

1-qism: Har bir topshiriq 0,9 balldan baholanadi

- 202000 sonining nechta natural bo'luvchisi mavjud?
A) 36 B) 40 C) 48 D) 60
- Arifmetik progressiyada $a_8 + a_{17} + a_{27} + a_{32} = 92$ bo'lsa, uning dastlabki 41 ta hadi yig'indisini toping (S_{41}).
A) 943 B) 861 C) 892 D) 997
- $x < |x|$ va $xy^3 < 0$ bo'lsa, soddalashtiring: $|x - y| - |-y| - |-x|$. A) 0 B) $2x$ C) $2y$ D) $2x - 2y$
- Tenglamaning ildizlari yig'indisini toping: $100x^3 - x^2 = 99x$
A) 0,01 B) -0,01 C) 0,99 D) -0,99
- $\sqrt{x^2 - 10x + 9} + \sqrt{81 - x^2} = 0$ tenglamaning ildizi ... oraliqda yotadi.
A) (-10; -8) B) (0; 2) C) (-2; 0) D) (7; 10)
- Idishdagi 10%li spirt aralashmasining uchdan bir qismi quyib olindi va uning o'rniga idishning $\frac{5}{6}$ qismiga yetguncha suv quyildi. Idishda hosil bo'lgan aralashmadagi spirtning foizi qancha?
A) 12% B) 10% C) 15% D) 8%
- ABC uchburchakda $AB = 12, AC = 8$. AN bissektrisa va BM mediana P nuqtada kesishadi. $\frac{BP}{PM}$ nisbatni toping. A) $\frac{3}{2}$ B) $\frac{9}{4}$ C) 2 D) 3
- D soni $x^2 + ax + b$ keltirilgan kvadrat uchhadning diskriminanti bo'lsin ($D \neq 0$). Agar uchhad ildizlaridan biri D ga, ikkinchisi $2D$ ga teng bo'lsa, u holda $a + b$ ni toping.
A) -1 B) 1 C) 2 D) -2
- Soddalashtiring: $\left(\frac{x^2 - 4 + y^2 + 2xy}{x^2 - y^2 + 4 + 4x}\right)^2 \cdot \left(\frac{x - y + 2}{x + y - 2}\right)^2$ A) 1 B) $\frac{x - 2 + y}{x + 2 - y}$ C) $\left(\frac{x + y - 2}{x - y + 2}\right)^2$ D) $\left(\frac{x + y + 2}{x - y + 2}\right)^2$
- $ABCD$ kvadratning tomonlari 6 ga teng. BC va CD tomonlarda P va Q nuqtalar shunday olinganki, bunda AP va AQ kesmalar kvadratni yuzlari teng bo'lgan uchta qismga ajratadi. APQ uchburchak yuzini toping. A) 6 B) 8 C) 10 D) 9

2-qism: Har bir topshiriq 1,5 balldan baholanadi

- O'tkir burchakli ABC uchburchakning AD va CE balandliklari o'tkazildi. M va N nuqtalar mos ravishda A va C uchlardan DE to'g'ri chiziqqa tushirilgan perpendikulyar asoslari. $ME:DN$ nisbatni toping. A) 1 B) 2 C) 0,5 D) $\sqrt{2}$
- Agar $(x_1; y_1), (x_2; y_2)$ -sistemaning yechimlari bo'lsa, $\begin{cases} y = -\sqrt{4 - x^2} \\ y = tg \frac{4\pi}{7} \cdot |x| \end{cases}$ u holda $x_1 y_1 + x_2 y_2$ ni toping.
A) 0 B) $tg \frac{4\pi}{7}$ C) $-tg \frac{4\pi}{7}$ D) 1
- Agar $f(x) = \frac{x^2 - 8x + 15}{5 - x} - \sqrt{x^2 - 8x + 16}$ bo'lsa, $f\left(\frac{2}{3}\right)$ ni toping. A) 1 B) $\frac{23}{3}$ C) -1 D) $\frac{17}{3}$



14. Agar $|a + 1| \leq 2$ va $a + b = 4$ bo'lsa, u holda $ab - 2a$ ifodaning eng kichik qiymatini toping.
A) -12 B) -15 C) -4 D) -8
15. Ifodaning qiymatini toping: $1! \cdot 3 - 2! \cdot 4 + 3! \cdot 5 - 4! \cdot 6 + \dots - 2000! \cdot 2002 + 2001!$
(bu yerda, $n! = 1 \cdot 2 \cdot 3 \cdot \dots \cdot n$) A) 1 B) 2001! C) 1000! D) 0
16. Tengsizlikning butun yechimlari yig'indisini toping: $\frac{x+1}{x} \leq \frac{2}{x+2} + \frac{8}{x(x+2)}$
A) 3 B) -3 C) 0 D) -1
17. Soddalashtiring: $\frac{ctg\alpha + ctg(270+\alpha)}{ctg\alpha - ctg(270+\alpha)} - 2 \cos(135^\circ + \alpha) \cdot \cos(315^\circ - \alpha)$
A) $2\cos 2\alpha$ B) $\cos 2\alpha$ C) $\sin 2\alpha$ D) $2\sin 2\alpha$
18. ABCD kvadratning AD tomonida K nuqta olindi, AB nurning davomida B dan keyin L nuqta olindi. Agar $\angle LKC = 45^\circ$, AK = 1, KD = 2 bo'lsa, LB ni toping. A) 2 B) 1 C) 3 D) 4
19. Agar $x^2 + x = 7$ bo'lsa, $2 + 70x - x^2 - x^5$ ning qiymatini toping. A) 72 B) 100 C) 90 D) 42
20. ABC uchburchakda CD to'g'ri burchak bissektrisasi. D nuqtadan AC tomonga $DM = \sqrt{3}$ perpendikulyar tushirilgan. Agar AD = $2\sqrt{3}$ bo'lsa, u holda BC ni toping.
A) $\sqrt{6} + 1$ B) $\sqrt{6} + \sqrt{2}$ C) $\sqrt{3} + 1$ D) $\sqrt{2} + \sqrt{3}$

3-qism: Har bir topshiriq 2,6 balldan baholanadi

21. Barcha raqamlari turlicha bo'lib, 9 ga bo'linadigan eng kichik besh xonali sonni toping.
22. ABCD qavariq to'rtburchakning AB va CD tomonlari o'rtalari orasidagi masofa uning diagonallarining o'rtalari orasidagi masofaga teng. BC va AD to'g'ri chiziqlar kesishishidan hosil bo'lgan burchakni toping.
23. Qavariq ABCD to'rtburchakda AD = DC, $\angle ADB = 40^\circ$, $\angle BDC = 20^\circ$ va $\angle ABC = 150^\circ$. $\angle BCA$ burchakni toping.
24. Tenglamani yeching: $\frac{x^2}{x^4+25} = -0,9 + 2^{(x-\sqrt{5})^2}$
25. ABC uchburchakda: $\cos 3A - \sin(B - A) = 2$ va $AB = 2\sqrt{3}$ bo'lsa, BC ni toping.
26. ABCD to'rtburchakda A va C - to'g'ri burchaklar, AB = BC = 3 va BD = 5. AD va CD tomonlarda mos ravishda olingan E va F nuqtalar uchun AE = 1 va CF = 2 shartlar bajariladi. Agar ABCFE beshburchak yuzi S bo'lsa, u holda $100 \cdot S$ ni toping.
27. Agar ixtiyoriy x uchun $f(2x-1) = 1 - 4x^2$ bo'lsa, u holda $f(x)$ funksiyaning eng katta qiymatini toping.
28. $\frac{100!}{6^{100}}$ kasr qisqartirilgandan keyin hosil bo'lgan kasr maxrajini toping.
29. Teng yonli uchburchakning asosi va yon tomoniga tushirilgan balandliklari mos ravishda 4 va 6 ga teng. Uchburchak perimetrini toping.
30. Nechta 100 dan kichik butun musbat sonlar 2 ga ham, 3 gaga ham, 5 ga ham bo'linmaydi?

