

1) Teng yonli uchburchakning yon tomonlari a va asosi b ga teng bo'lsa, unga ichki va tashqi chizilgan aylana markazlari orasidagi masofani toping.

Javob: $\sqrt{R^2 - 2Rr}$ formulaga qo'yamiz.

2) 5 ta mandarin va 4 ta olmadan nechta mandarin va olma juftligini tuzish mumkin?

3) Teng yonli uchburchakning asosi 8 ga va yon tomoniga tushirilgan medianasi 10 ga teng bo'lsa, yon tomonini toping.

4) Katetlari a va b ga teng bo'lgan to'g'ri burchakli uchburchakning katta katetiga urinib shu katet qarshisidagi uch orqali o'tib, markazi gipotenuzada bo'lgan doiraning yuzini toping.

5) Katetlari a va b ga teng bo'lgan to'g'ri burchakli uchburchakning katta katetiga urinib shu katet qarshisidagi uch orqali o'tib, markazi gipotenuzada bo'lgan aylananing uzunligini toping.

6) Katetlari a va b ga teng bo'lgan to'g'ri burchakli uchburchakning katta katetiga urinib shu katet qarshisidagi uch orqali o'tib, markazi gipotenuzada bo'lgan doiraning radiusini toping.

7) Hisoblang:

$$\sqrt{4^{12} + 6^{13} + 9^{13}} - \sqrt{4^{12} - 6^{13} + 9^{13}}$$

8) Hisoblang:

$$\sqrt{4^{15} + 6^{16} + 9^{16}} - \sqrt{4^{15} - 6^{16} + 9^{16}}$$

9) 3 ta yashikda 64,2 kg olma bor. Ikkinchi yashikda birinchisining 0,8 qismicha olma, uchinchi yashikda ikkinchisining 42,5% iga teng olma bor bo'lsa, uchinchi yashikda qancha olma bor?

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uchinchi yashikda ikkinchisining 42,5% iga teng olma bor bo'lsa, birinchi yashikda qancha olma bor?

12) Uchburchakning uchta tomoni a, b, c ga teng bo'lsa, unga ichki chizilgan aylana radiusini toping.

13) Uchburchakning uchta tomoni a, b, c ga teng bo'lsa, unga tashqi chizilgan aylana radiusini toping.

14) Soddashtiring:

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

15) Soddashtiring:

$$7 \sin^2 \alpha + 7 \cos^2 \alpha - 5$$

16) $\frac{x^3+27}{x+3}$ ifodaning eng kichik butun qiymatini toping?

17) *Prizma* bu - ...

18) Tengsizlikni yeching. $2^{\sqrt{x+1}-6} \geq 2^{4-\sqrt{x+1}}$.

19) Teng yonli uchburchakning asosi a ga va yon tomoni b ga teng bo'lsa, asosidagi burchakning kosinusini toping.

20) Teng yonli uchburchakning asosi a ga va yon tomoni b ga teng bo'lsa, asosidagi burchakning sinusini toping.

21) Teng yonli uchburchakning asosi a ga va yon tomoni b ga teng bo'lsa, asosidagi burchakning tangensini toping.

22) Teng yonli uchburchakning asosi a ga va yon tomoni b ga teng bo'lsa, asosidagi burchakning kotangensini toping.

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26) Teng yonli uchburchakning asosi a ga va yon tomoni b ga teng bo'lsa, uchidagi burchakning kotangensini toping.

27) Prizmaning asosi tomonlari 5 va 6 bo'lgan hamda o'tkir burchagi 45° bo'lgan parallelogrammdan iborat. Agar prizmaning yon qirrasi 4 ga teng va u asos tekisligi bilan 30° burchak tashkil qilsa, prizma hajmini toping.

28) Prizmaning asosi tomonlari 5 va 6 bo'lgan hamda o'tkir burchagi 45° bo'lgan parallelogrammdan iborat. Agar prizmaning yon qirrasi 4 ga teng va u asos tekisligi bilan 30° burchak tashkil qilsa, yon sirtini toping.

29) Prizmaning asosi tomonlari 5 va 6 bo'lgan hamda o'tkir burchagi 45° bo'lgan parallelogrammdan iborat. Agar prizmaning yon qirrasi 4 ga teng va u asos tekisligi bilan 30° burchak tashkil qilsa, to'la sirtini toping.

30) Prizmaning asosi tomonlari 5 va 6 bo'lgan hamda o'tkir burchagi 45° bo'lgan parallelogrammdan iborat. Agar prizmaning yon qirrasi 4 ga teng va u asos tekisligi bilan 30° burchak tashkil qilsa, balandligini toping.

31) Teng yonli trapetsiyaning asoslari 30 va 24 ga teng. Bu trapetsiyaning diagonallari o'zaro perpendikulyar bo'lsa, uning yuzini toping.

32)

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

integralni hisoblang.

33) Bir burchagi 60° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning yuzini toping.

34) Bir burchagi 60° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning perimetrini toping.

35) Bir burchagi 60° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 60° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning tomonlarini toping.

36) Bir burchagi 30° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 30° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning yuzini toping.

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39) Bir burchagi 45° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 45° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning yuzini toping.

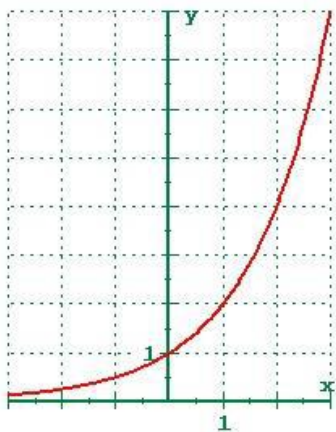
40) Bir burchagi 45° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 45° li burchak ular uchun umumiy, rombnning barcha uchlari rombnning tomonlarida yotadi. Uchburchakning perimetrini toping.

41) Bir burchagi 45° bo'lgan to'g'ri burchakli uchburchakka tomoni a ga teng bo'lgan romb shunday ichki chizilganki, 45° li burchak ular uchun umumiy, rombnings barcha uchlari rombnings tomonlarida yotadi. Uchburchakning tomonlarini toping.

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

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

44) Grafik ko'rinishda berilgan funksiyani toping:



$y = \log_2 x; y = 2^x; y = \left(\frac{1}{2}\right)^x; y = e^x$

45) Agar $f(x) = 6 + 5tg^2 x$ bo'lsa, $f'(\pi) = ?$

46) Tenglamaning ildizlari ko'paytmasini toping:

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

Javob: $x_1 = 2; x_2 = -2$

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

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

49) Agar nolga teng bo'lmagan $a, b, c \in \mathbb{R}$ sonlar uchun $\frac{a}{b+c} + \frac{b}{a+c} + \frac{c}{a+b} = 0$ bo'lsa, $\frac{a^2}{b+c} + \frac{b^2}{a+c} + \frac{c^2}{a+b} = ?$

Javob: -1

50) Hisoblang: $\sin\left(\frac{1}{2} \arcsin\left(-\frac{2\sqrt{2}}{3}\right)\right)$

51) Ifodani soddalashtiring:

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

52) To'g'ri keltirilgan integrallash formulasini ko'rsating:

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

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

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

Javob: 1; 3

53) Integralni hisoblang:

$$\int_{-2}^2 |x - 2| dx$$

54) Tenglamaning ildizlari yig'indisini toping:

$$\frac{(5^x - 25)(7^x - 7)}{\sqrt{7 - 5x}} = 0$$

Javob: $x = 1$

55) Hisoblang:

$$\sqrt{4^{10} + 6^{11} + 9^{11}} - \sqrt{4^{10} - 6^{11} + 9^{11}}$$

Javob: $= \sqrt{(2^{10} + 3^{11})^2} - \sqrt{(3^{11} - 2^{10})^2} = 2 \cdot 3^{11}$

56) Qiymatlar sohasini toping:

$$y = \arcsin\left(\left|x - \frac{1}{2}\right| + |x|\right)$$

Javob: $\left[\frac{\pi}{6}; \frac{\pi}{2}\right]$

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

Javob: 1 ta

58) $y = 4x^2$ va $y = -4x^2 - 8$ parabolalarga absissalar o'qi bilan o'tkir burchak tashkil qiladigan umumiy urinma o'tkazilgan. Shu urinmaning tenglamasini toping.

Javob: $y = 8x - 4$

59) $\int_0^1 x^9 \cdot (x^5 + 1)^{2n} \cdot (x^5 - 1)^{2n} dx = a$ bo'lsa, $\frac{1}{a} = ?$

60) Ifodaning qiymatini toping:

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

61) Ushbu $\log_{x^2} 13 = \log_{4-3x} 13$ tenglamaning ildizi 5 dan qanchaga kam?

62) Tenglamning ildizlari nisbatini toping:

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

63) Agar $f(x) = 6 - 5\text{tg}^2 x$ bo'lsa, $f'(\pi) = ?$

64) Bir nuqtadan aylanaga ikkita urinma o'tkazilgan. Har bir urinmaning uzunligi 12 sm, urinish nuqtalari orasidagi masofa 14,4 sm. Tekislikning shu aylana bilan chegaralangan soha yuzini toping.

65) Hisoblang: $\sin\left(\frac{1}{2} \arcsin\left(\frac{2\sqrt{2}}{3}\right)\right)$

66) Hisoblang:

$$1 - ((\cos \alpha - \cos \beta)^2 + (\sin \alpha - \sin \beta)^2) : \left(4 \sin^2 \frac{\alpha - \beta}{2}\right)$$

67) Uchta sonning uchinchi ikkinchisidan nechta ortiq bo'lsa, ikkinchi birinчисidan shuncha ortiq. Bu sonlardan ikkita kichigining ko'paytmasi 378, ikkita kattasining ko'paytmasi 504 ekanligi ma'lum, shu uchta sondan birinчисini toping.

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504 ekanligi ma'lum, shu uchta sondan uchinчисini toping.

70) Tenglamani yeching:

$$2^{\sin^2 x} + 2^{\cos^2 x} = 3$$

71) $\sin x + \sin\left(x + \frac{2\pi}{3}\right) + \sin\left(x + \frac{4\pi}{3}\right) = ?$

72) Agar nolga teng bo'lmagan $a, b, c \in \mathbb{R}$ sonlar uchun $\frac{a}{b+c} + \frac{b}{a+c} + \frac{c}{a+b} = -1$ bo'lsa, $\frac{a^2}{b+c} + \frac{b^2}{a+c} + \frac{c^2}{a+b} = ?$

73) $\int_1^2 \frac{3}{2x-1} dx$ integralni hisoblang.

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

Javob: javoblarni qo'yib ko'ramiz

75) $\int_0^{\frac{\pi}{2}} \frac{\cos x}{1 + \sin^2 x} dx$ ni hisoblang.

76) Ildizlari $x_1 = \frac{1}{10+6\sqrt{2}}$ va $x_2 = \frac{1}{10-\sqrt{72}}$ bo'lgan kvadrat tenglamani tuzing.

77) Ifodani soddalashtiring:

$$\frac{27 - \log_a^3 b^3}{(\log_a b + \log_b a + 1) \cdot \log_a \frac{a}{b}} \cdot \log_b^9 a = ?$$

78) Bir nuqtadan aylanaga ikkita urinma o'tkazilgan har bir urinmaning uzunligi 12 sm, urinish nuqtalari orasidagi masofa 14,4 sm. Shu aylananing radiusini toping.

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

80) Bir nuqtadan aylanaga ikkita urinma o'tkazilgan. Har bir urinmaning uzunligi 15 sm, urinish nuqtalari orasidagi masofa 24 sm. Shu aylananing uzunligini toping.

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

82) 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.

83) Quyidagi tasdiqlarning qaysilari to'g'ri?

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

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

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

84) Quyidagilardan qaysilari 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 $c > 0, b > a > 0$ bo'lsa, u holda $\frac{a}{b} > \frac{a+c}{b+c}$ bo'ladi.

85) Hisoblang:

$$\sqrt{4^8 + 2 \cdot 6^8 + 9^8} - \sqrt{4^7 + 6^8 + 9^8}$$

86) $\sqrt[3]{\frac{12}{5} \sqrt{\frac{244}{15(38^2 - 23^2)}}}$ ni hisoblang.

87) $\sqrt{4^{19} + 6^{20} + 9^{20}} + \sqrt{4^{19} - 6^{20} + 9^{20}}$ ifodani soddalashtiring.

88) Arifmetik progressiyada $a_{13} = 6a_8$ bo'lsa, uning dastlabki o'n uchta hadi yig'indisini toping.

89) Ifodani soddalashtiring: $\cos x + \operatorname{tg} x \cdot \sin x$

90) Agar $a = 6$ bo'lsa, ifodani soddalashtiring:

$$\frac{\left(25^{2 \log_4 25} + 2 \log_2 \log_2 \log_2 a^{2 \log_a 4}\right) \cdot 4^{-\frac{2}{\log_3 4}} - a^2}{1 - a}$$

91) Ifodani soddalashtiring: $\sqrt[5]{b^5} - \sqrt[4]{b^4} + \sqrt[6]{b^6} - \sqrt[7]{b^7}$, bu yerda $b < 0$.

92) $a^2 - b^2 + a + 7b - 12$ ni ko'paytuvchilarga ajrating.

93) Tenglamalar sistemasini yeching:

$$\begin{cases} 2^x \cdot 7^y = 28 \\ 2^x + 7^y = 11 \end{cases}$$

94) Perimetri 40 sm bo'lgan parallelogrammda diagonallar o'tkazilgan. Ikkita qo'shni uchburchaklar perimetrlari orasidagi ayirma 10 sm ga teng. Parallelogramm katta tomonining uzunligini toping.

95) $y = \frac{\sin x(\operatorname{ctg} x + 1) + \cos x(\operatorname{tg} x + 1)}{2}$ funksiyaning qiymatlari oshasini toping.

Javob: $[-\sqrt{2}; -1) \cup (-1; 1) \cup (1; \sqrt{2}]$

96) $f(x) = \frac{e^x}{\ln x} - \sqrt{\sin 3}$ bo'lsa, $f'(e) = ?$

97) $2^{\log_{0,8}(x) \log_{0,8}(1,25x)} > 1$ tengsizlikni yeching.

98) $2^{\sqrt{x-1}} - 6 \leq 2^{4-\sqrt{x-1}}$ tengsizlikni yeching.

99) $\int_{-5}^3 |x - 1| dx$ integralni hisoblang.

100) 1,2,2,3,3,3,4,4,4,4,5,5,5,5,6,6,6,6,6,... ketma - ketlikning 2017 - hadini toping?

101) $\sin^{100} x + \cos^{100} x = 1$ tenglamani yeching.

102) $x^{30} + x^{18} + x^7 + 1$ ko'phadni $x^6 - x^2$ ga bo'lgandagi qoldiqni toping.

103) $g(x) = x - 3$ va $f(g(x)) = 3x^2 - 7x + 5$ bo'lsa, $f'(g(x)) = ?$

104) $(x - 4)^3 + (x - 4)^2 + (x - 4)(x - 3) + (x - 3)^3 + (x - 3)^2 = 6$ tenglamani yeching.

105) $\int_1^2 \left(x + \frac{1}{x}\right)^2 dx$ integralni hisoblang.

106) Ifodani soddalashtiring:

$$\frac{1 - \log_a^3 b}{(\log_a b + \log_b a + 1) \cdot \log_a \frac{a}{b}} \cdot \log_{b^2} a$$

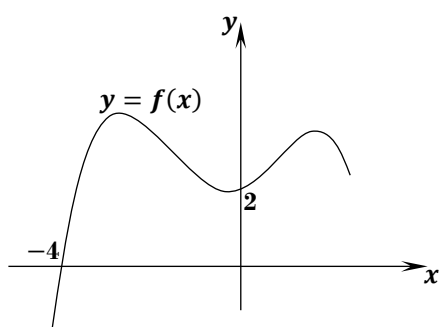
107) Agar $|a| \neq |b| \neq |c|$ va $\frac{a}{b+c} + \frac{b}{a+c} + \frac{c}{a+b} = 6$ bo'lsa, $\left(\frac{a^2}{b+c} + \frac{b^2}{a+c} + \frac{c^2}{a+b}\right) : (a + b + c) = ?$

108) 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?

Javob: 40

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

110) $y = f(x)$ funksiya grafigi berilgan. $\int_{-4}^0 |f(x)|^2 \cdot f'(x) dx$ integralni hisoblang.



111) $\int_{-3}^2 f(2x - 5) dx = 7$ bo'lsa, $\int_{-11}^{-1} f(x) dx$ ni qiymatini toping.

112) $\begin{vmatrix} 2018 & 2019 \\ 2020 & 2021 \end{vmatrix}$ determinantni hisoblang.

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

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

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

116) Ifodani soddalashtiring: $\cos^4 \alpha + \cos^2 \alpha \cdot \sin^2 \alpha$

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

118) Tenglamani ildizi 5 dan qanchaga kam?

$$\frac{(5^x - 25)(7^x - 49)}{\sqrt{7 + 5x}} = 0$$

119) 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.

120) $f(x + 1) = f(x) + 2x + 1$ va $f(0) = 1$ bo'lsa, $f(15) = ?$

121) n sonining natural bo'luvchilari ketma - ket yozib chiqildi. 6 - va 20 - o'rinda turgan sonlarning ko'paytmasi n ga teng bo'lsa, n ning natural bo'luvchilari nechta?

122) To'g'ri burchakli uchburchakning gipotenuzasida nuqta olingan va shu nuqtadan katetlarga bo'lgan masofalar teng. Bu nuqta gipotenuzani 30 va 40 smli kesmalarga ajratadi. Uchburchakning yuzini toping.

123) $y = |x^2 + 2x - 3| - |x + 1|$ bo'lsa, $f'(1) = ?$

124) $\frac{\sin \alpha - \sin 2\alpha + \sin 3\alpha}{\cos \alpha - \cos 2\alpha + \cos 3\alpha}$ ifodani soddalashtiring.

125) $A(1; 3; 5)$ va $B(-2; 3; 5)$ nuqtalar berilgan. $C(x; 0; 0)$ nuqta A va B nuqtalardan bir xil uzoqlikda bo'lsa, $x = ?$

126) $\frac{\log_a b + \log_b a + 2}{(\log_a b + \log_{ab} b)^{-1}} \cdot \log_b a + 2$ ifodani soddalashtiring.

127) $\frac{\sin 3\alpha - \sin 4\alpha + \sin 5\alpha}{\cos 3\alpha - \cos 4\alpha + \cos 5\alpha}$ ifodani soddalashtiring.

128) ABC uchburchakda $\angle C = 90^\circ$, $\cos B = \frac{5}{13}$, $AB = 39$ bo'lsa, $AC = ?$

129) $f(2x - 1) = x^2 - x + 3$ bo'lsa, $f'(x)$ ga teskari funksiyani toping.

130) $-\frac{60}{|x|+7} < |x| - 9$ tengsizlikni qanoatlantirmaydigan butun sonlar nechta?

131) $\arcsin x \cdot (4 \arcsin x + 3 \arccos x) = \pi^2$ tenglamani yeching.

132) $(-3; -4)$ nuqtadan Ox o'qigacha bo'lgan masofani toping.

133) $(-3; -4)$ nuqtadan Oy o'qigacha bo'lgan masofani toping.

134) $3^{2x+1} - 5 \cdot 6^x + 2^{2x+1} = 0$ tenglamani yeching.

135) $b_1 + b_2 + b_3 = 126$ va $b_1 \cdot b_2 \cdot b_3 = 13824$ geometrik progressiyada b_1, b_2, b_3 sonlardan o'rtanchasining kvadratini toping.

136) Integralni hisoblang:

$$\int_1^4 \frac{1}{x^2} dx$$

137) $(m - 2)x^2 - 8x + 5$ ifoda x ning barcha qiymatlarida -2 dan kichik bo'lsa, m ni toping.

138) $2^{\sqrt{x-3}+1} - 6 \leq 2^{3-\sqrt{x-3}}$ tengsizlik nechta butun yechimga ega?

139) Agar $|a| \neq |b| \neq |c|$ va $\frac{a^2}{b+a} + \frac{b^2}{b+c} + \frac{c^2}{a+c} = 2$ bo'lsa, $\frac{b^2}{b+a} + \frac{c^2}{b+c} + \frac{a^2}{a+c} = ?$

140) $\log_{x-2}(x^3 - 14) = 3$ tenglamaning ildizlari yig'indisini toping.

141) $(\log_{11} x)^2 \leq 1$ tengsizlikning eng katta va eng kichik yechimlarining ko'paytmasini toping.

142) $\overline{53X2Y}$ sonni 10 ga bo'lganda 4 qoldiq qolsa, X ning qiymatlarini toping.

143) $y = e^{x^2+\ln x} + 2x$ bo'lsa, $y'(1) = ?$

144) x ning qanday qiymatlarida $f(x) = x^2 - 3x + 1$ funksiyaning hosilasi o'zidan kichik bo'ladi?

145) $7x^3 - 14x - ax^2 + a + 2 = 0$ tenglama uchta ildizga ega bo'lib, ikkitasi qarama - qarshi sonlar bo'lsa, $a^2 + 3$ ni toping.

146) $f(x) = \left\lfloor \frac{x-2}{5} \right\rfloor$ bo'lsa, $f'(10)$ ni toping. Bu yerda $[a] - a$ sonning butun qismi.

147) Temirning 72%i kesib olindi. Qolgan qismining og'irligi 64,2 kg bo'lsa, temirning kesib olingan qismining og'irligini toping.

148) $\left| \frac{6-3x}{1+3x} \right| > 0$ tengsizlikni yeching.

149) $ABCD A_1 B_1 C_1 D_1$ to'g'ri burchakli parallelepiped berilgan. $AB = 8, BC = 2, BB_1 =$

6 bo'lsa, $ABCDB_1 C_1$ ko'pyoqning to'la sirti yuzini toping.

150) $\cos(\pi x) = 1$ tenglamaning (1; 6) oraliqdagi ildizlari ko'paytmasini toping.

151) Geometrik progressiyada $\begin{cases} b_1 + b_4 = 27 \\ b_2 b_3 = 72 \end{cases}$ bo'lsa, $S_4 = ?$

152) $|x - 3| < 4$ tengsizlikning butun ildizlarini toping.

153) Koordinatalar tekisligida $|x| + |y - 1| \leq 4$ tengsizlikning yechimlari hosil qilgan soha yuzini toping.

154) Koordinatalar tekisligida $|x + 3| + |y - 1| \leq 2$ tengsizlikning yechimlari hosil qilgan soha yuzini toping.

155) $(2x - 1)^{10}(x + 1)^2$ ko'phadning koeffitsiyentlari yig'indisini toping.

156) 10 kishi tennis musobaqasida oltin, kumush va bronza medallarini necha xil usulda olishi mumkin?

157) 5, 9, 13, ... ketma - ketlikning nechta hadi yig'indisi 13705 bo'ladi?

158) $f(x) = \begin{cases} 2b^2 x^2 + 2ax + 2, & x \geq 2 \\ x^2 + 2bx + 1, & x < 2 \end{cases}$ va $f'(1) = 3, f'(3) = 4$ bo'lsa, $(a + b)^3 = ?$

159) $\overline{X714Y5}$ soni 55 ga bo'linsa, $X = ?$

160) Soddashtiring: $\operatorname{tg} \alpha + \operatorname{ctg} \alpha + \operatorname{tg} 3\alpha + \operatorname{ctg} 3\alpha = ?$

161) R radiusli aylanaga trapetsiya ichki chizilgan. Trapetsiyaning pastki asosi qolgan tomonlaridan ikki marta 2 marta katta. Trapetsiyaning yuzini toping.

162) $\frac{1}{\sin 200^\circ} + \frac{1}{\sqrt{3} \cos 20^\circ} = ?$

163) $\sin 200x \cos 199x - \sin 199x \cos 200x = 0$ tenglama $[0; 4\pi]$ oraliqda nechta yechimga ega?

164) Hisoblang: $\int_4^{16} \sqrt{x} dx = ?$

165) $y = 5 - 3^{x-2}$ funksiyaning qiymatlari sohasini toping.

166) Muntazam uchburchakli $ABCA_1B_1C_1$ prizmaaning asosi tomoni 1 ga teng. $|\overrightarrow{CE} - \overrightarrow{CB_1}| = ?$

167) 5 ta olma, 4 ta nok, 2 ta behidan bittadan olib nechta guruhlash tuzish mumkin?

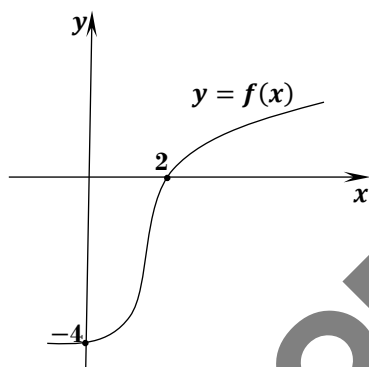
168) $\log_5^2(5x - 4) = 5 \log_5(5x - 4)$ tenglamani yeching.

169) Agar $(x - 5)^{10} + (2x - 9)^5 = 0$ bo'lsa, $10 - x = ?$

170) $\sqrt{12 - \sqrt{80}} - \sqrt{12 + \sqrt{80}} = ?$

171) Kubning diagonali va u bilan kesishmaydigan qirrasidagi masofa 5 ga teng bo'lsa, kubning hajmini toping.

171) $y = f(x)$ funksiya grafigi berilgan. $\int_0^2 [f(x)]^3 \cdot f'(x) dx$ integralni hisoblang.



172) To'g'ri burchakli uchburchakning gipotenuzasida nuqta olingan va shu nuqtadan katetlarga bo'lgan masofalar teng. Bu nuqta gipotenuzani $\frac{100}{3}$ va $\frac{50}{3}$ smli kesmalarga ajratadi. Uchburchakning katta katetini toping.

173) Agar $\log_2 \left(\log_{\frac{1}{2}} (\log_{625} (x^2 + x - 1)) \right) = 1$ bo'lsa, $x = ?$

174) $A = \{x: |x - 3| < 4, x \in \mathbb{N}\}$ to'plamning elementlari sonini toping.

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

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

$$177) \sqrt{x + \sqrt{4x + \sqrt{16x + \sqrt{\dots + \sqrt{4^{10}x + 1}}}}} =$$

$\sqrt{x} + 1$ tenglamaning natural sonlardan iborat nechta yechimi bor?

178) Agar $m = a \sin x + b \cos x$ va $n = -\sqrt{a^2 + b^2}$ bo'lsa, x nng istalgan qiymati uchun quyidagilardan qaysi biri o'rinli?

1) $m > n$; 2) $m < n$; 3) $m \geq n$; 4) $m \leq n$.

179) $y = |x - 4| - x^2$ funksiyaning monoton o'sish oralig'ini toping.

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

181) Arifmetik progressiyada $9a_{11} = a_{19}$ bo'lsa, uning dastlabki 19 hadi yig'indisini toping.

182) Arifmetik progressiyada $a_9 = 4a_6$ bo'lsa, uning dastlabki 9 hadi yig'indisini toping.

183) Hech bir uchtasi bir to'g'ri chiziqda yotmaydigan 25 ta nuqtadan nechta uchburchak yasash mumkin?

184) $2x^2 - (2\sqrt{3} + 3\sqrt{2})x + \sqrt{6} + 2 = 0$ tenglamaning kichik ildizini toping.

185) 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 qoldiqni toping.

186) Ikkita son o'rta proporsionali shu sonlarning kichigidan 6 ga ko'p, o'rta arifmetigi esa kattasidan 7 ga kam bo'lsa, shu sonlarni toping.

187) $\sqrt{21 - \sqrt{21 + x}} = x$ tenglama nechta natural yechimga ega?

188) $f(x) = \left(\frac{1}{3}\right)^{x^2 - 6x + 11}$ funksiyaning qiymatlari sohasini toping.

189) $a = \frac{1}{6} (\log_2^3 3 - \log_2^3 6 - \log_2^3 12 + \log_2^3 24)$ bo'lsa, 2^a ni toping.

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

191) $(1 - 2)^2 + (3 - 4)^2 + (5 - 6)^2 + (7 - 8)^2 + \dots + (17 - 18)^2 - ((15 - 17)^2 + (13 - 15)^2 + \dots + (1 - 3)^2)$ ni hisoblang.

192) Asosi muntazama uchburchakdan tashkil topgan piramidani apofemasi 15 ga, balandligi 9 ga teng bo'lsa, piramidaning hajmini toping.

193) $\frac{3}{|x-1|+1} \geq |x-1| - 1$ tengsizlik nechta butun yechimga ega?

194) $\int_{\frac{3\pi}{2}}^{2\pi} \cos\left(2x + \frac{\pi}{4}\right) dx$ integralni hisoblang.

195) $\cos 140^\circ + \cos 120^\circ + \cos 20^\circ$ ni hisoblang.

196) $9 \cdot 10^{\frac{1}{\log_x^2 10}} + x^{2 \lg x} - 190 = 0$ tenglamani yeching.

197) $y = 2^x - 2$ funksiyaning qiymatlari sohasini toping.

198) $(a - 7b)^2 - 42b + 6a$ ifodaning eng kichik qiymatini toping.

199) $ABCD$ trapetsiyaning asoslari $AD = 30$ va $BC = 24$ hamda $\angle A = 60^\circ$. Diagonallari O nuqtada kesishadi. COD uchburchak yuzini toping.

200) Konusning yasovchisi 15 ga teng. Yon sirtining yuzi 135π ga teng bo'lsa, shu konusga ichki chizilgan shar hajmini toping.

201) $f(x) = (a + b - 6)x^3 + 2x^2 + (b - 3)x$ funksiya juft funksiya bo'lsa, $f(a) + f(b)$ ni toping.

202) To'g'ri burchakli trapetsiyaning diagonal yon tomoniga teng. Balandligi 6 ga teng bo'lsa, o'rta chizig'ini toping.

203) Koordinatalar tekisligida $|x + 3| + |y + 1| \leq 6$ tengsizlikning yechimlari tashkil etgan sohaning yuzini toping.

204)
$$\sqrt{x + \sqrt{4x + \sqrt{16x + \sqrt{\dots + \sqrt{4^{10}x + 3}}}}} =$$

$\sqrt{x} + 1$ tenglamaning natural sonlardan iborat nechta yechimi bor?

205) $1^3 + 2^3 + 3^3 + \dots + 12^3$ son qaysi sonning kvadrati bo'ladi?

206) Quyidagilardan qaysi biri $f(x) = [x]$ funksiyaning grafigi bo'ladi?

207) Quyidagilardan qaysi biri $f(x) = \{x\}$ funksiyaning grafigi bo'ladi?

208) $ABCD$ qavariq to'rtburchakka aylana ichki chizilgan. $AB = 3, BC = 4, CD = 5$ bo'lsa, $AD = ?$

209) Agar $f(x) = \lg(x^2 - 6x + 8)$ bo'lsa, $f'(x)$ funksiyaning qiymatlari sohasini toping.

210) Yon tomoni 17 ga teng bo'lgan teng yonli trapetsiyaga diametri 15 ga teng bo'lgan aylana ichki chizilgan. Trapetsiyaning asoslarini toping.

211) $\left(\frac{33}{21^3 \sqrt{18^3/81} - 15^3 \sqrt{4^3/192}}\right)^{-9}$ ni hisoblang.

212) $f(x) = \ln(x^2 - 5x + 6)$ funksiyaning aniqlanish sohasini toping.

213) $\left(625^{\frac{1}{4} - \frac{1}{2} \log_{25} 4} + 8\right) \cdot \sqrt{2} - 8$ ni hisoblang.

214) Agar $\begin{cases} \operatorname{tg} \alpha + \operatorname{tg} \beta = 4 \\ \operatorname{ctg} \alpha + \operatorname{ctg} \beta = 2 \end{cases}$ bo'lsa, $\operatorname{tg}(\alpha + \beta) = ?$

215) $a \geq 0, b > 0, \sqrt{a} \geq b$ bo'lsa, $\sqrt{\frac{a+b^2}{b} + 2\sqrt{a}} - \sqrt{\frac{a+b^2}{b} - 2\sqrt{a}} = ?$

217) $ABCD$ parallelogramning BC tomonida E nuqta olingan. A burchak bissektrisasi E nuqtada BC tomon bilan kesishadi. $AB = 9, AD = 15$ bo'lsa, BE va EC ni toping.

218) $\cos \frac{2\pi x}{3} = 3^{\sqrt{x^2 - x - 12}}$ tenglamani yeching.

219) $\int_0^2 f(2x + 3) dx = 15$ bo'lsa, $\int_0^{10} f(x) dx = ?$

220) $\int_{-3}^1 \frac{1}{x^3} dx$ integralni hisoblang.

221) $y = \left(\frac{2}{3}\right)^{-2+x^2}$ funksiyaning qiymatlari to'plamini toping.

222) $f(x) = x^7 - \ln x$ funksiya grafigiga $x = 1$ nuqtada o'tkazilgan urinmaning tenglamasini tuzing.

223) $\int (kx + b)^p + 4 dx$ integralni hisoblang.

224) $\sqrt{x + 2\sqrt{x-1}} - \sqrt{x - 2\sqrt{x-1}}$ ifodaning $x = 2,01$ dagi qiymatini hisoblang.

225) $\left| \frac{x^2 - 5x + 6}{x - 3} \right| \geq \frac{4}{5}$ tengsizlikni yeching.

226) 300 dan keyin keladigan to'rtinchi tub sonni 2 ga bo'lgandagi qoldiqni toping.

Javob: nechinchi tub son bo'lishidan qat'iy nazar doim 1 ga teng.

227) $|x^2 - 11x + 24| = |x^2 - 12|$ tenglamaning natural ildizlari yig'indisining eng katta ildiziga nisbatini toping.

228) $\operatorname{tg}^2 \varphi + \operatorname{ctg}^2 \beta$ ning eng kichik qiymatini toping.

229) $y = \ln x^{\ln x^{\ln x}}$ bo'lsa, $y' = ?$

230) $y = ax^2 - bx + c$ funksiyaning grafigi 1 -, 2 -, 4 - choraklardan o'tishi uchun a, b, c lar qanday munosabatda bo'lishi kerak?

231) Qirradi 50 sm ga teng kubning ichini qirradi 5 sm ga teng kubchalar bilan to'ldirish uchun nechta kubcha kerak bo'ladi?

232) $\overline{43X5Y}$ sonni 10 ga bo'lgandagi qoldig'i 4 ga teng hamda 9 ga qoldiqsiz bo'linsa, x ning olishi mumkin bo'lgan eng kichik qiymatini toping?

233) To'g'ri burchakli uchburchakning gipotenuzasi 6 ga, ichki chizilgan aylana radiusi 1 ga teng bo'lsa, uchburchakning perimetrini toping.

$$234) \frac{\sqrt{5-\sqrt{5-\sqrt{5-\dots}}}}{\sqrt{6-\sqrt{6-\sqrt{6-\dots}}}} - \frac{\sqrt{7-\sqrt{7-\sqrt{7-\dots}}}}{\sqrt{8-\sqrt{8-\sqrt{8-\dots}}}} = ?$$

235) Muntazam ko'pburchakka ichki va tashqi chizilgan aylanalarda radiuslari R va r , tomoni a ga teng bo'lsa, $\frac{(R-r)(R+r)}{a^2}$ ni toping.

236) $\int \sin 3x dx$ ni toping.

237) $x \cdot \sqrt{x^2 - 10} \geq x^2 - 6$ tengsizlikni qanoatlantiruvchi butun sonlarning yig'indisini toping.

238) 6 xonali son berilgan. Uning birinchi raqami 1 ga teng. Shu sonning birinchi raqamini uning oxiriga ko'chirib, berilgan sondan uch marta katta son hosil bo'ladi. U qaysi son?

239) $\sin 54^\circ \sin 18^\circ$ ni hisoblang?

240) Teng yonli to'g'ri burchakli uchburchakka ichki chizilgan aylana radiusi r ga teng bo'lsa, uning yarim perimetrini toping.

241) Agar $a^4 \sqrt[4]{b} = c^3$ bo'lsa, $4 \log_2 a^2 + \log_4 b - \log_{\sqrt{2}}(2c^3)$ ni hisoblang.

242) $a + 2b + 2c = 0$ bo'lsa, $\frac{a}{b+c} + \frac{b}{a+2c} + \frac{c}{a+2b} = ?$

243) $\int_2^{14} \frac{4}{x \ln 7} dx$ integralni hisoblang.

244) $|x| + a - 3 \geq 0$ tengsizlik x ning barcha qiymatlarida o'rinli bo'lsa, $a = ?$

245) $(2 + \operatorname{tg}^2 \alpha + \operatorname{ctg}^2 \alpha) \cdot \operatorname{tg}^2 \alpha$ ifodani soddalashtiring.

246) Arifmetik progressiyada $a_{15} = 37$, $a_5 + a_6 = 36$ bo'lsa, $a_1 \cdot a_2 = ?$

247) $\begin{cases} x^2 - 3xy = 6 \\ 4y^2 - xy = 3 \end{cases}$ tenglamalar sistemasi nechta yechimga ega?

248) $y = -2,6x + b$ funksiyaning grafigi $C\left(1; \frac{1}{2}\right)$ nuqtadan o'tsa, b ni toping.

249) $A(-a - 2; a - 5)$ nuqta koordinatalar tekisligining 4 - choragida joylashgan bo'lsa, $a = ?$

250) n ta uchi bo'lgan prizmaning nechta diagonal kesimi mavjud?

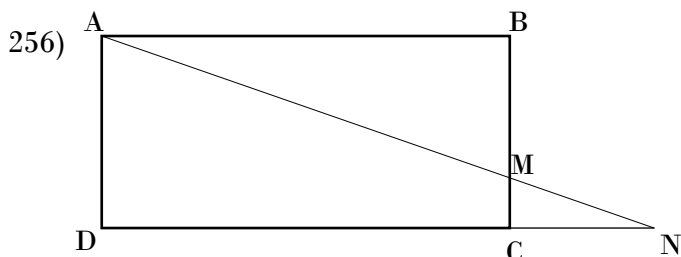
251) $\frac{1}{2 \cdot 5} + \frac{1}{5 \cdot 8} + \frac{1}{8 \cdot 11} + \frac{1}{11 \cdot 14} + \frac{1}{14 \cdot 17}$ ni hisoblang.

252) $\frac{1}{\operatorname{tg}^2 \alpha} + \frac{1}{\operatorname{ctg}^2 \alpha} + \frac{1}{\sin^2 \alpha} + \frac{1}{\cos^2 \alpha} - 2$ ni soddalashtiring.

253) Alpinist birinchi kuni 800 m balandlikka chiqdi. Qolgan kunlari oldingi kunga qaraganda 25 m kam balandlikka chiqdi. U 6300 m ga necha kunda ko'tarilgan?

254) $(a + b + c) : \left(\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right) : \frac{\frac{1}{a} + \frac{1}{b} + \frac{1}{c}}{a+b+c}$ ifodani soddalashtiring.

255) $2x^{2-1} - 3x^2 = 3x^{2-1} - 2x^{2+2}$ tenglamaning ildizlarini toping.



$BM:MC = 3:1$ va $S_{MNC} = 12$ bo'lsa, $S_{ABCD} = ?$

257) Argumentning qanday qiymatida $y = \frac{1}{|x+2|-|x-2|}$ funksiyaning qiymati 1 ga teng bo'ladi?

258) $x^{\lg^2 x} \cdot 2^{-\lg x} = 1$ tenglamani yeching.

259) $\log_{\frac{1}{11+x^2}}(12x - 24) > -1$ tengsizlikni yeching.

260) ABC uchburchak balandliklari kesishish nuqtasi H , ichki chizilgan aylana markazi esa I . Agar $\angle A = 40^\circ, \angle B = 75^\circ$ ga teng bo'lsa, IAH burchakni toping.

261) $\int_0^1 f(3x - 5) dx = 8$ bo'lsa, $\int_{-5}^{-2} f(x) dx$ ning qiymatini toping.

262) $1^3 + 2^3 + 3^3 + \dots + 10^3$ qaysi sonning kvadrati?

263) 6 ni 7 ga bo'lganda hosil bo'ladigan sonning 2018-o'rnida turgan raqamini toping.

264) $x^2 - 7|x| + 10 = a$ tenglama a ning qanday qiymatida 3 ta yechimga ega bo'ladi?

265) To'g'ri burchakli uchburchakning o'tkir burchagi bissektrisasi qarshisidagi katetni 2 va 3 ga teng kesmalarga ajratadi. Uchburchakning yuzini toping.

266) Agar $f^3(x)$ va $\frac{1}{f(x)}$ funksiyalarning $x = 1$ nuqtadagi hosilalari 9 va -3 bo'lsa, $f'(1)$ ni toping.

267) $1 + 2 + 2^2 + \dots + 2^{22}$ ni hisoblang.

268) Tenglamani yeching:

$$\sqrt{x + \sqrt{x + \sqrt{x + \dots}}} = \sqrt{x \sqrt{x \sqrt{x \dots}}}$$

269) Aniqmas integralni hisoblang: $\int x \cdot \ln x dx$

270) Tenglamani yeching: $|\sin x + \cos x| = \sqrt{2} \sin 2x$

271) $\frac{\sqrt{21+12\sqrt{3}} - \sqrt{|12\sqrt{3}-21|}}{\sqrt{3}}$ ni hisoblang.

272) $xy = 5, x + y = -5$ bo'lsa, $(3 + 2x)^2 y + (3 + 2y)^2 x$ ni toping.

273) Diyora dugonasining telefon raqamining oxirgi raqamini esidan chiqarib qo'ydi. Uning bir urinishda unutilgan raqamni topish imkonining ehtimoli nimaga teng?

Javob: $\frac{1}{10}$

274) $\frac{1}{p}$ sof davriy kasrning 2018 - raqami 2 ga teng bo'lsa, $\frac{p-1}{p}$ ning 2018 - raqamini toping.

275) Tomoni a ga teng bo'lgan kvadrat shunday qir qilganki, natijada eng katta yuzaga ega bo'lgan muntazam sakkizburchak hosil bo'lgan. Sakkizburchakning yuzini toping.

276) $y = |x^2 - 6x - 1|$ funksiyaning eng kichik qiymatini toping.

277) $f(x) = \log_3(-x^2 + 4x + 12)$ funksiyaning qiymatlari sohasini toping.

278) $x^4 + 3x^3 - 2x^2 + 4x - 5$ ko'phadni $-5x$ ga bo'lgandagi qoldiqni toping.

279) Soddalashtiring: $\frac{1}{\sin 70^\circ} + 4 \cos 140^\circ$

280) $|3 + 2x - x^2| = a$ tenglama a ning qanday qiymatlarida 3 ta yechimga ega?

281) $\frac{x}{10} + \frac{y}{12} = 0,15$ to'g'ri chiziqning Oy o'qi bilan hosil qilgan burchagi α bo'lsa, $\operatorname{tg}\alpha + \operatorname{ctg}\alpha$ ni toping.

282)

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