MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

20-MILLIY SERTIFIKAT TESTI

1. Turli raqamlardan tashkil topgan olti xonali $\overline{abcdef}$ soni 6 ga bo'linsa, $\frac{a+b+c+d+e+f}{f}$ ifodaning eng katta qiymatini toping.

   A) 23,5
   B) 9,75
   C) 18
   D) 18,5

2. Hisoblang:

$$2025\frac{4}{9}\cdot 2023\frac{1}{9}-2026\frac{4}{9}\cdot 2022\frac{1}{9}=$$

   A) $2023\frac{1}{3}$
   B) $2022\frac{1}{3}$
   C) $3\frac{1}{3}$
   D) $2\frac{1}{3}$

3. Hovuzdagi suv bo'shatila boshlanganidan bir soat o'tgach, unda $400\,m^3$ suv qoldi va yana uch soat vaqt o'tgach esa $250\,m^3$ suv qoldi. Dastlab hovuzda qancha (m^3) suv bo'lgan?

   A) 475
   B) 600
   C) 525
   D) 450

4. To'rtburchak shaklidagi plakatning eni 10% ga, bo'yi esa 30% ga qisqartirildi. Qolgan plakat maydoni asl plakat maydonining necha foizini tashkil qiladi?

   A) 45%
   B) 63%
   C) 77%
   D) 70%

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5. Hisoblang:

$$\frac{(2^{-1}+1)^{-0,5^{-1}}-(2{,}25)^{-2^{-1}}}{\left(\frac{1}{0{,}25}\right)^{-2^{-1}}+(-27)^{-3^{-1}}}$$

A) $-\frac{4}{15}$
B) $-\frac{4}{3}$
C) $\frac{20}{3}$
D) $-\frac{4}{5}$

$$= \frac{\left(\frac{3}{2}\right)^{-2}-\left(\frac{9}{4}\right)^{\frac{1}{2}}}{(4)^{\frac{1}{2}}+(-27)^{\frac{1}{3}}} = \frac{\frac{4}{9}-\frac{3}{2}}{2-3} = \frac{-\frac{2}{9}}{-1} = -\frac{2}{3}\cdot\frac{6}{1} = -\frac{4}{3}$$ (B)

6. Hisoblang:

$$\frac{1}{\sqrt{1}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{5}}+\ldots+\frac{1}{\sqrt{2023}+\sqrt{2025}}$$

A) 44
B) 45
C) 22
D) 25

$$= \frac{\sqrt{3}-1}{2}+\frac{\sqrt{5}-\sqrt{3}}{2}+\ldots+\frac{\sqrt{2025}-\sqrt{2023}}{2} =$$

$$= \frac{-1+\sqrt{2025}}{2} = \frac{-1+45}{2} = \frac{44}{2} = 22$$ (C)

7. Soddalashtiring. $(x > 3)$

$$\frac{\sqrt{x+2\sqrt{x-1}-1}}{\sqrt{x-2\sqrt{x-1}+1}}-\sqrt{4-4x+x^2}$$

A) $x-3$
B) $x-1$
C) $1-x$
D) $3-x$

$$= \frac{\sqrt{x-1+2\sqrt{x-1}+1}-1}{\sqrt{x-1-2\sqrt{x-1}+1}+1}-\sqrt{(2-x)^2} =$$

$$= \frac{\sqrt{(\sqrt{x-1}+1)^2}-1}{\sqrt{(\sqrt{x-1}-1)^2}+1}-|2-x| = \frac{|\sqrt{x-1}+1|-1}{|\sqrt{x-1}-1|+1}-|2-x| =$$

$$= \frac{\sqrt{x-1}+1-1}{\sqrt{x-1}-1+1}+2-x = 1+2-x = 3-x$$ (D)

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8. Arifmetik progressiyada $a_1 + a_4 = 26$, ikkinchi hadi esa beshinchi hadidan 6 ga ko'p. Shu progressiyaning to'rtinchi va sakkizinchi hadlari yig'indisini toping.

A) 10
B) 12
C) 15
D) 7

$a_2 = a_5 + 6$
$-3d = 6$
$d = -2$

$a_1 + a_1 + 3d = 26$
$2a_1 - 6 = 26$
$a_1 = 16$

$a_4 + a_8 = ?$
$a_1 + 3d + a_1 + 7d = 2a_1 + 10d =$
$= 2 \cdot 16 + 10 \cdot (-2) = 32 - 20 = 12$

B

9. Oltita musbat son geometrik progressiyani tashkil qiladi. Geometrik progressiyaning dastlabki ikkita hadining ko'paytmasi $\frac{9}{8}$ ga, oxirgi ikkita hadining ko'paytmasi esa 288 ga teng. Shu progressiyaning oxirgi ikkita hadining yig'indisini toping.

A) 36
B) 18
C) 48
D) 34

$\begin{cases} b_1 \cdot b_2 = \frac{9}{8} \\ b_5 \cdot b_6 = 288 \end{cases}$

$\frac{b_1 \cdot b_2}{b_5 \cdot b_6} = \frac{9}{8 \cdot 288} = \frac{1}{256}$

$\frac{1}{q^4} \cdot \frac{1}{q^4} = \frac{1}{256}$

$\frac{1}{q^8} = \frac{1}{256}$

$q = 2$

$b_1 \cdot b_1 \cdot q = \frac{9}{8}$

$b_1^2 \cdot 2 = \frac{9}{8}$

$b_1^2 = \frac{9}{16}$ $b_1 = \frac{3}{4}$

$b_5 + b_6 = ?$

$b_5 + b_6 = b_1 \cdot q^4 + b_1 \cdot q^5 =$
$= b_1 q^4 (1 + q) =$
$= \frac{3}{4} \cdot 16 (1 + 2) =$
$= 12 \cdot 3 = 36$

A

10. Agar $a = \sqrt[3]{20 + 14\sqrt{2}} + \sqrt[3]{20 - 14\sqrt{2}}$ ga teng bo'lsa, $a^3 - 6a$ ni hisoblang.

A) 25
B) 30
C) 35
D) 40

$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$

$a^3 = 20 + 14\sqrt{2} + 20 - 14\sqrt{2} + 3 \sqrt[3]{20^2 - (14\sqrt{2})^2} \cdot \left(\sqrt[3]{20 + 14\sqrt{2}} + \sqrt[3]{20 - 14\sqrt{2}}\right)$

$8 \qquad\qquad a$

$a^3 = 40 + 6a$

$a^3 - 6a = 40$

B

11. Ifodani soddalashtiring.

$$\frac{(a-b)^2 + ab}{(a+b)^2 - ab} : \frac{a^5 + b^5 + a^2b^3 + a^3b^2}{a^3 + b^3 + ab^2 + a^2b} \cdot (a^3 - b^3)$$

A) ab
B) $a + b$
C) $\frac{1}{a-b}$
D) $a - b$

$= \frac{a^2 - ab + b^2}{a^2 + ab + b^2} \cdot \frac{a(a^2+b^2) + b(a^2+b^2)}{a^2(a^3+b^3) + b^2(a^3+b^3)} \cdot (a^3 - b^3) =$

$= \frac{a^2 - ab + b^2}{a^2 + ab + b^2} \cdot \frac{(a^2+b^2)(a+b)}{(a^3+b^3)(a^2+b^2)} \cdot (a-b)(a^2 + ab + b^2) =$

$= a - b$

D

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12. Ushbu $3\cos 4x + 1 = 0$ tenglamaning $\left[-\frac{\pi}{2};\frac{\pi}{2}\right]$ oraliqqa tegishli ildizlari soni nechta ?

A) 4
B) 5
C) 6
D) 3

$\cos 4x = -\frac{1}{3}$

$4x = \pm\arccos\left(-\frac{1}{3}\right) + 2\pi n$

$x = \pm\frac{1}{4}\left(\pi - \arccos\frac{1}{3}\right) + \frac{\pi n}{2}$

$x_1 = \frac{\pi}{4} - \frac{1}{4}\arccos\frac{1}{3} + \frac{\pi n}{2}$

$x_2 = -\frac{\pi}{4} + \frac{1}{4}\arccos\frac{1}{3} + \frac{\pi n}{2}$

x_2: $-\frac{\pi}{4} + \frac{1}{4}\arccos\frac{1}{3}$ ✓ $n=0$; $\frac{\pi}{4} + \frac{1}{4}\arccos\frac{1}{3}$ ✓ $n=1$; $n=2$

x_1: $\frac{\pi}{4} - \frac{1}{4}\arccos\frac{1}{3}$ ✓ $n=0$; $-\frac{\pi}{4} - \frac{1}{4}\arccos\frac{1}{3}$ ✓ $n=-1$

4 ta. (A)

13. Agar $\alpha, \beta, \gamma \in \left(0, \frac{\pi}{2}\right)$ oraliqda tegishli bo'lsa,

$$\frac{\sin(\alpha+\beta) - \sin(\alpha-\beta)}{\cos(\gamma-\beta) - \cos(\gamma+\beta)} - \frac{\cos\alpha}{\sin\gamma} =$$

A) 1
B) 2
C) $\frac{\cos\alpha}{\sin\gamma}$
D) 0

$= \frac{2\sin\beta\cdot\cos\alpha}{2\sin\beta\sin\gamma} - \frac{\cos\alpha}{\sin\gamma} = 0$

(B)

14. Tengsizlikni yeching:

$$(|x|+1)^{2x^2-5x+2} > (|x|+1)^{14}$$

$|x|+1 \geq 1$, $|x|+1 \geq 1$

$2x^2-5x+2 > 14$

$2x^2-5x-12 > 0$

$(2x+3)(x-4) > 0$

+ | − | +

$-\frac{3}{2}$; 4

(C)

A) $\left(-\frac{3}{2};4\right)$
B) $(4;\infty)$
C) $\left(-\infty;-\frac{3}{2}\right)\cup(4;\infty)$
D) $\left(-\infty;-\frac{3}{2}\right)$

15. Tenglama nechta haqiqiy ildizga ega?

$$\frac{\lg\sqrt{x^2+2x-3}}{\lg\sqrt[3]{x^3-1}} = \frac{3}{2}$$

A) 0
B) 1
C) $2\lg\sqrt{x^2+2x-3} = 3\lg\sqrt[3]{x^3-1}$
D) $\lg(x^2+2x-3) = \lg(x^3-1)$

$x^2+2x-3 = x^3-1$

$(x+3)(x-1) = (x-1)(x^2+x+1)$

$x-1=0$ ✗ $x=1$

$x+3 = x^2+x+1$

$x^2 = 2$

$x=\sqrt{2}$ ✓ $x=-\sqrt{2}$?

1 ta (B)

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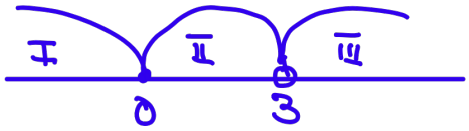
16. Tenglamaning haqiqiy ildizlar yig'indisini toping. (Agar u bitta bo'lsa, o'sha ildizini toping)

$$\frac{|x-3|}{|x|-3}=|3+|x||$$

A) 0
B) -1
C) 1
D) -4



I) $\frac{-x+3}{-x-3}=3-x$. $\frac{+(x-3)}{+(x+3)}=-(x-3)$ $1=-x-3$ $x=-4$ ✓

II) $\frac{-x+3}{x-3}=3+x$ $\frac{-(x-3)}{x-3}=3+x$ $-1=3+x$ $x=-4$ ✗

III) $\frac{x-3}{x-3}=3+x$ $1=3+x$ $x=-2$ ✗

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

A) $3-\sqrt[3]{3}$
B) $\sqrt[3]{3}$
C) $3+\sqrt[3]{3}$
D) $3+\sqrt{3}$

$(x-4)^3+\frac{(x-4)^3-(x-3)^3}{(x-4)-(x-3)}+(x-3)^3=6$

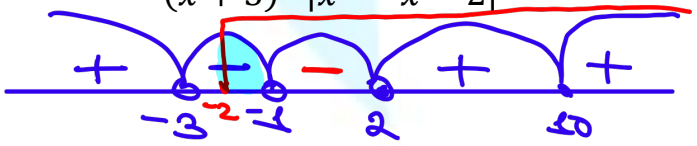
$(x-4)^3-(x-4)^3+(x-3)^3+(x-3)^3=6$

$3(x-3)^3=3$ $x-3=\sqrt[3]{3}$ $x=3+\sqrt[3]{3}$. ✓

18. Tengsizlikni qanoatlantiruvchi butun sonlar yig'indisini toping.

$$\frac{\sqrt[4]{x+2}\cdot\sqrt[3]{x-2}\cdot(x-10)^{10}}{(x+3)\cdot|x^2-x-2|}\le 0$$

A.S. $x+2\ge 0$ $x\ge -2$



A) 6
B) 7
C) 8
D) 9

$[-2;-1)\cup(-1;2)\cup\{10\}$

$-2+1+10=9$ ✓

19. Tengsizlikni nechta natural son qanoatlantirmaydi?

$$x-4<\sqrt{x^2-6x}$$

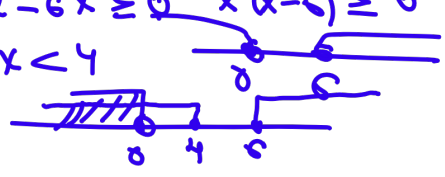
A) 5
B) 6
C) 7
D) 8

1; 2; 3; 4; 5; 6; 7; 8;

I) $\sqrt{x^2-6x}>x-4$

$\begin{cases} x-4\ge 0 \\ x^2-6x>(x-4)^2 \end{cases}$ $x\ge 4$ $x^2-6x>x^2-8x+16$ $2x>16$ $x>8$

yoki $\begin{cases} x-4\le 0 \\ x^2-6x\ge 0 \end{cases}$ $x(x-6)\ge 0$ $x<4$



$(-\infty;0]\cup(8;\infty)$

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20. Agar funksiya $f(x)=\frac{3x-2}{x+7}$ bo'lsa, ushbu funksiyaga teskari funksiyani toping

A) $f^{-1}(x)=\frac{7x+2}{3-x}$
B) $f^{-1}(x)=\frac{7x+3}{2-x}$
C) $f^{-1}(x)=\frac{3x-2}{x+7}$
D) $f^{-1}(x)=\frac{x+2}{7-3x}$

$y=\frac{3x-2}{x+7}$

$yx+7y=3x-2$

$yx-3x=-2-7y$

$(y-3)x=-2-7y$

$x=\frac{-2-7y}{y-3}$ $\rightarrow$ $\frac{2+7y}{3-y}$

$f^{-1}(x)=\frac{2+7x}{3-x}$ (A)

21. Aniq integralni hisoblang:

$$\int_0^1 \frac{1}{\sqrt{4-x^2}}$$

A) $\frac{\pi}{6}$
B) $\frac{\pi}{4}$
C) $\frac{\pi}{3}$
D) $\frac{\pi}{2}$

$$=\int_0^1 \frac{1}{\sqrt{4\left(1-\frac{x^2}{4}\right)}}dx=\int_0^1 \frac{1}{\sqrt{1-\left(\frac{x}{2}\right)^2}}dx=$$

$\int \frac{1}{\sqrt{1-x^2}}dx=\arcsin x$

$=\frac{1}{2}\int_0^1 \frac{1}{\sqrt{1-\left(\frac{x}{2}\right)^2}}dx=$

$=\frac{1}{2}\arcsin\frac{x}{2}\Big|_0^1=\arcsin\frac{x}{2}\Big|_0^1=\arcsin\frac{1}{2}-\arcsin 0=$

$=\frac{\pi}{6}-0=\frac{\pi}{6}$ (A)

22. $f(x)=|e^x-\ln(x+1)+\operatorname{tg}^2 x|$ funksiyaning $x_0=0$ nuqtadagi hosilasini toping.

A) 1
B) -1
C) 0
D) Hosilasi mavjud emas

$f(x)=e^x-\ln(x+1)+\operatorname{tg}^2 x$

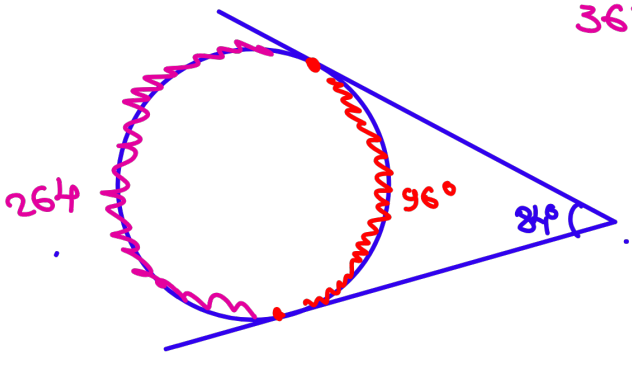
$f'(x)=e^x-\frac{1}{x+1}+2\operatorname{tg}x\cdot\frac{1}{\cos^2 x}$

$f'(0)=1-\frac{1}{1}+2\operatorname{tg}0\cdot\frac{1}{\cos^2 0}=$

$=1-1+0=0$ (C)

23. Aylana tashqarisidagi nuqtadan aylanaga ikkita urinma o'tkazilgan. Agar urinmalar orasidagi burchak 84^0 bo'lsa, aylananing urinish nuqtalari orasidagi katta yoyini toping.

A) 252°
B) 248°
C) 264°
D) 240°



$360-96=264$

(C)

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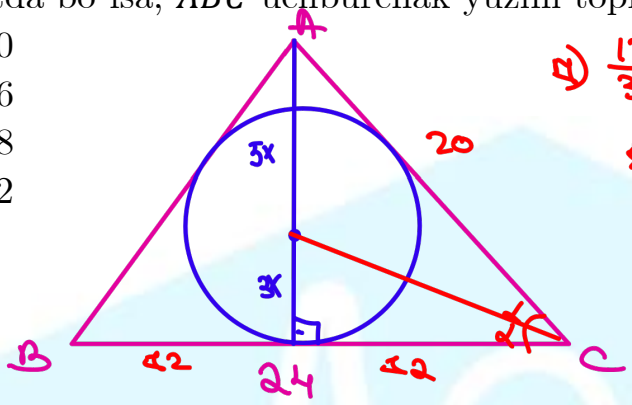
24. ABC teng yonli uchburchakning $(AB = AC)$ BC asosi 24 ga, ichki chizilgan aylana markazi asosga tushgan balandlikni uchidan boshlab hisoblaganda $5:3$ nisbatda bo'lsa, ABC uchburchak yuzini toping.

A) 240
B) 216
C) 168
D) 192



$\frac{12}{3x} = \frac{AC}{5x}$ $AC = 20$

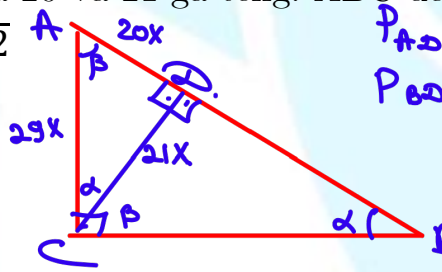
$8x = 16$ $x = 2$

$S = \frac{24 \cdot 8x}{2} = 96x =$

$= 96 \cdot 2 = 192$ (D)

25. To'g'ri burchakli ABC uchburchak CD balandlik bilan BCD va ACD uchburchaklarga bo'lingan. Shu uchburchaklar yarim perimetrlari mos ravishda 20 va 21 ga teng. ABC uchburchakning yarim perimetrini toping.

A) $24\sqrt{2}$
B) 26
C) 42
D) 29



$P_{ADC} = 40$ $\triangle ADC \sim \triangle BDC$

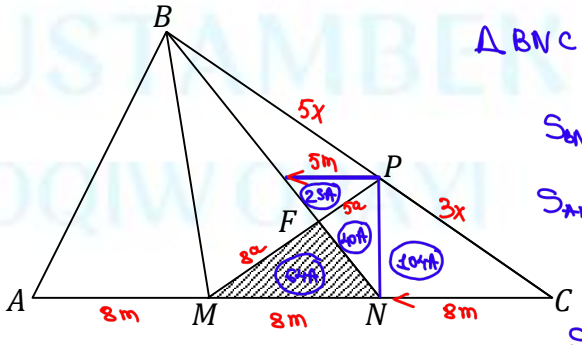
$P_{BDC} = 42$ $\frac{P_1}{P_2} = \frac{a_1}{a_2} = \frac{40}{42} = \frac{20}{21}$

$\triangle ABC \sim \triangle ADC$

$\frac{P}{40} = \frac{29x}{20x}$ $P = 58$ yarim 29

(D)

26. Rasmda ABC uchburchakning AC tomonini teng uch qismga bo'luvchi M va N nuqtalar olindi (M nuqta A ga yaqin). BC tomonda P nuqta olingan bo'lib, bunda $BP:PC = 5:3$ va BN kesma MP kesmalar F nuqtada kesishadi. Agar MFN uchburchakning yuzi 8 ga teng bo'lsa, ABC uchburchakning yuzini toping.



$\triangle BNC$ da: $\frac{104A}{3x} = \frac{S_{BNP}}{5x}$

$S_{BNP} = \frac{520A}{3}$

$S_{BNC} = \frac{520}{3}A + 104A = \frac{832}{3}A$

$S_{ABC} = 3S_{BNC} = 832A$

$64A = 8$

$A = \frac{1}{8}$

$S_{ABC} = 832 \cdot \frac{1}{8} = 104$

(B)

A) 112
B) 104
C) 120
D) 128

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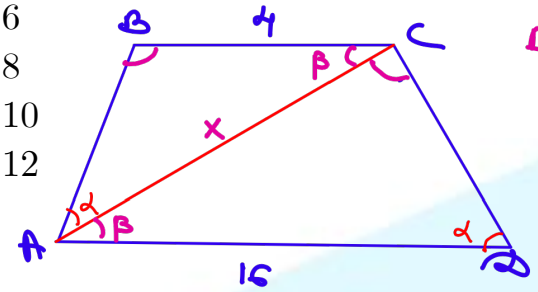
27. $ABCD$ trapetsiyaning AD va BC asoslari mos ravishda 16 va 4 ga teng. Agar $\angle BAC = \angle ADC$ ga teng bo'lsa, AC diagonal uzunligini toping.

A) 6
B) 8
C) 10
D) 12



$\triangle ABC \sim \triangle ACD$

$\frac{x}{16} = \frac{4}{x}$

$x^2 = 64$

$x = 8$ (B)

28. Diagonallar soni tomonlar sonidan 5 marta ko'p bo'lgan ko'pburchakning ichki burchaklar yig'indisini toping.

A) 1980°
B) 1800°
C) 2340°
D) 2160°

$\frac{n(n-3)}{2} = 5n$

$n-3 = 10$

$n = 13$

$S = (n-2)\pi = 11 \cdot 180^\circ = 1980$ (A)

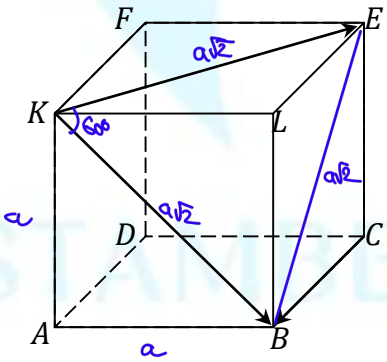
29. Rasmda $ABCDEFKL$ kub tasvirlangan. Agar $\overrightarrow{KE} \cdot \overrightarrow{KB} = 18$ ga teng bo'lsa, kub qirrasi uzunligini toping.

$\overrightarrow{KE} \cdot \overrightarrow{KB} = |\overrightarrow{KE}| \cdot |\overrightarrow{KB}| \cdot \cos\alpha$

$a\sqrt{2} \cdot a\sqrt{2} \cdot \cos 60^\circ = 18$

$2a^2 \cdot \frac{1}{2} = 18$

$a = 3\sqrt{2}$



A) $\sqrt{2}$
B) $2\sqrt{2}$
C) $3\sqrt{2}$ (C)
D) $4\sqrt{2}$

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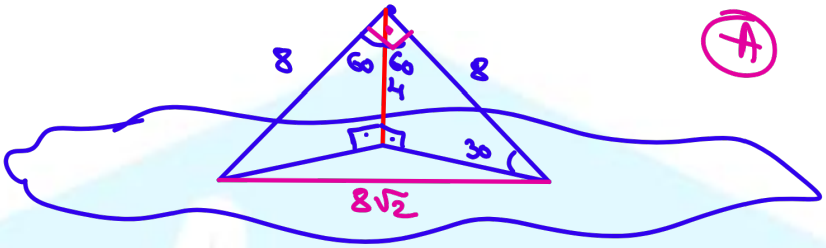
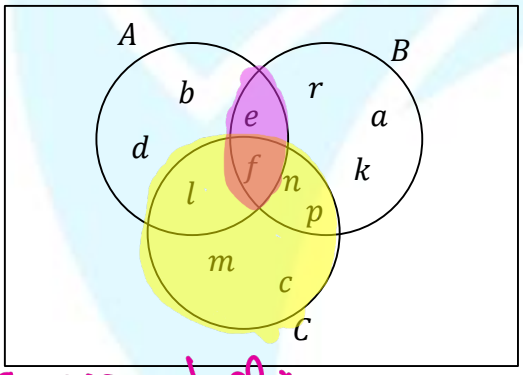
30. Tekislikdan 4 m masofada yotgan nuqtadan ikkita teng og'ma o'tkazilgan. Agar og'malar o'zaro perpendikulyar va tekislikka o'tkazilgan perpendikulyar bilan 60^0 ga teng burchaklar tashkil etishi ma'lum bo'lsa, og'malarning asoslari orasidagi masofani toping.

A) $8\sqrt{2}\,m$
B) $4\sqrt{2}\,m$
C) $6\sqrt{2}\,m$
D) $12\sqrt{2}\,m$



A

31. Quyidagi A, B va C to'plamlar berilgan. $A \cap B \cup C$ ning bo'sh bo'lmagan qism to'plamlari sonini toping.



$A \cap B = \{e; f\}$

$A \cap B \cup C$

$\{e; f\} \cup \{e, f, n, p, c\}$

$\Rightarrow \{e, f, l, n, p, m, c\}$ $n = 7$

$2^7 = 128$ ta qism to'plam

127 tasi bo'sh emas

A) 128
B) 64
C) 127
D) 63

C

32. Yuk va yengil mashinalar sonini nisbati $3:2$ ga teng. Yuk mashinaning benzin quyish ehtimoli 0,1 ga, yengil mashinaning benzin quyish ehtimoli 0,2 ga teng. Shahobchaga mashina benzin quygani kirgan bo'lsa, uning yuk mashina bo'lish ehtimolini toping.

A) $\frac{4}{7}$
B) $\frac{9}{14}$
C) $\frac{3}{7}$
D) $\frac{5}{14}$

$P(\text{yuk}) = \frac{3x}{5x} = \frac{3}{5}$

$P(\text{yengil}) = \frac{2x}{5x} = \frac{2}{5}$

$P(\text{Benzin}) = \frac{3}{5} \cdot 0{,}1 + \frac{2}{5} \cdot 0{,}2 = \frac{7}{50}$

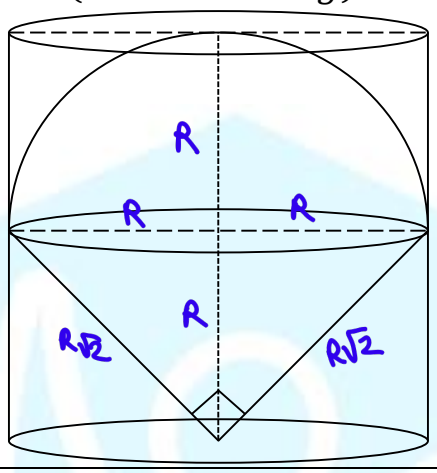
$P(\text{yuk} \mid \text{Benzin}) = \frac{\frac{3}{5} \cdot 0{,}1}{\frac{7}{50}} = \frac{3}{7}$

C

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

Topshiriqlar(33-35) va javob variantlari (A-F) ni o'zaro moslashtiring.

Silindr ichiga yarim shar va o'q kesim uchidagi burchagi $90°$ ga teng bo'lgan konus rasmdagidek qilib ichki chizildi. $(\pi \approx 3\ deb\ oling)$



33. Yarim shar va konus hajmlari yig'indisining silindr hajmiga nisbatini toping.

34. Agar silindr asosi radiusi 3 ga teng bo'lsa, yarim shar va konusning birlashkan ko'rinishidagi jismning to'la sirtini toping.

35. Agar silindr asosining radiusi 3 ga teng bo'lsa, silindrning yarim shar va konusdan bo'sh qolgan qismining hajmini toping.

A) $\frac{1}{2}$

B) $\frac{1}{3}$

C) 81

D) $54 + 27\sqrt{2}$

E) $54 + 24\sqrt{3}$

F) 84

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

36. $x^4 - x^3 - 3x^2 + x + 2 = 0$ tenglama berilgan.

a) Tenglamaning haqiqiy ildizlari nechta?

Javob: a) 3

b) Tenglamaning haqiqiy ildizlari $x_1, x_2, \dots, x_n$ bo'lsa, $|x_1| + |x_2| + \dots + |x_n|$ ni toping.

Javob: b) 1+1+2=4

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

$x^4 - x^3 - 3x^2 + 3x - 2x + 2 = 0$

$x^3(x-1) - 3x(x-1) - 2(x-1) = 0$

$(x-1)(x^3 - 3x - 2) = 0$

$x = 1$ $\quad x^3 - 3x - 2 = 0$

$x^3 + x^2 - x^2 - x - 2x - 2 = 0$

$x^2(x+1) - x(x+1) - 2(x+1) = 0$

$(x+1)(x^2 - x - 2) = 0$

$x = -1$ $\quad x^2 - x - 2 = 0$

$x = 2$ $\quad x = -1$

37. Tenglamani yeching.

$$\log_{\frac{1}{2}}(\sin^2 x) + \log_{\frac{1}{2}}(\cos^2 x) = 3$$

$\log_{\frac{1}{2}}(\sin^2 x \cos^2 x) = 3$

$\frac{1}{4}\sin^2 2x = \frac{1}{8}$

$\frac{1-\cos 4x}{2} = \frac{1}{2}$

$\cos 4x = 0$

$4x = \frac{\pi}{2} + \pi n$

$x = \frac{\pi}{8} + \frac{\pi n}{4}$

a) $\left[0; \frac{\pi}{2}\right]$ oraliqta eng kichik yechimini toping.

Javob: a) $\frac{\pi}{8}$

b) $\left[-\frac{\pi}{3}; \frac{2\pi}{3}\right]$ oraliqdagi yechimlari yig'indisini hisoblang.

Javob: b) π

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

a) $n = 0 \quad x = \frac{\pi}{8}$

b) $n = -1 \quad n = 0 \quad n = 1 \quad n = 2$

$\frac{\pi}{8} - \frac{\pi}{4} \quad \frac{\pi}{8} \quad \frac{\pi}{8} + \frac{\pi}{4} \quad \frac{\pi}{8} + \frac{\pi}{2}$

yig'indisi $= \frac{\pi}{8} + \frac{\pi}{2} = \pi$

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

38. Agar $f(x)=\frac{x-6}{6x-1}$ berilgan bo'lsa, ($f^{-1}(x)-f(x)$ funksiyaga teskari funksiya)

a) $f^{-1}(1)$ ni hisoblang.

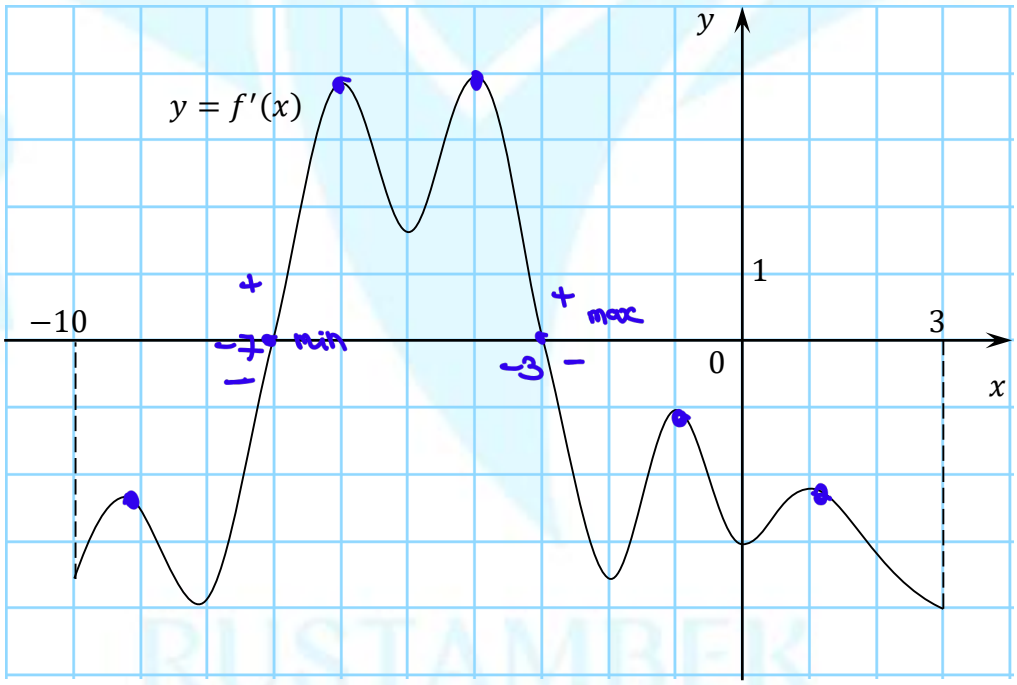
Javob a) _____

b) $f(x)\cdot f^{-1}(x)\geq 0$ tensizlikning eng kichik natural yechimini toping.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

39. $(-10;3)$ oraliqda $f(x)$ funksiyaning hosilasining grafigi tasvirlangan.



a) $f(x)$ funksiyaning $(-10;3)$ oraliqdagi qaysi nuqtada eng katta qiymatga erishadi.

Javob: a) _____

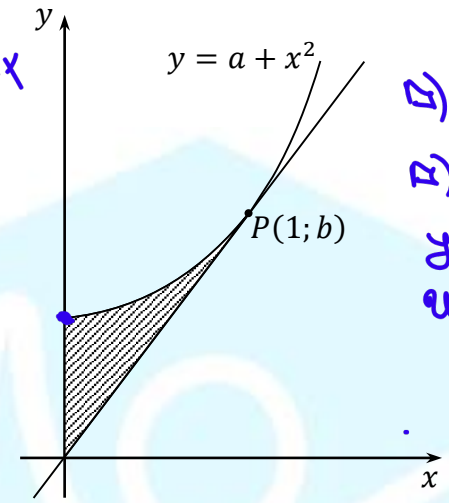
b) $f'(x)$ funksiya $(-10;3)$ oraliqda nechta maksimum nuqtaga ega?

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

40. Rasmda $y = x^2 + a$ parabolaga $(1; b)$ nuqtada urinuvchi to'g'ri chiziq grafigi tasvirlangan.



a) Rasmdagi ma'lumotlar asosida $a^2 + ab + b^2$ ni hisoblang.

Javob: a) _____

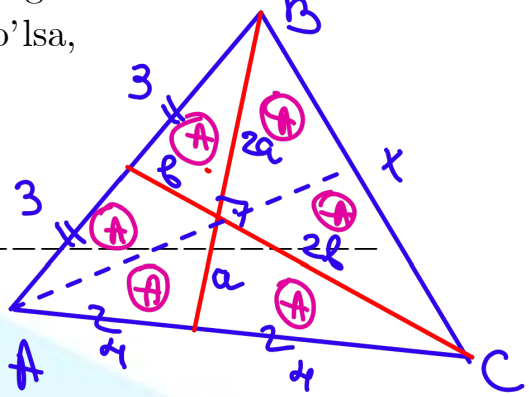
b) Rasmdagi bo'yalgan soha yuzini toping.

Javob: b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

41. ABC uchburchakning AB va AC tomonlariga o'tkazilgan medianalari o'zaro perpendikulyar. Agar $AB = 6$ va $AC = 8$ ga teng bo'lsa,



a) BC tomon uzunligini toping.

Javob: a) $2\sqrt{5}$

b) ABC uchburchak yuzini toping.

Javob: b) $4\sqrt{11}$

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

$$\begin{cases} 4a^2+b^2=9 \\ a^2+4b^2=16 \\ 4a^2+4b^2=x^2 \end{cases} \quad (+) \quad 5a^2+5b^2=25 \Rightarrow a^2+b^2=5.$$

$$4(a^2+b^2)=x^2 \qquad x^2=20$$

$$x=2\sqrt{5}$$

$$A=\frac{b\cdot 2a}{2}=ab=\frac{2\sqrt{11}}{3}$$

$$S_{ABC}=6A=6\cdot\frac{2\sqrt{11}}{3}=4\sqrt{11}$$

$$\begin{cases} a^2+b^2=5 \\ 4a^2+b^2=9 \end{cases} \quad (-)$$

$$3a^2=4$$

$$a=\frac{2}{\sqrt{3}} \qquad b=\frac{\sqrt{11}}{\sqrt{3}}$$

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

42. Markazi O nuqtada bo'lgan AE diametrli yarim aylanaga AB va ED vatarlar o'tkazilgan ($AB = ED$). Yarim ayalandagi AC vatar $\angle BAE$ burchakni teng ikkiga ajratadi.

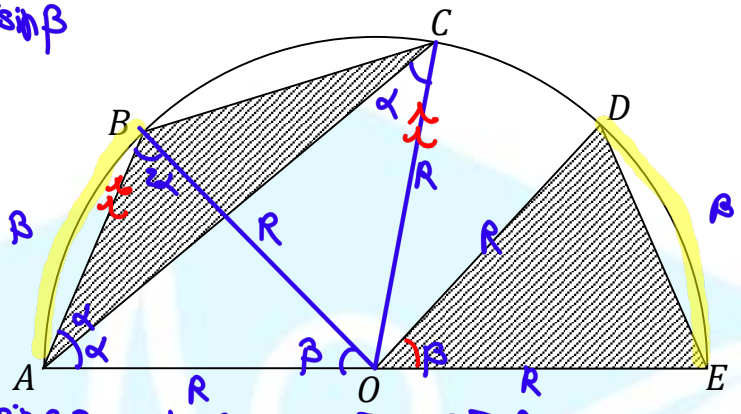
$S_{ABC} = S_{AOB} = \frac{1}{2}R^2\sin\beta$

$S_{DOE} = \frac{1}{2}R^2\sin\beta$

b) $\alpha + \beta = 180$

$\beta = 60$

$S_{ABC} = S_{DOE} = \frac{1}{2}R^2\sin 60^\circ = \frac{1}{2}\cdot(6+2\sqrt{3})\cdot\frac{\sqrt{3}}{2} = \frac{3\sqrt{3}+3}{2}$



a) ABC uchburchak yuzining DOE uchburchak yuzga nisbatini toping.

Javob: a) 1

b) Agar $\angle BAC = 30°$ va aylana radiusi $\sqrt{6+2\sqrt{3}}$ ga teng bo'lsa, rasmdagi bo'yalmagan soha yuzini toping. ($\pi \approx 3$ *deb oling*)

Javob: b) 6

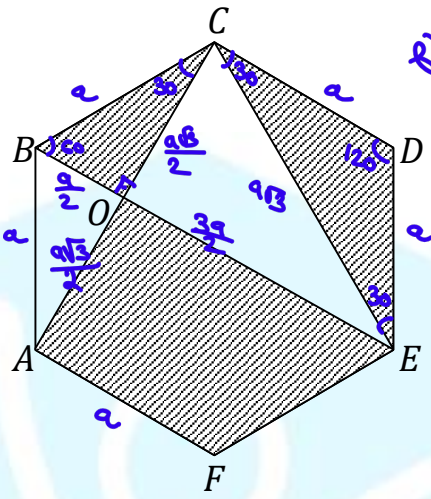
Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

b) $S = \frac{\pi\cdot R^2}{2} - 2\cdot\frac{3\sqrt{3}+3}{2} = \frac{3\cdot(6+2\sqrt{3})}{2} - 2\frac{3\sqrt{3}+3}{2} = 9+3\sqrt{3}-3\sqrt{3}-3 =$

$= 6$

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

43. Rasmda $ABCDEF$ muntazam oltiburchak tasvirlangan. AC va BE diagonallar O nuqtada kesishadi.



a) $AOEF$ to'rtburchak yuzining BOC uchburchak yuziga nisbatini toping.

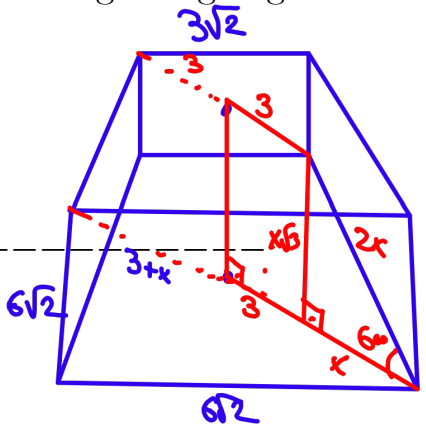
Javob: a) 5 : 1

b) Agar muntazam oltiburchakning tomoni 6 ga teng bo'lsa, bo'yalgan soha yuzini toping.

Javob: b) $36\sqrt{3}$

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

44. Muntazam to'rtburchakli kesik piramida kichik asosining yuzi 18 ga teng bo'lib, uning yon qirrasi va asos tekisligi orasidagi burchak 60° ga teng. Agar unga tashqi chizilgan shar hajmi 288π ga teng bo'lsa,



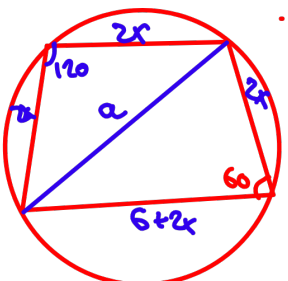
a) Sharning to'la sirtini toping.

Javob: a) 144π

b) Shu kesik piramidaning hajmini toping.

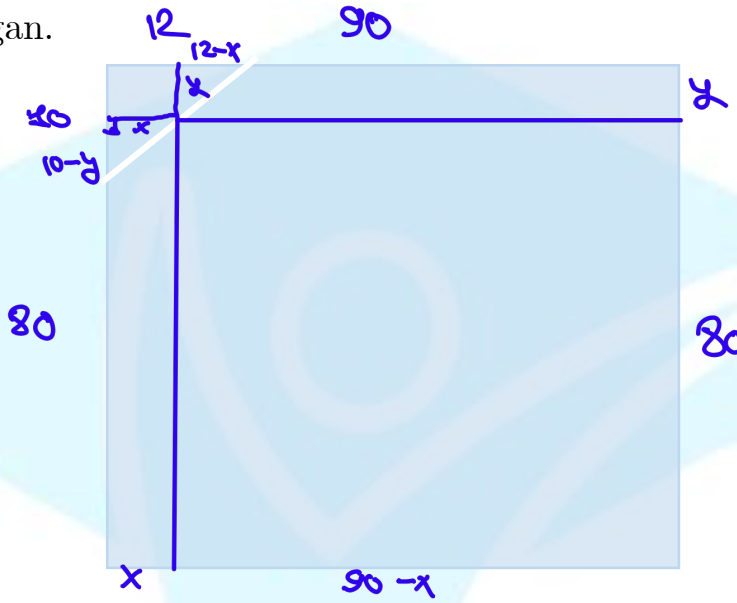
Javob: b) $126\sqrt{3}$

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.



MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

45. O'lchami 80 × 90 cm^2 bo'lgan tekis oynaning sirtida yoriq hosil bo'lgan, va bu yoriq uni ikki bo'lakka bo'lib yuborgan. Bu ikkita bo'lakdan kichigi to'g'ri burchakli uchburchak shaklida bo'ladi, uning katetlari 10 cm va 12 cm bo'ladi (bu uzunliklar kichik va katta tomonlarga mos keladi).
Bu ikkita shakldan kattasidan eng katta yuzali to'g'ri to'rtburchak shaklidagi oyna kesib olingan.



$\frac{10-y}{x} = \frac{y}{12-x}$

$120 - 10x - 12y + xy = xy$

$10x + 12y = 120$

$x = 12 - 1{,}2y$

a) Kesilgan eng katta yuzali oynaning perimetrini toping. (cm)

Javob: a) $P = 2(90-x+80-y) = 2(170-7{,}5-3) = 319$

b) Kesilgan oynaning yuzasining eng katta qiymatini toping. (cm^2)

Javob: b) $S = (90-3)\cdot(80-7{,}5) = 6307{,}5$

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

$S = (90-x)(80-y) = (90-12+1{,}2y)(80-y) =$

$= (78+1{,}2y)(80-y) = 7020 + 30y - 1{,}2y^2 \to \max$

$S' = 18 - 2{,}4y = 0 \quad y = \frac{18}{2{,}4} = 7{,}5 \quad x = 3$

MILLIY SERTIFIKAT MOCK TEST SAVOLLARI