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

1. Tenglamaning haqiqiy ildizlari ko‘paytmasini toping: $x^2+3x\cdot\frac{|x-2|}{x-2}-10=0$

A) -2 B) -10 C) -25 D) -20

2. $a<0<b<c$ bo‘lsa, quyidagilardan qaysi biri a,b, c haqiqiy sonlarning ixtiyoriy qiymatida doimo musbat boladi? A) $a+b-c$ B) $-b+c-a$ C) $-b+a+c$ D) $2a-b+c$

3. Tenglamani yeching: $\dfrac{\frac{x+6}{2}-3}{2-\frac{1}{2}}-\dfrac{\frac{x-6}{3}+2}{2-2\frac{1}{3}}=\dfrac{\frac{x}{6}+4\frac{1}{3}}{(1,2)^{-1}}$ A) -26 B) $4\frac{10}{17}$ C) $-3\frac{1}{17}$ D) 39

4. Yon tomoni 8 ga teng bo‘lgan teng yonli trapetsiyaga radiusi 3 ga teng aylana ichki chizilgan. Trapetsiya yuzini toping. A) 24 B) 36 C) 48 D) 64

5. Tengsizlikning butun yechimlari sonini toping: $\dfrac{x^3}{x-2}\le\dfrac{36x}{x-2}$ A) 9 B) 10 C) 8 D) 11

6. $y=\frac{|x|}{2}, y=1, y=3$ grafiklar bilan chegaralangan figura yuzini toping.

A) 16 B) 18 C) 24 D) 12

7. Teng yonli trapetsiyaning diagonali o‘tkir burchagining bissektrisasi. Katta asosi 19 ga, perimetri 40 ga teng bo‘lsa, trapetsiyaning o‘rta chizig‘ini toping. A) 12 B) 10 C) 11 D) 13

8. $\frac{\sqrt{4-\sqrt{x}}}{\sqrt{4-x}}>0$ tengsizlikning butun yechimlari o‘rta arifmetigini toping.

A) 1,5 B) 2 C) 2,5 D) 1

9. a va b parametrlarning qanday qiymatlarida $\frac{25x-3}{25x^2-9}=\frac{a}{5x+3}+\frac{b}{5x-3}$ tenglik ayniyat bo‘ladi?

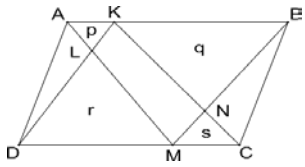
A) $a=1,b=3$ B) $a=3,b=1$ C) $a=2,b=3$ D) $a=3,b=2$

10. Решите неравенство $4^x+2^{2x+4}-4\cdot 2^{2x}\geqslant 52$.

A) $(-\infty;1]$ B) $(-\infty;0]$ C) $[1;+\infty)$ D) $[0;+\infty)$

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

11. Chizmada $ABCD$ parallelogram berilgan. p,q,r va s mos ravishda ALK, BNK, DLM va CNM uchburchaklarning yuzlari. Quyidagi munosabatlardan qaysi biri doim to‘g‘ri?



A) $p+r=q+s$ B) $q-p=r-s$

C) $p+q=r+s$ D) $2(p+s)=q+r$

12. a,b,c va d sonlari geometrik progressiyaning ketma-ket hadlari. Agar $a+d=10$, $a\cdot d=7$ ekanligi ma’lum bo‘lsa, b^3+c^3 ni toping. A) 70 B) 63 C) 56 D) 84

13. Tenglamaning haqiqiy ildizlari yig‘indisini toping: $(x^2-6x)^2-2(x-3)^2=81$

A) 6 B) 9 C) 12 D) 15

14. $A(x_0;y_0)$ nuqta $y=2x^2-bx+1$ parabola uchi bo‘lsa, $y_0+2x_0^2$ ifadaning qiymatini toping.

A) -1 B) 2 C) 0 D) 1

15. $f(x)$ funksiya uchun $f(0)+f(x-1)=4x-2$ tenglik o‘rinli bo‘lsa, $f(f(3)-2f(1))$ ni toping.
A) 13 B) 9 C) 14 D) 17

16. A va B shaharlar orasidagi masofa 80 км. A shahardan B shaharga mashina yo‘lga chiqdi, oradan 20 minut o‘tgach tezligi 90km/h bo‘lgan mototsikl mashina izidan yo‘lga chiqdi va mashinani C shaharda (C shahar A va B shaharlar orasida) quvib yetdi hamda darhol orqaga qaytdi. Mashina B shaharga yetib kelganda, mototsiklchi C dan A gacha masofaning yarmini bosib o‘tdi. A va C shaharlar orasidagi masofani toping.
A) 60 B) 80 C) 50 D) 90

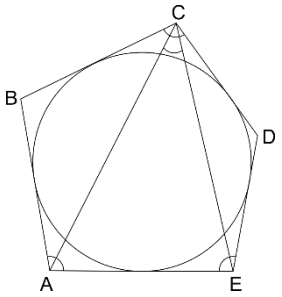
17. Agar $a=\sqrt[3]{4}+1$ bo‘lsa, $a(a-1)(a-2)+a$ ni toping A) 4 B) 5 C) 6 D) 3

18. Perimetri $2p$ va yuzi $\frac{1}{6}p^2$ ga teng bo‘lgan to‘g‘rito‘rtburchakning diagonallari orasidagi burchakni toping.
A) 60° B) 45° C) 30° D) 90°

19. Turnirda to‘rtta futbol jamoasi o’zaro bir-biri bilan bir martadan o‘ynadi. G'alaba uchun 3 ochko, durang uchun 1 ochko beriladi. Jamoalar 5, 3, 3 va 2 ochkolarni qo'lga kiritishgan bo‘lsa, nechta o’yin durang natija bilan tugagan? A) 5 B) 4 C) 3 D) 1

20. To‘g‘riburchakli uchburchakning tomonlari ayirmasi 1,5 ga teng arifmetik progressiya tashkil qiladi. Uchburchak perimetrini toping. A) 18 B) 17 C) 15 D) 16

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



21. $x^2+\frac{1}{x^2+2x}=1$ tenglama ildizlari yig‘indisini toping.
22. Agar $\overline{ab}+a^b=115$ bo‘lsa, bu yerda a,b –raqamlar, $7a+6b$ ni toping.
23. ABCDE beshburchak aylanaga tashqi chizilgan. Agar A, C va E burchaklarning har biri 120° bo‘lsa, $\angle ACE$ burchak nimaga teng? (*chizmaga qarang*)
24. Hisoblang $\sqrt[4]{2^{20}+2^{27}+2^{31}+2^{32}+2^{37}+2^{40}}$
25. ABC teng yonli uchburchakning AB asosidagi D nuqta orqali o‘tkazilgan CD to‘g‘ri chiziq ABC uchburchakka tashqi chizilgan aylanani E nuqtada kesib o‘tadi. Agar $DE=CD=4\sqrt{2}$ bo‘lsa, AC ni toping.
26. Ifodaning ozod hadini toping $\left(4x+\frac{1}{x}\right)^6$
27. ABKC qavariq to‘rtburchakda AB tomon $\sqrt{3}$ ga, BC diagonal 1 ga teng. ABC, BKA va BKC burchaklar mos ravishda $120^\circ, 30^\circ$ va 60°ni tashkil qiladi. $ctg\angle BAK$ ning qiymatini toping.
28. ABC uchburchakning AB tomonida D nuqta , BC tomonida esa E nuqta olingan, bunda $AD=BE=1$ va $CE=3$. Agar AB tomon davomida B nuqtadan keyin $BF=4$ va $AC=EF$ shartlarni qanoatlantiradigan F nuqta olingan bo‘lsa, CD kesma uzunligini toping.
29. $\begin{cases}x^2+yz=a\\y^2+zx=b\\z^2+xy=c\end{cases}$ va $x+y+z=0$ bo‘lsa, $\frac{1}{a+b}+\frac{1}{b+c}+\frac{1}{c+a}$ yig‘indini toping.
30. x_0 soni $\log_{0,5}\left(\log_4\frac{1}{x}\right)+\log_4\left(\log_2(16x^2)\right)=0$ tenglamaning ildizi bo‘lsa, $16^{\sqrt{2}}\cdot x_0$ ni hisoblang.