MILLIY SERTIFIKAT MOCK TEST SAVOLLARI

24-MILLIY SERTIFIKAT TESTI

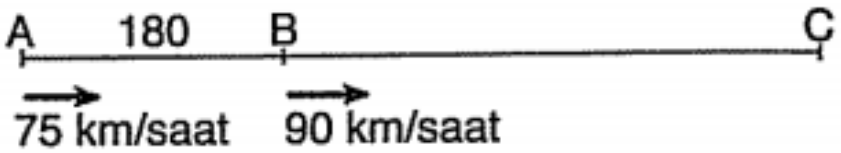
1. Natural a va b sonlar uchun $a+b=97$ tenglik bajarilsa, $ab-2$ ayirmaning eng katta qiymatini toping.
   A) 2350
   B) 2349
   C) 2348
   D) 2347

2. Hisoblang:

$$\left(\frac{1}{4}\right)^{-2} - 3 \cdot 8^{\frac{2}{3}} \cdot 4^{0} + \left(\frac{9}{16}\right)^{-\frac{1}{2}} - 3^{-1}$$

   A) 2
   B) 3
   C) 4
   D) 5

3. A dan B gacha masofa 180 km. A shahridan tezligi 75 km/soat bo‘lgan, B shahridan esa tezligi 90 km/soat bo‘lgan ikkita avtomobil bir vaqtning o‘zida va bir xil yo‘nalishda harakatlana boshlaydi. B shahridan harakatga tushgan avtomobil C punktiga yetib borib, hech to‘xtamasdan darhol qaytadi. Ikkala avtomobil harakatni boshlaganidan 4 soat o‘tib uchrashganlariga ko‘ra, B bilan C orasidagi masofa nechchi km?



   A) 120
   B) 150
   C) 180
   D) 240

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4. Agar uchburchakning asosi 10% ga orttirilib, asosga tushgan balandligi 10% ga kamaytirilsa uchburchak yuzi qanday o'zgaradi?
   A) O'zgarmaydi
   B) 1% ga ortadi
   C) 1% ga kamayadi
   D) 2% ga kamayadi

5. $3 \cdot 8^{24} \cdot 625^{17}$ ko'paytma necha xonali son?
   A) 69
   B) 70
   C) 71
   D) 72

6. Hisoblang:

$$\frac{\sqrt{2}+\sqrt{3}+\sqrt{4}}{\sqrt{2}+\sqrt{3}+\sqrt{6}+\sqrt{8}+4}$$

   A) $\sqrt{2}-1$
   B) $\sqrt{2}+1$
   C) $2-\sqrt{3}$
   D) $2+\sqrt{3}$

7. Hisoblang:

$$\sqrt[12]{8 \cdot 2^8} \cdot \sqrt[4]{7 \cdot \sqrt[3]{54} + 15 \cdot \sqrt[3]{128}}$$

   A) 6
   B) 2
   C) $\sqrt[12]{12}$
   D) $\sqrt[4]{3}$

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8. O'suvchi arifmetik progressiyaning dastlabki uchta hadi yig'indisi 21 ga, kvadratlari yig'indisi 179 ga teng. Uning dastlabki o'nta hadi yig'indisini toping.
   A) 200
   B) 210
   C) 220
   D) 230

9. Geometrik progressiyada $b_4 + b_2 = 10$ va $b_1 + b_3 = 5$ tenglik o'rinli bo'lsa, geometrik progressiyaning dastlabki 8 ta hadi yig'indisini toping.
   A) 33
   B) 63
   C) 127
   D) 255

10. Agar $a + b = 3$ bo'lsa, $\left(\frac{36b}{a^2+ab} + \frac{12}{a+b} + \frac{a}{b^2+ab}\right) : \left(\frac{6b}{a} + 2 + \frac{a}{6b}\right)$ ni hisoblang.
    A) 1
    B) 2
    C) 3
    D) 4

11. Ifodani soddalashtiring:

$$\frac{\frac{1}{a} + \frac{1}{b+c}}{\frac{1}{a} - \frac{1}{b+c}} \cdot \left(1 + \frac{b^2 + c^2 - a^2}{2bc}\right) \cdot (a + b + c)^{-2}$$

    A) $\frac{1}{2ab}$
    B) $\frac{1}{bc}$
    C) $\frac{1}{2bc}$
    D) $\frac{1}{ac}$

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12. Hisoblang:

$$\arcsin\frac{3}{5}+\arcsin\frac{12}{13}$$

A) $\arcsin\frac{61}{65}$
B) $\arcsin\frac{63}{65}$
C) $\arcsin\frac{64}{65}$
D) $\arcsin\frac{59}{65}$

13. $-20245°$ qaysi chorakka tegishli?

A) I
B) II
C) III
D) IV

14. $\frac{3^x+3^x+3^x+3^x}{6^x+6^x+6^x}=16$ tenglamaning ildizi x_0 bo'lsa, 2^{x_0+2} ning qiymatini toping.

A) $\frac{1}{6}$
B) $\frac{1}{3}$
C) 3
D) 6

15. Tengsizlikni yeching:

$$\log_2\frac{2x+3}{x+1}<1$$

A) $\left(-\infty;-\frac{3}{2}\right)$
B) $\left(-\frac{3}{2};\infty\right)$
C) $(-\infty;-1)$
D) $(-1;\infty)$

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16. Tenglamaning haqiqiy ildizlari yig'indisini hisoblang.

$$|x^2 - 4x + 2| = \frac{5x - 4}{3}$$

A) 1
B) 2
C) 5
D) 7

17. Tenglama nechta haqiqiy ildizga ega?

$$\frac{4x}{x^2 + x + 3} + \frac{5x}{x^2 - 5x + 3} = -\frac{3}{2}$$

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

18. Tenglamaning haqiqiy ildizlari yig'indisini hisoblang:

$$2x + 4 + \sqrt{2x + 6} = 0$$

A) $-3{,}5$
B) $-2{,}5$
C) -1
D) 0

19. Tengsizlikni yeching:

$$(x^3 - 4x)\sqrt{x + 2} > 0$$

A) $(2; \infty)$
B) $(0; \infty)$
C) $(-2; \infty)$
D) $(-2; 0) \cup (2; \infty)$

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20. Agar $f(x)=\frac{2-3x}{4x+5}$ ga teng bo'lsa, $f^{-1}(x)$ funksiyani toping. ($f^{-1}(x)-f(x)$ funksiyaning teskari funksiyasi)

A) $\frac{5-3x}{4x-2}$
B) $\frac{3x-5}{4x-2}$
C) $\frac{2-4x}{3x+5}$
D) $\frac{-5x+2}{4x+3}$

21. Integralni hisoblang:

$$\int \frac{\cos x}{2\sin^2 x}dx$$

A) $\frac{1}{2\,\mathrm{tg}\,x}+C$
B) $-\frac{1}{2\,\mathrm{ctg}\,x}+C$
C) $-\frac{1}{2\sin x}+C$
D) $-\frac{1}{2\cos x}+C$

22. $y=x^2+|x+2|$ funksiyaning $[-3;1]$ oraliqdagi eng katta va eng kichik qiymatlari yig'indisini toping.

A) 14
B) 5,75
C) 11,75
D) 15

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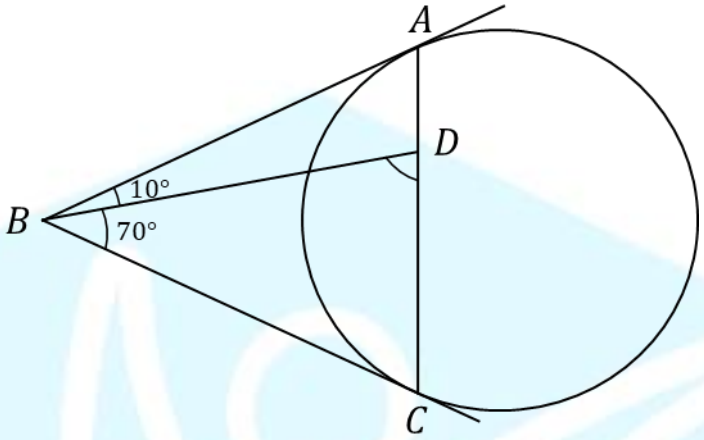
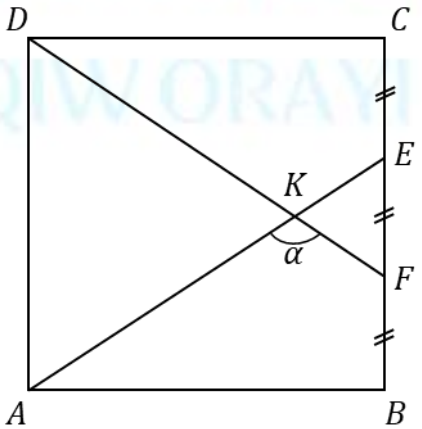
23. B nuqtadan aylanaga BA va BC urinmalar o'tkazilgan. D nuqta AC vatarda yotadi. Agar $\angle ABD = 10°$ va $\angle CBD = 70°$ ga teng bo'lsa, $\angle BDC$ burchakni toping.



A) $50°$
B) $55°$
C) $60°$
D) $65°$

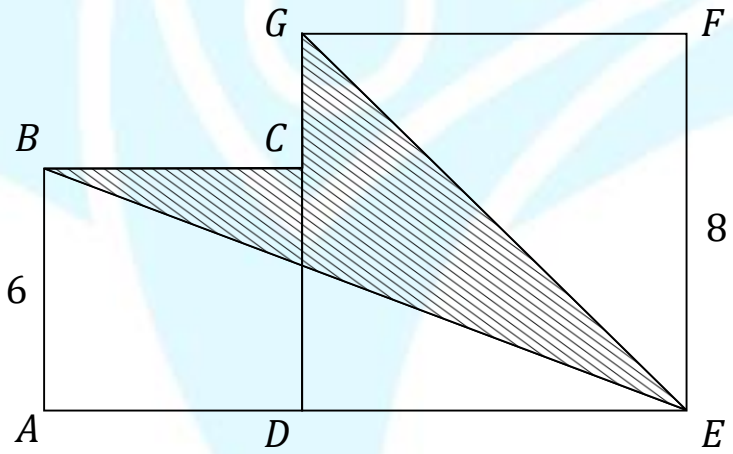
24. Agar uchburchakning uchta medianasi 6, 8 va 10 ga teng bo'lsa, uchburchakning yuzini toping.
A) 64
B) 32
C) 24
D) 36

25. $ABCD$ kvadratning BC tomonida E va F nuqtalar olingan. AE va DF kesmalar K nuqtada kesishadi. Agar $\angle AKF = \alpha$ bo'lsa, $\operatorname{tg}\alpha$ ni toping.



A) $-\frac{12}{5}$
B) $-\frac{6}{5}$
C) $-\frac{2}{5}$
D) $\frac{4}{5}$

26. Rasmda $ABCD$ va $DEFG$ kvadratlar tasvirlangan. Agar $AB = 6$ va $EF = 8$ ga teng bo'lsa, $BCGE$ to'rtburchakning yuzini toping.



A) 32
B) 28
C) 30
D) 26

27. $ABCD$ trapetsiyada $DC||EF||AB$, $CF = 3FB$, $DC = 2$ va $EF = 8$ ga teng bo'lsa, AB katta asosni toping.

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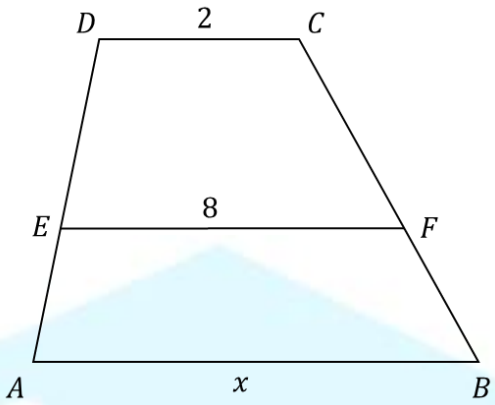
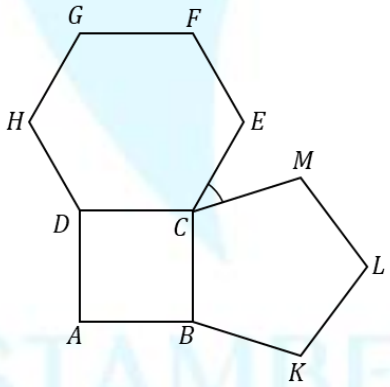


A) 9
B) 10
C) 11
D) 12

28. Rasmda $ABCD$ kvadrat, $BCMLK$ muntazam beshburchak va $DCEFGH$ muntazam oltiburchak tasvirlangan. $\angle ECM$ burchakni toping.



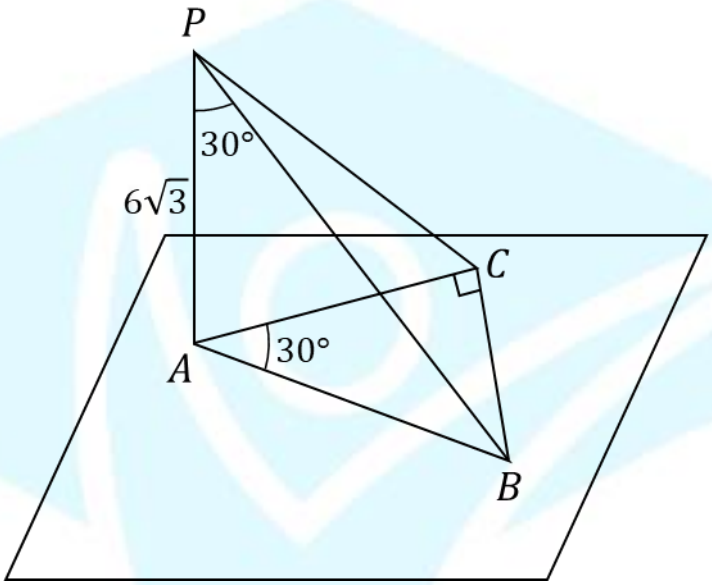
A) 54°
B) 48°
C) 45°
D) 42°

29. $ABCDEFGH$ muntazam sakkizburchak. Agar $\overrightarrow{AH} = \vec{x}$, $\overrightarrow{AE} = \vec{y}$ ga teng bo'lsa, $\overrightarrow{DC} + \overrightarrow{CB} + \overrightarrow{BA}$ vektorni $\vec{x}$ va $\vec{y}$ vektorlar orqali ifodalang.

A) $\vec{x} + \vec{y}$
B) $\vec{x} - \vec{y}$
C) $\vec{y} - \vec{x}$

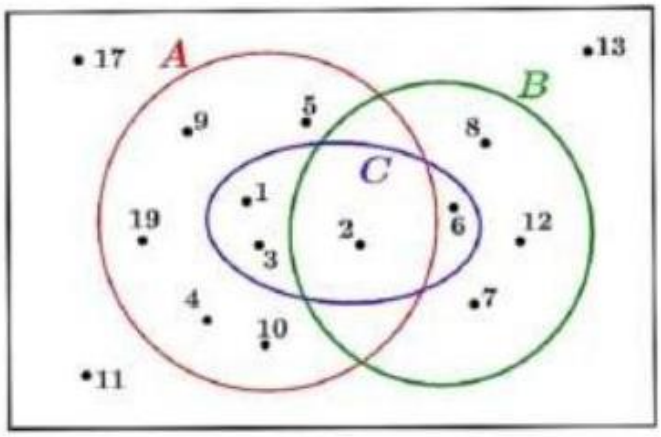
D) $-\vec{x}-\vec{y}$

30. ABC uchburchak tekisligiga P nuqtadan PA perpendikulyar tushirilgan. Agar $\angle ACB = 90°$, $\angle CAB = \angle APB = 30°$ va $PA = 6\sqrt{3}$ ga teng bo'lsa, PC kesma uzunligini toping.



A) $3\sqrt{15}$
B) $12\sqrt{5}$
C) $5\sqrt{15}$
D) $4\sqrt{15}$

31. Rasmda berilganlarga ko'ra $C \cup (B \setminus A)$ to'plamning qism to'plamlari sonini toping.



A) 32
B) 64
C) 128

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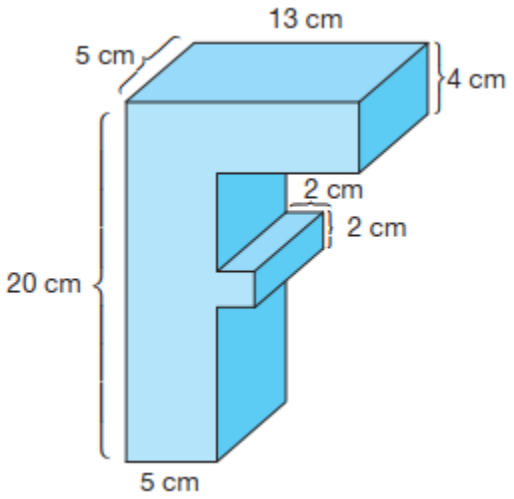
D) 256

32. 1 dan 50 gacha bo‘lgan sonlardan tasodifiy tanlangan sonning raqamlar yig‘indisi 9 ga teng bo‘lish ehtimoli qanday?

A) $\frac{1}{5}$
B) $\frac{1}{9}$
C) $\frac{1}{5}$
D) $\frac{1}{10}$

Topshiriqlar(33-35) va javob variantlari (A-F) ni o’zaro moslashtiring.
Rasmdagi ma’lumotlar asosida savollarga javob yozing.



33. Berilgan jismning o’q kesim yuzini toping.

34. Berilgan jismning to’la sirtini toping.

35. Berilgan jismning hajmini toping.

A) 680
B) 622
C) 584
D) 620
E) 136
F) 720

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36. Tenglamani yeching:

$$\frac{5}{x-1}+\frac{4}{x+2}+\frac{21}{x-3}=\frac{5}{x+1}+\frac{4}{x-2}+\frac{21}{x+3}$$

a) Tenglama nechta haqiqiy ildizga ega?

Javob: a)_____

b) Tenglamaning haqiqiy ildizlari ko'paytmasini toping.

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

37. Tenglamani yeching.

$$\sqrt{3-4\cos 2x}=\sqrt{2\sin x}$$

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

Javob: a)_____

b) $[-2\pi;3\pi]$ oraliqdagi yechimlari yig'indisini hisoblang.

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

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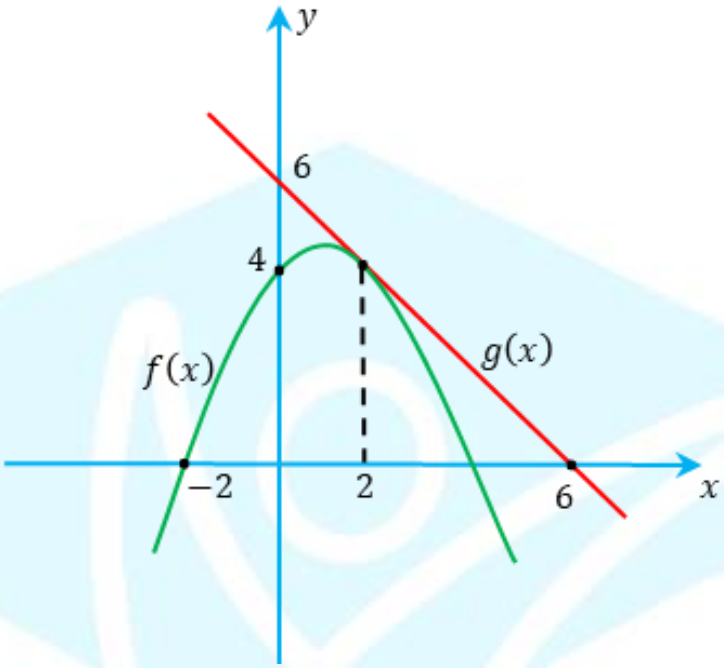
38. $g(x) = kx + b$ va $f(x) = ax^2 + bx + c$ funksiya grafiklari berilgan. Grafikdan foydalanib, quyidagilarni hisoblang.



a) $f'(2)$ ni hisoblang.

Javob a) _____

b) $f'\left(\frac{1}{a}\right) - 5f'\left(\frac{1}{b}\right) + 2f'\left(\frac{1}{c}\right)$ ni hisoblang.

Javob b) _____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

39. Rasmda $f(x)$ funksiya grafigiga tegishli bo'lgan $x_1; x_2; x_3; x_4; x_5; x_6; x_7; x_8$ nuqtalar tasvirlangan.

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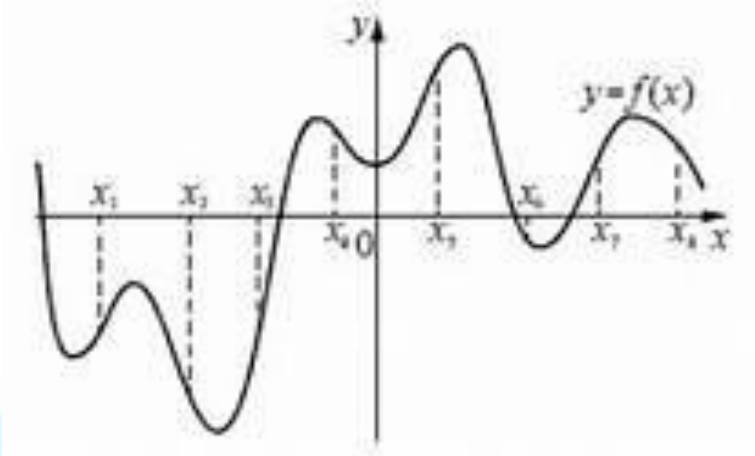

a) $f(x) \geq 0$ tengsizlikni nechta nuqta qanoatlantiradi?

Javob: a)_____

b) $f'(x) < 0$ tengsizlikni nechta nuqta qanoatlantiradi?

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

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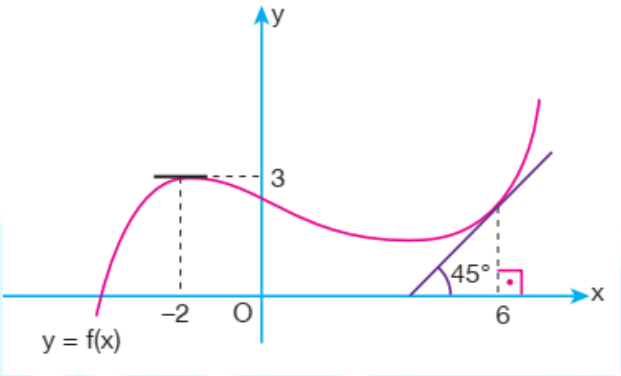
40. Rasmda $y = f(x)$ ning grafigi tasvirlangan. Funksiay grafigiga $x_0 = 6$ nuqtada o'tkazilgan urinma Ox o'qining musbat yo'nalishi bilan $45°$ li burchak tashkil etsa,



a) $f'(-2) + f'(6)$ ni hisoblang.

Javob: a)_____

b) $\int_{-2}^{6}\left(f''(x) + f'(x) \cdot f''(x)\right) dx$ ni hisoblang.

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

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41. ABC muntazam uchburchak ichidan P nuqta olingan bo'lib, bunda $AP = 6$, $BP = 8$ va $CP = 10$ ga teng bo'lsa,
    a) Muntazam uchburchakka tashqi chizilgan aylana radiusini toping.

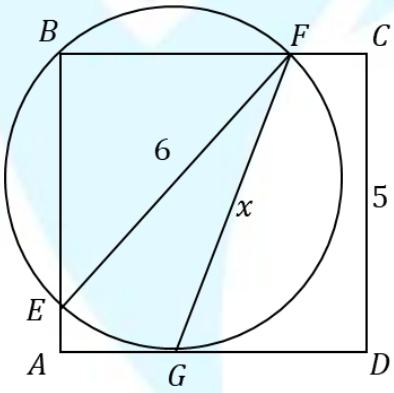
    Javob: a)_____

    b) Muntazam uchburchak yuzini toping.

    Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

42. $ABCD$ kvadratga aylana shunday chizilganki, aylana kvadratning B uchidan o'tib, AD tomonga G nuqtada urinadi. AB va BC tomonlarini E va F nuqtalarda kesib o'tadi. Agar $EF = 6$ va $CD = 5$ ga teng bo'lsa,



    a) Aylana uzunligini toping.

    Javob: a)_____

    b) FG kesma uzunligini toping.

    Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

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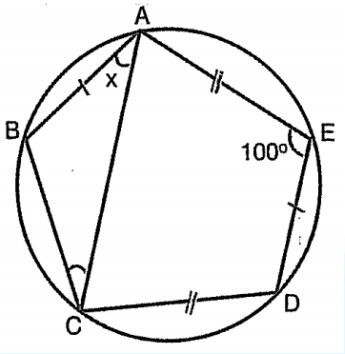
43. Aylanaga $ABCDE$ beshburchak ichki chizilgan. Agar $AE = CD$, $ED = AB$ va $\angle AED = 100°$ ga teng bo'lsa,



a) $\angle BAC$ burchakni toping.

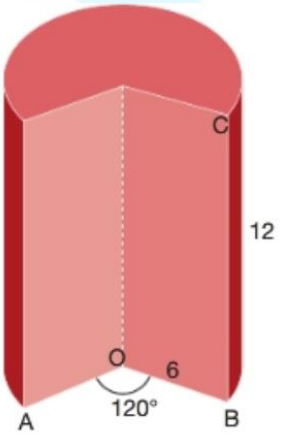
Javob: a)_____

b) $\angle ACD$ burchakni toping.

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

44. Rasmda $120°$ li qismi kesib olingan to'g'ri silindr tasvirlangan. Agar silindrning asosi radiusi 6 ga, balandligi esa 12 ga teng bo'lsa,
$(\pi \approx 3\ deb\ oling)$



a) Berilgan jismning to'la sirtining yuzini toping.

Javob: a)_____

b) Berilgan jismning hajmini toping.

Javob: b)_____

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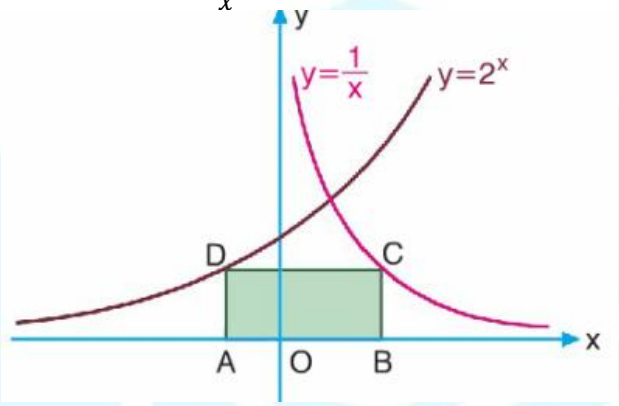
Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.

45. Rasmda $y = 2^x$ va $y = \frac{1}{x}$ funksiya grafiklari tasvirlangan. Eng katta yuzali $ABCD$ to'g'ri to'rtburchakning A va B uchlari Ox o'qida, D va C uchlari esa mos ravishda $y = 2^x$ va $y = \frac{1}{x}$ funksiya grafiklariga yotadi.



a) Eng katta yuzali $ABCD$ to'g'ri to'rtburchakning C nuqtasining ordinatasini toping.

Javob: a)_____

b) Eng katta yuzali $ABCD$ to'g'ri to'rtburchakning D nuqtasining absissasini toping.

Javob: b)_____

Diqqat! Javoblaringizni javoblar varaqasiga ko'chirib yozing.