

Ushbu test varianti 30ta test topshirig'idan iborat.

Kitobda yopiq va ochiq turdagi test topshiriqlari mavjud.

Yopiq turdagi test topshiriqlarida berilgan to'rtta javobdan bitta javobni tanlash va javoblar varaqasida tanlangan javobga mos bo'lgan xarfni (A, B, C yoki D) topshiriq raqamiga mos qatorga yozish kerak.

Ochiq turdagi test topshiriqlarida javobingizni javoblar varaqasidagi topshiriq raqamiga mos qatorga to'liq va aniq tarzda yozish kerak.

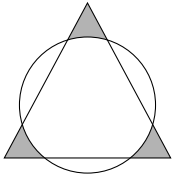
1.  $|x| + |y| \leq 10$  ( $x, y \in Z$ ) tengsizlikni nechta ( $x; y$ ) juftlik qanoatlantiradi?

A) 181 B) 221 C) 261 D) 241

2.  $x^2 - 7x - 144 = y^2 - 25y$  tenglikni nechta ( $x; y$ ) sonlar ( $x, y$  - tub sonlar) juftligi qanoatlantiradi?

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3. Tomonining uzunligi 6 m bo'lgan muntazam uchburchakka radiusi 2 m bo'lgan va markazi uchburchakning markazi bilan ustma-ust tushadigan aylana chizilgan (rasm). Uchburchakning aylana tashqarisidagi bo'yalgan qismlarining yuzalari yig'indisini ( $m^2$ ) toping.



A)  $2(3\sqrt{2} - \pi)$  B)  $2(3\sqrt{3} - \pi)$   
C)  $2(3\sqrt{3} + \pi)$  D)  $2(2\sqrt{3} - \pi)$

4. 8; 16; 32; 56; ... sonlar ketma-ketligi shunday xususiyatga egaki, bunda ikkita qo'shni hadlarining ayirmasi arifmetik progressiyani tashkil etadi. Berilgan ketma-ketlikning nechanchi hadi 1688 ga teng?

A) 22 B) 21 C) 19 D) 20

5.  $-\operatorname{tg} \frac{7\pi}{24} \cdot \operatorname{tg} \frac{\pi}{24} + \operatorname{tg} \frac{7\pi}{24} - \operatorname{tg} \frac{\pi}{24}$  ni hisoblang.

A) 0 B)  $\sqrt{3}$  C) -1 D) 1

6.  $3 \sin x + 2\sqrt{3} \cos \left(x + \frac{\pi}{6}\right) =$

$$= \cos^2 \left(x - \frac{\pi}{12}\right) + \sqrt{3} \sin \left(x + \frac{\pi}{3}\right)$$

tenglamaning umumiy yechimini toping.

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7. Tengsizlikni yeching:

$$\left(\log_{|x+0,5|} (0,25-x) - 1\right) \cdot \log_{16} (0,25-x) > > \log_4 \frac{0,25-x}{|x+0,5|}$$

A)  $\left(-\frac{3}{2}; -\frac{2}{3}\right) \cup \left(0; \frac{1}{8}\right)$

B)  $\left(-2; -\frac{3}{2}\right) \cup \left(-\frac{1}{8}; 0\right)$

C)  $\left(-2; -\frac{2}{3}\right) \cup \left(-\frac{1}{8}; 0\right)$

D)  $\left(-2; -\frac{3}{2}\right) \cup \left(-\frac{3}{2}; 0\right) \cup \left(0; \frac{1}{8}\right)$

8.  $5^{2x} - 3 \cdot 2^{2y} + 5^x \cdot 2^{y-1} = 2 \cdot 5^x + 2^{y+2}$  tenglama nechta ( $x; y$ ) butun yechimga ega?

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

9.  $a = \frac{1}{2\sqrt{2}}$ ,  $b = \frac{1}{\sqrt[3]{2}}$ ,  $c = \frac{1}{\sqrt[6]{2}}$  bo'lganda

$$\frac{1}{a(a-b)(a-c)} + \frac{1}{b(b-a)(b-c)} +$$

$$\frac{1}{c(a-c)(b-c)}$$
 ning qiymatini hisoblang.

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10.  $\frac{6x}{x^2 + 2x + 3} + \frac{11x}{x^2 + 7x + 3} = 2$  tenglamaning barcha haqiqiy yechimlari yig'indisini toping.

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

11. Tenglamani haqiqiy sonlarda yeching:

$$x^3 + x^2 + x = -\frac{1}{3}$$

A)  $\frac{1}{\sqrt[3]{2}-1}$  B)  $\frac{1}{\sqrt[3]{2}+1}$  C)  $-\frac{1}{\sqrt[3]{2}-1}$

D)  $-\frac{1}{\sqrt[3]{2}+1}$

12.  $x_1, x_2$  va  $x_3$  sonlar  $3x^3 - x^2 - 6x + 2 = 0$  tenglamaning haqiqiy ildizlari bo'lsa,

$$\frac{1}{x_1-1} + \frac{1}{x_2-1} + \frac{1}{x_3-1}$$
 ni toping.

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13. Tengsizlikni yeching:

$$2x^2 + 2x + 1 - \frac{15}{x^2 + x + 1} < 0$$

- A)  $(-2; 1)$  B)  $(-2; 5)$  C)  $(0; 1)$   
D)  $(-2; 0)$

14.  $f(x)$  funksiya  $(-\infty; +\infty)$  da aniqlangan, qiymatlar sohasi  $[-2; 2]$  bo'lgan davriy funksiya. Agar  $f(x)$  funksiya uzluksiz va davri 4 ga teng bo'lsa, u holda  $y = -3f(2x - 8) + 4$  funksiyaning qiymatlar sohasini toping.

- A)  $[-2; 3]$  B)  $[-2; 10]$  C)  $[10; 13]$   
D)  $[3; 5; 5]$

15.  $f(x)$  funksiya uchun  $x \cdot f\left(\frac{x}{2x-1}\right) + f(x) = 2$  bo'lsa,  $f(4)$  ni toping.

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16.  $f(2x - 5) = \left(\operatorname{tg}^4 \frac{\pi}{x} - \log_2 \sin^2 \frac{\pi}{x}\right) \cdot (2x - 8)$

bo'lsa,  $f'(3)$  ni hisoblang.

- A) 4 B) -2 C) 0 D) 2

17. Funksiyaning eng katta qiymatini toping:

$$y = \frac{x^2 + 2x + 9}{x^2 + 2x + 3,5}$$

- A) 3 B) 1 C) 3,2 D)  $2\frac{4}{7}$

18.  $\int_9^{10} (x - 9)^8 \cdot x dx$  ni hisoblang.

- A)  $1\frac{1}{10}$  B)  $1\frac{1}{8}$  C)  $1\frac{1}{9}$  D)  $1\frac{1}{11}$

19. Integralni hisoblang:  $\int_0^{\frac{\pi}{4}} (\operatorname{tg}^{30} x + \operatorname{tg}^{28} x) dx$

- A)  $\frac{1}{28}$  B)  $\frac{1}{29}$  C)  $\frac{1}{30}$  D)  $\frac{1}{31}$

20. Asosidagi burchaklari  $60^\circ$  va  $30^\circ$  bo'lgan trapetsiyaga radiusi  $3 - \sqrt{3}$  bo'lgan doira ichki chizilgan. Trapetsiyaning perimetrini toping.

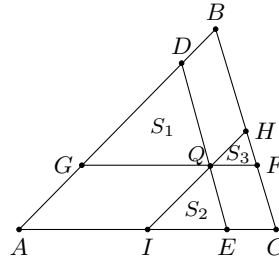
- A)  $9\sqrt{3}$  B)  $12\sqrt{2}$  C) 12 D) 16

21.  $ABC$  uchburchakning  $AD$  bissektrisasi bissektrisalar kesishgan nuqtada  $6 : 5$  nisbatda bo'linadi. Agar  $AB = 8$  cm,  $AC = 10$  cm bo'lsa,  $BC$  ni toping.

- A) 12 cm B) 15 cm C) 14 cm D) 13 cm

22. Chizmada  $ABC$  uchburchak berilgan.

Uchburchak sohasidagi ixtiyoriy  $Q$  nuqtadan uchburchak tomonlariga parallel ( $DE \parallel BC$ ,  $IH \parallel AB$  va  $GF \parallel AC$ ) kesmalar o'tkazilgan. Natijada yuzalari  $S_{GQD} = S_1$ ,  $S_{QIE} = S_2$  va  $S_{QHF} = S_3$  bo'lgan uchburchaklar hosil bo'lgan.  $ABC$  uchburchak yuzini  $S_1$ ,  $S_2$  va  $S_3$  lar orqali ifodalang.



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23. Qirralari 12, 14 va 15 cm ga teng parallelepiped qirralari 1 cm ga teng bo'lgan kubchalardan tashkil topgan. Parallelepipeddan kubcha qalinligidagi tashqi sirtini olib tashlash uchun nechta kubcha olinishi kerak?

- A) 962 B) 956 C) 960 D) 952

24. Silindrning o'qiga parallel bo'lgan kesimining yuzi 24 ga teng va bu kesim asos aylanasini 7:3 nisbatda bo'ladi. Silindrning yon sirti yuzini toping.

- A)  $18\pi(\sqrt{5} + 1)$  B)  $12\pi(\sqrt{5} - 1)$   
C)  $9\pi(\sqrt{5} + 1)$  D)  $24\pi(\sqrt{5} - 1)$

25. Uchlari  $A(2; 0; 0)$ ,  $B(0; 3; 0)$ ,  $C(0; 0; 4)$  va  $D(0; 0; 0)$  nuqtalarda bo'lgan piramidaning  $D$  uchidan  $ABC$  yog'igacha bo'lgan eng kichik masofani toping.

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26. Perpendikular  $l_1$  va  $l_2$  to'g'ri chiziqlar  $a > 0$  bo'lgan  $(0; a)$  nuqtada kesishadi.  $l_1$  to'g'ri chiziq  $Ox$  o'qini  $(-1, 8; 0)$  nuqtada,  $l_2$  to'g'ri chiziq esa  $(3, 2; 0)$  kesib o'tadi.  $l_2$  to'g'ri chiziqning tenglamasini tuzing.

- A)  $y = -0,75x + 2,4$  B)  $y = x - 3,2$   
C)  $y = 0,75x - 2,4$  D)  $y = -x + 3,2$

27. Agar  $|\vec{a}| = 4$ ;  $|\vec{b}| = 3$ ;  $|\vec{c}| = 2$  va

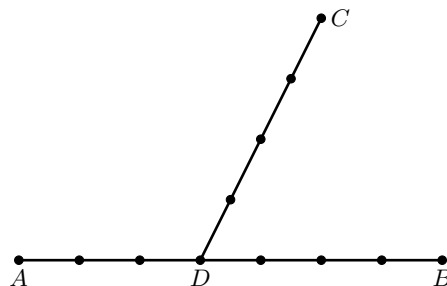
$\vec{a} \cdot \vec{b} - \vec{b} \cdot \vec{c} - \vec{a} \cdot \vec{c} = 12$  bo'lsa, u holda  $\vec{a} + \vec{b} - \vec{c}$  vektorning uzunligini toping.

- A)  $\sqrt{52}$  B)  $\sqrt{53}$  C)  $\sqrt{51}$  D)  $\sqrt{54}$

28. 0, 1, 2, 3, 4, 5, 6, 7 raqamlaridan ular ko'pi bilan bir marta ishtirok etadigan va 5 raqami bilan tugaydigan jami nechta besh xonali son tuzish mumkin?

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29.  $AB$  va  $CD$  kesmalarda nuqtalar belgilab olingan (rasm).  $D$  nuqta  $AB$  kesmada yotadi. Uchlari belgilangan nuqtalarda bo'lgan ko'pi bilan nechta har xil uchburchak yasash mumkin?



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30.  $A = \{a; b; c; d; e; f; h\}$  to'plamning nechta qism to'plamiga  $a$  element tegishli bo'lib,  $b$  element tegishli bo'lmaydi?

Javob: \_\_\_\_\_