

Ikki yoqli, ko'p yoqli burchaklar va ularning tekis burchaklariga oid misol va masalalar yechish.

Teng yonli trapetsiyada diagonallari o'zaro perpendikulyar bo'lib, o'rta chizig'i m ga teng. Trapetsiyaning balandligini toping.

$$\text{Soddalashtiring: } \frac{a^3 - 2a^2 + 5a + 26}{a^3 - 5a^2 + 17a - 13}$$

$$\text{Hisoblang: } \sin 10^\circ \sin 30^\circ \sin 50^\circ \sin 70^\circ$$

$$\text{Tenglamani yeching: } \log_x 2 \cdot \log_{2x} 2 = \log_{4x} 2$$

Ko'p yoqli shakllar, ularning sirtlari, hajmlari.

To'g'ri burchakli ABC uchburchakning AB gipotenuzasiga uchburchakni qoplamaydigan qilib kvadrat chizilgan. Agar katetlar yig'indisi a ga teng bo'lsa, C uchidan kvadrat markazigacha bo'lgan masofani toping.

$$\text{Soddalashtiring: } \frac{\sqrt[3]{2a + 2\sqrt{a^2 - 1}}}{\left(\frac{\sqrt{a-1}}{\sqrt{a+1}} + \frac{\sqrt{a+1}}{\sqrt{a-1}} + 2\right)^{1/3}}$$

$$\text{Tenglamani yeching: } \cos 3x - \sin x = \sqrt{3}(\cos x - \sin 3x)$$

$$\text{Tenglamalar sistemasini yeching: } \begin{cases} \frac{x^2}{y} + \frac{y^2}{x} = 12 \\ \frac{1}{x} + \frac{1}{y} = \frac{1}{3} \end{cases}$$

Ko'pyoqli shakllar ta'rifi, ularning sirtlari, hajmlari, asosiy tushunchalari va formulalari.

Uchburchakning bir uchidan o'tkazilgan balandlik va mediana shu uchda joylashgan burchakni uchta teng bo'lakka bo'ladi. Uchburchakning burchaklarini hisoblang.

$$\text{Soddalashiring: } \frac{p^3 + 4p^2 + 10p + 12}{p^3 - p^2 + 2p + 16} \cdot \frac{p^3 - 3p^2 + 8p}{p^2 + 2p + 6}$$

$$\text{Hisoblang: } \operatorname{tg}\left(\arccos\left(-\frac{7}{25}\right) - \arcsin\frac{12}{13}\right)$$

$$\text{Tenglamani yeching: } x^2 + 2x\sqrt{x} + 2x + \sqrt{x} = 30$$

Aylanish jismlari, ularning sirtlari va hajmlari, asosiy tushunchalari, formulalari.

ABC uchburchakning AC va AB tomonlarining uzunliklari b va c ga, AA_1 medianasining uzunligi \sqrt{bc} ga teng bo'lsa, A burchakning qiymatini toping.

$$\text{Soddalashtiring: } \frac{(a^2b\sqrt{b} - 6a^{5/3}b^{5/4} + 12ab\sqrt[3]{a} - 8ab^{3/4})^{2/3}}{ab\sqrt[3]{a} - 4ab^{3/4} + 4a^{2/3}\sqrt{b}}$$

$$\text{Tenglamani yeching: } \sin 2x = \cos^4 \frac{x}{2} - \sin^4 \frac{x}{2}$$

$$\text{Tenglamalar sistemasini yeching: } \begin{cases} x^2 + y^2 = 7 + xy \\ x^3 + y^3 = 6xy - 1 \end{cases}$$

Ko'pyoqlarning o'zaro kombinatsiyasiga oid masalalar. Aylanma shakllarning o'zaro kombinatsiyasiga oid masalalar.

Aylanaga ichki chizilgan $ABCD$ to'rtburchakda $AB = \frac{1}{2}AD$, $BC = \frac{1}{2}CD$, $AB = a$, $AC = b$ bo'lsa, BC ning uzunligini toping.

$$\text{Soddalashtiring: } \left(\frac{(x + \sqrt[3]{2ax^2})(2a + \sqrt[3]{4a^2x})^{-1}}{\sqrt[3]{x} - \sqrt[3]{2a}} - (2a)^{-1/3} \right)^{-6}$$

$$\text{Hisoblang: } 2\sin 40^\circ + 2\cos 130^\circ - 3\sin 160^\circ - 3\cos(-110^\circ)$$

$$\text{Tenglamani yeching: } \log_5^3 x + \log_{5x} \frac{5}{x} = 1$$

Bir xil argumentli trigonometrik funksiyalar orasidagi munosabatlar.

Tomonlari $AB=6$ sm, $AC=4$ sm, $BC=5$ sm bo'lgan ABC uchburchakning AC tomonida $AK=3$ sm, AB tomonida $AL=2$ sm bo'lgan kesmalar ajratilgan. $BLKC$ to'rtburchakning perimetri va uning diagonallaridan yasalgan to'g'ri to'rtburchakning yuzini toping.

$$\text{Soddalashtiring: } \left(2 - \frac{1}{4a^{-1}} - \frac{4}{a} \right) \left((a-4)\sqrt[3]{(a+4)^{-3}} - \frac{(a+4)^{3/2}}{\sqrt{(a^2-16)(a-4)}} \right)$$

$$\text{Hisoblang: } \sin \frac{3\pi}{10} - \sin \frac{\pi}{10}$$

$$\text{Tenglamani yeching: } 2x^{\lg x} + 3x^{-\lg x} = 5$$

Trigonometrik funksiyaning ko'paytmasini yig'indiga va teskarisiga almashtirish formulalari.

Teng yonli trapetsiyaning asoslari 16 sm va 12 sm, balandligi esa 14 sm ga teng. Trapetsiyaga tashqi chizilgan doiraning yuzini aniqlang.

$$\text{Soddalashtiring: } \frac{x^2 + 2x - 3 + (x+1)\sqrt{x^2-9}}{x^2 - 2x - 3 + (x+1)\sqrt{x^2-9}}; x > 3$$

$$\text{Tenglamani yeching: } \cos x \sin 7x = \cos 3x \sin 5x$$

$$\text{Tenglamani yeching: } \left(\sqrt{4 + \sqrt{15}} \right)^x + \left(\sqrt{4 - \sqrt{15}} \right)^x = 8$$

Teskari trigonometrik funksiyalar va ularning xossalari, grafiklari.

Agar $AC+CD=m$ va $AB-BD=n$ lar ma'lum bo'lsa, ABC uchburchakning AD bissektrisasini toping.

$$\text{Soddalashtiring: } \frac{2a^4 + a^3 + 4a^2 + a + 2}{2a^3 - a^2 + a - 2}$$

$$\text{Hisoblang: } \frac{1 - 4\sin 10^\circ \sin 70^\circ}{2\sin 10^\circ}$$

$$\text{Tenglamani yeching: } x^{1+\log_3 x} = 9x^2$$

Trigonometrik funksiyalar orasidagi munosabatlar. Trigonometrik tengliklar

$ABCD$ romb berilgan. Uning diagonallari 3 sm va 4 sm ga teng. B o'tmas burchakning uchidan BE va BF balandliklar o'tkazilgan. $BFDE$ to'rtburchakning yuzini hisoblang.

$$\text{Soddalashtiring: } \left(\frac{z-2}{6z+(z-2)^2} + \frac{(z+4)^2-12}{z^3-8} - \frac{1}{z-2} \right) : \frac{z^3+2z^2+2z+4}{z^3-2z^2+2z-4}$$

Tenglamani yeching: $\sin x \cos 2x + \cos x \cos 4x = \sin\left(\frac{\pi}{4} + 2x\right) \sin\left(\frac{\pi}{4} - 3x\right)$

Tenglamalar sistemasini yeching:
$$\begin{cases} \frac{x^2}{y} + \frac{y^2}{x} = 12 \\ \frac{1}{x} + \frac{1}{y} = \frac{1}{3} \end{cases}$$

Arkfunksiyalarning trigonometrik funksiyalari. Arkfunksiyalar orasidagi bog'lanishlar Medianalarining uzunliklari 12, 15, 21 sm bo'lgan uchburchakning yuzini toping.

Soddalashtiring: $\left(\frac{z-2}{6z+(z-2)^2} + \frac{(z+4)^2-12}{z^3-8} - \frac{1}{z-2}\right) : \frac{z^3+2z^2+2z+4}{z^3-2z^2+2z-4}$

Hisoblang: $\sin\left(2\left(\arcsin\frac{\sqrt{5}}{3} - \arccos\frac{\sqrt{5}}{3}\right)\right)$

Tenglamani yeching: $\log_4 \log_2 x + \log_2 \log_4 x = 2$

Trigonometrik funksiyalarning arkfunksiyalari. Arkfunksiyalarning trigonometrik funksiyalari.

parallelogrammning tomonlari a va b , diagonallari orasidagi o'tkir burchagi α . Parallelogrammning yuzini toping.

Soddalashtiring: $(\sqrt[3]{m^2} + n\sqrt[3]{m} + n^2) \frac{\sqrt[3]{m^4 - n^3} + n^2 \sqrt[3]{m} - mn}{mn^{-1} + n - n^4 m^{-1} - n^2}$

Tenglamani yeching: $\cos x \cos 2x = \sin\left(\frac{\pi}{4} + x\right) \sin\left(\frac{\pi}{4} + 4x\right) + \sin\left(\frac{3\pi}{4} + 4x\right) \cos\left(\frac{7\pi}{4} - 5x\right)$

Tenglamalar sistemasini yeching:
$$\begin{cases} 2y^2 - 4xy + 3x^2 = 17 \\ y^2 - x^2 = 16 \end{cases}$$