) 13

146. Arifmetik progressiyada $a_9=4a_6$ bo'lsa, S_9 ni toping.

147. Trapetsiyaning o'rta chizig'i 36 ga, asoslari ayirmasining moduli 10 ga teng teng bo'lsa, uning asoslarini toping.

148. $a^2-b^2+2a+6b-8$ ifodani ko'paytuvchilarga ajrating.

149. $a^2-b^2+a+7b-12$ ko'phadning ko'paytuvchilaridan birini toping.
A) $a+b+3$ B) $a+b+4$
C) $a-b+3$ D) $a+b-3$

150. Aylana to'g'ri burchakli uchburchakning katta katetiga urinib, shu katet qarshisidagi burchak uchidan o'tadi, markazi esa gipotenuzada yotadi. Agar katetlarining uzunliklari 5 va 12 bo'lsa, tekislikning shu aylana bilan chegaralangan ichki

sohasini yuzini toping.
A) $52\frac{13}{81}\pi$ B) $53\frac{13}{81}\pi$ C) $52\frac{11}{81}\pi$ D) $52\frac{117}{81}\pi$

151. Aylana to'g'ri burchakli uchburchakning katta katetiga urinib, shu katet qarshisidagi burchak uchidan o'tadi, markazi esa gipotenuzada yotadi. Agar katetlarining uzunliklari 6 va 8 bo'lsa, aylana radiusini toping.

152. Aylana to'g'ri burchakli uchburchakning katta katetiga urinib, shu katet qarshisidagi burchak uchidan o'tadi, markazi esa gipotenuzada yotadi. Agar katetlarining uzunliklari 3 va 4 bo'lsa, tekislikning shu aylana bilan chegaralangan ichki sohasini yuzini toping.

153. Aylana to'g'ri burchakli uchburchakning katta katetiga urinib, shu katet qarshisidagi burchak uchidan o'tadi, markazi esa gipotenuzada yotadi. Agar katetlarining uzunliklari 8 va 15 bo'lsa, aylana uzunligini toping.

154. 1,2,2,3,3,3,4,4,4,4,5,5,5,5,5, ... ketma-ketlikning $2017-$ hadini toping.

155. $(a^2-b^2-c^2+2bc):\left(\frac{a+b-c}{a+b+c}\right)$ ifodaning $a=3$, $b=\sqrt{3}, c=-1$ bo'lgandagi qiymatini toping.
A) 1

156. Hech bir uchtasi bir to'g'ri chiziqda yotmaydigan 25 ta nuqtadan nechta uchburchak yasash mumkin?
A) 2300

157. $\lg^2(100x)+\lg^2(10x)+\lg^2 x=14$ tenglamani yeching.
A) 0,001 va 10 B) 10 va 0,01
C) 100 va 0,0001 D) 0,1 va 1

158. M sonini 3 ga bo'lganda qoldiqda $\frac{(3a+1)^{40}+1}{(3a+1)^{20}}$ qoladi. a ning eng kichik qiymati nimaga teng.
A) $-\frac{2}{3}$ B) 1 C) $-\frac{1}{2}$ D) 0

159. Ifodani soddalashtiring:
$\frac{x^3+27}{2x-2}\cdot\frac{x^2-1}{x^2+4x+3}\cdot\frac{6x+12}{3x^2-9x+27}$.
A) $x+2$ B) $\frac{x+2}{2}$ C) $2x+1$ D) $\frac{x+2}{x-1}$

160. Ifodani soddalashtiring:
$\frac{x^3+27}{2x-2}\cdot\frac{x^2-1}{x^2+4x+3}\cdot\frac{6x+12}{3x^2-9x+27}+3$.

161. $2x^2-\left(2\sqrt{3}+3\sqrt{2}\right)x+\sqrt{6}+2=0$ tenglamaning kichik ildizini toping.
A) $\frac{\sqrt{2}}{2}$ B) $\sqrt{3}-\sqrt{2}$ C) $-\frac{\sqrt{2}}{2}$ D) $\sqrt{3}+\sqrt{2}$

162. Tenglamani yeching:
$4\cos^2 x-2\sin^2 x-5cosx-4=0$
A) $x=\pm\arccos\frac{2}{3}+\pi n, n\in Z$
B) $x=\pm\arccos\left(-\frac{2}{3}\right)+2\pi n, n\in Z$
C) $x=\arccos\left(-\frac{2}{3}\right)+\pi n, n\in Z$
D) $x=\pm\arccos\left(-\frac{2}{3}\right)+\pi n, n\in Z$

163. $y=\sqrt{\log_{\frac{1}{3}}(x^2-2x)+1}$ funksiyaning aniqlanish sohasini toping.
A) $\{-1;0)\cup(2;3]$ B) $(-\infty;0)\cup(2;\infty)$
C) $(-\infty;-1]\cup[3;\infty)$ D) $[-1;3]$

164. O'lchamlari $40\times20\times5\ sm$ bo'lgan to'g'ri burchakli parallelepiped shaklidagi mis g'o'lasidan qalinligi $1\ mm$ bo'lgan tunuka taxtasi tayyorlandi. Bu tunuka taxtaning yuzini toping.
A) $0{,}4\ m^2$ B) $40\ m^2$ C) $4\ m^2$ D) $40\ sm^2$

165. Bir noma'lumli tenglama nechta ildizga ega bo'lishi mumkin?
1) bitta ildizga;
2) cheksiz ko'p ildizga;
3) ildizi yo'q.
A) 1; 2; 3 B) faqat 2 va 3
C) faqat 1 D) faqat 1 va 3

166. Quyidagi tasdiqlarning qaysilari to'g'ri?
1) Kub - barcha yoqlari kvadratlardan iborat ko'pyoqdir;
2) Parallelepiped - barcha yoqlari parallelogramdan iborat ko'pyoqdir;
3) Prizma - asoslari deb atalgan ikii yog'i parallel tekisliklarda yotuvchi, qolgan yoqlari trapetsiyadan iborat ko'pyoqdir.
A) 1; 3 B) 1; 2 C) 1; 2; 3 D) 2; 3

167. $\sqrt{8+2^{\sqrt{3-x}+1}-4^{\sqrt{3-x}}}+2^{\sqrt{3-x}+1}>5$ tengsizlikni qanoatlantiruvchi eng kichik va eng kata butun yechimlari ayirmasining absolyut qiymatini toping.
A) 3 B) 4 C) 2 D) 0

168. Radiusi 3 ga teng bo'lgan aylanaga ikkita AB va AC urinmalar o'tkazilgan bo'lib, bunda A nuqta aylana markazidan 4 ga teng masofada joylashgan. Berilgan aylanaga, AB va AC urinmalarga urinuvchi aylana(hosil bo'lgan yangi aylananing radiusi berilgan aylananing radiusidan kata)ning radiusini toping.
A) 21 B) 36 C) 55 D) 78

169. Uchburchakli piramidaning yon qirralari bir xil uzunlikka ega bo'lib, bu uzunlik 6 ga teng. Bu piramidaning uchidagi tekis burchaklaridan ikkitasi 45°, uchinchisi 60° ga teng bo'lsa, piramidaning hajmini toping.
A) $\frac{44}{3}$ B) 15 C) $\frac{53}{3}$ D) 18

170. ABC uchburchakning tomonlari uzunliklari AB=5, BC=4 va CA=6 bo'lsa, $\overrightarrow{CA}\cdot\overrightarrow{CB}$ skalyar ko'paytmani hisoblang.
A) $-\frac{5}{2}$ B) $\frac{1}{2}$ C) $\frac{5}{2}$ D) $\frac{5}{4}$

171. $\begin{cases} x+y+x^2+y^2=8 \\ x^2y+y^2x=6 \end{cases}$ sistemani yeching.
A) $(1;\ -3);(-3;1);(1;2);(2;1)$

172. $\frac{(8-x)^2}{3-x} \le 0$ tengsizlikning $[-1;9]$ kesmadagi butun yechimlari yig'indisini toping.

173. a va b 6 ga bo'linmaydigan juft sonlar. a va b ni 6 ga bo'lganda bir xil qoldiq qoladi. $a+b$ ni 6 ga bo'lgandagi qoldini toping.

174. $3a+2b+2c=0$ bo'lsa, $\frac{a}{b+c}+\frac{b}{3a+2c}+\frac{c}{3a+2b}$ ni toping.

175. $a=\sqrt[3]{4}+\sqrt[3]{2}+1$ bo'lsa, $\frac{3}{a}+\frac{3}{a^2}+\frac{3}{a^3}$ ni toping.

176. Agar $|a| \ne |b| \ne |c|$ va $\frac{a^2}{a+b}+\frac{b^2}{b+c}+\frac{c^2}{a+c}=6$ bo'lsa, $\frac{b^2}{a+b}+\frac{c^2}{b+c}+\frac{a^2}{a+c}$ ni qiymatini toping.
A) 6

177. Ikkita son o'rta proporsionali shu sonlardan kichigidan 6 ga ko'p, o'rta arifmetigi esa, kattasidan 7 ga kam bo'lsa, kichik sonni toping.
A) 18

178. Ikkita son o'rta proporsionali shu sonlardan kichigidan 6 ga ko'p, o'rta arifmetigi esa, kattasidan 7 ga kam bo'lsa, shu sonlarni toping.
A) 18 va 32

179. Uchburchakli piramidaning asosining tomonlari 6, 6 va 8 ga teng. Asosidagi barcha ikki yoqli burchaklari 45° ga teng bo'lsa, piramidaning hajmini toping.
A) $\frac{32}{3}$

180. Arifmetik progressiyaning dastlabki 5 ta hadi yig'indisi 100 ga teng bo'lib, barcha hadlari natural sonlardan iborat. Bu progressiyaning eng katta hadi nechaga teng bo'lishi mumkin?

181. Muntazam uchburchakka tomoni uzunligi 1 ga teng bo'lgan kvadrat ichki chizilgan. Uchburchakning yuzini toping.

182. $(2;\ -3)$ nuqtani Ox o'qiga nisbatan simmetrik bo'lgan nuqtasini toping.

183. $y=3\sqrt{tgx-1}$ funksiyaning qiymatlar to'plamini toping. A) $[0;\infty)$

184. $2^{\sqrt{x-3}+1}-6 \ge 2^{\sqrt{x-3}-3}$ tengsizlikni yeching.

185. A shahardan B shaharga 6 xil usulda borish mumkin, B shahardan C shaharga esa 4 xil usul bilan borish mumkin. Agar A dan D ga 2 xil usul bilan, D dan B ga ham 2 xil usul bilan borish mumkin bo'lsa, A dan C ga necha xil usul bilan borish mumkin?
A) 40

186. Soddalashtiring: $\frac{tg2\alpha+1+ctg\left(2\alpha+\frac{3\pi}{2}\right)\cdot tg\left(\frac{3\pi}{2}+\alpha\right)}{ctg\alpha+tg\alpha}$

187. 5 ta har xil ruchka va 4 ta daftardan nech xil usul bilan ikkalasidan ham tanlab olish mumkin?

188. $sinx+cosx=1{,}04$ x ning qiymati qaysi chorakda joylashgan?
A) I B) I, II C) I,IV D) yechimga ega emas

189. Quyida berilgan tenglama ildizlari yig'indisini toping. $(x-3)^6+(x^2-2x-1)^3=0$
A) 2 B) 3 C) 1 D) 4

190. $y=2x^5-lnx$ funksiyaga $x_0=1$ nuqtada o'tkazilgan urinma tenglamasini tuzing.
A) $f(x)=11-9x$ B) $f(x)=9x+11$
C) $f(x)=9x-8$ D) $f(x)=-11-9x$

191. $y=\cos\frac{2x-11}{5}$ berilgan funksiyaning eng kichi musbat davrini toping.
A) 5π B) 2π C) 3π D) 4π

192. $(x^2+3x+1)(x^2+3x+3)<35$ tengsizlikning eng kata va eng kichik yechimlari ayirmasini toping.
A) 5 B) 3 C) 4 D) 6

193. Hisoblang: $\frac{1}{cos200^\circ}+4sin50^\circ$
A) 1 B) $\frac{\sqrt{3}}{2}$ C) $\sqrt{3}$ D) 2

194. To'g'ri burchakli uchburcha katetlari a va b ga teng, hamda o'tkir burchaklaridan biri x ga teng bo'lsa tgx ni toping.

195. $\sqrt{21-\sqrt{21+x}}=x$ tenglama nechta natural yechimga ega?
A) 0 B) 1 C) 2 D) 3

196. $f(x)=e^x-x-1$ funksiyaning o'sish oralig'ini toping.
A) $[0;\infty)$ B) $(1;\ \infty)$ C) $(-\infty;1)$ D) $[-2;5]$

197. Geometrik progressiyada $b_5-b_1=18$ va $b_3-b_1=12$ bo'lsa, b_{11} ni toping.
A) $-0{,}75$ B) 0,5 C) 1,5 D) $-0{,}5$

198. $f(x)=\left(\frac{1}{3}\right)^{x^2-6x+11}$ funksiyaning qiymatlar sohasini toping.
A) $[0;\ \infty)$ B) $\left(0;\frac{1}{9}\right]$ C) $\left(\frac{1}{3};\ \infty\right)$ D) $(3;\ \infty)$

199. $a=\frac{1}{6}((\log_2 3)^3-(\log_2 6)^3-(\log_2 12)^3+(\log_2 24)^3)$ bo'lsa, 2^a ni toping.
A) 72 B) 75 C) 80 D) 60

200. $\frac{x^2}{4}+\frac{9}{x^2}-2\left(\frac{x}{2}-\frac{3}{x}\right)-\frac{9}{4} \le 0$ tengsizlikni butun yechimlari nechta?
A) 3 ta B) 2 ta C) 1 ta D) yechimga ega emas

201. ABC uchburchakning tomonlari uzunliklari AB=5, BC=4 va CA=4 bo'lsa, $\overrightarrow{CA}\cdot\overrightarrow{CB}$ skalyar ko'paytmani hisoblang.

202. Hisoblang: $\left(27\cdot\left(10{,}6-\sqrt{3\sqrt[3]{9}}-9\frac{3}{5}\cdot\sqrt[3]{9\sqrt{3}}\right)\right)^{-\frac{18}{5}}$

203. $y=\ln(x^2-2x-3)$ funksiyaning manfiy qiymatlar qabul qiladigan butun x lar sonini toping.