29 мая 2018 г., 23:13

DTM tomonidan taqdim qilingan namunaviy test (axborotnoma)ni 2-variant yechimlari : Misollar Usmonov.M tomonidan yechilgan:
Loyiha muallifi : @PulatovDilmurodHalimbayvich
Rasmiy kanalimiz @axborotnoma
Matematikan yordam guruhi : @axborotnomaguruhi
Takliflar uchun @axborotnoma_bot
Reklama xizmatimiz mavjud
@axborotnoma_reklama_bot

Ахборотнома 2018 B №2

① $$\frac{a}{b}=\frac{1\cdot2+2\cdot3+3\cdot4+\cdots+40\cdot41}{5\cdot4+10\cdot6+15\cdot8+\cdots+200\cdot82}=$$

$$=\frac{1\cdot2+2\cdot3+3\cdot4+\cdots+40\cdot41}{5\cdot2\cdot(1\cdot2+2\cdot3+3\cdot4+\cdots+40\cdot41)}=\frac{1}{10}$$

C

② $\frac{7}{1+\frac{2}{x-1}}$ ловкога эга бўлмослиги учун $1+\frac{2}{x-1}=0$ ва $x-1=0$ бўлиши керак.

a) $1+\frac{2}{x-1}=0 \Rightarrow 1=\frac{2}{1-x} \Rightarrow 1-x=2 \Rightarrow x_1=-1$

б) $x-1=0 \Rightarrow x_2=1$

$\Sigma x=(-1)+1=0$

A

③ $x<-1$, $y>1$ бўлса:

A) $x^4>y$ агар $|x|>\sqrt[4]{y}$ бўлса шарт ўринли.

B) $y^3>x^3 \Rightarrow y^3-x^3=y^3+(-x)^3$ бу ҳолда $y>0$ ва $(-x)>0$ бўлгани учун $y^3>x^3$ ҳар доим ўринли

C) $x^2<y^2$ бу фақат $|x|<y$ бўлсагина ўринли

D) $y^2>x^6$ бу фақат $y>|x^3|$ бўлсагина ўринли

Ахборот кола 2018 2-сон

④ $\left(1\frac{1}{7}\right)\cdot\left(1\frac{1}{8}\right)\cdot\left(1\frac{1}{9}\right)\cdot\ldots\cdot\left(1\frac{1}{69}\right) =$

$= \frac{8}{7}\cdot\frac{9}{8}\cdot\frac{10}{9}\cdot\frac{11}{10}\cdot\frac{12}{11}\cdot\ldots\cdot\frac{68}{67}\cdot\frac{69}{68}\cdot\frac{70}{69} =$

$= \frac{70}{7} = 10$ ②

⑤ $(180+70) \rightarrow 100\%$ $\quad x = ?$

$70 \Rightarrow x\%$

$x = \frac{70\cdot 100\%}{(180+70)} = \frac{70\cdot 100\%}{250} = 28\%$ (A)

⑥ $\left(\sqrt[3]{a+\sqrt[3]{a+\sqrt[3]{a+\ldots}}}\right)^3 = 2^3$

$\underbrace{a+\sqrt[3]{a+\sqrt[3]{a+\sqrt[3]{a+\ldots}}}}_{2} = 8$

$a+2=8 \Rightarrow a=6$

$\left(\sqrt{a-\sqrt{a-\sqrt{a-\ldots}}}\right)^2 = (x)^2 \quad x=?$ $\quad x>0$

$\underbrace{a-\sqrt{a-\sqrt{a-\sqrt{a-\ldots}}}}_{x} = x^2$

$a-x=x^2 \Rightarrow 6-x=x^2 \Rightarrow$

$\Rightarrow x^2+x-6=0 \Rightarrow (x+3)(x-2)=0$

$x=2$ (B)

13. $y = \cos\left(\frac{x}{3} - \frac{\pi}{4}\right) + 2\sin x$ funksiyaning eng kichik musbat davrini toping.

kodlash usulidan foydalanilgan. Shu bilan birga, ikkilikdagi kodlar o'sib borish tartibi ingliz alifbosi harflarining o'sish tartibiga

(7) $1\cdot 4 + 2\cdot 7 + 3\cdot 10 + \cdots + 9\cdot 28 =$

$= 1\cdot(3+1) + 2\cdot(6+1) + 3\cdot(9+1) + \cdots + 9(27+1) =$

$= 1\cdot 3 + 1 + 2\cdot 6 + 2 + 3\cdot 9 + 3 + \cdots + 9\cdot 27 + 9 =$

$= 1\cdot 3 + 2\cdot 6 + 3\cdot 9 + \cdots + 9\cdot 27 + (1+2+3+\cdots+9) =$

$= 3(1 + 2\cdot 2 + 3\cdot 3 + \cdots + 9\cdot 9) + \frac{1+9}{2}\cdot 9 =$

$= 3\cdot(\underbrace{1^2 + 2^2 + 3^2 + \cdots + 9^2}_{\text{формуласи бор}}) + 45 =$

$= 3\cdot(1 + 4 + 9 + 16 + 25 + 36 + 49 + 64 + 81) + 45 =$

$= 3\cdot 285 + 45 = 900$ (A)

Эслатма: Илгари борича формула китоб-лардан фойдаланиш учун берилган тестларни ечинглар

$$1^2 + 2^2 + 3^2 + 4^2 + \cdots + n^2 = \frac{n(n+1)(2n+1)}{6}$$

(8) $ctg\alpha = -\frac{1}{2}$; $tg3\alpha = ?$

$ctg\alpha = -\frac{1}{2} \Rightarrow tg\alpha = -2$

$$tg2\alpha = \frac{2tg\alpha}{1-tg^2\alpha} = \frac{2\cdot(-2)}{1-(-2)^2} = \frac{-4}{1-4} = \frac{4}{3}$$

$$tg3\alpha = tg(2\alpha+\alpha) = \frac{tg2\alpha + tg\alpha}{1 - tg2\alpha\, tg\alpha} = \frac{\frac{4}{3} + (-2)}{1 - \frac{4}{3}\cdot(-2)} =$$

$$= \frac{\left(\frac{4}{3} - 2\right)\cdot 3}{\left(1 + \frac{8}{3}\right)\cdot 3} = \frac{4-6}{3+8} = \frac{-2}{11} = -\frac{2}{11}$$ (C)

D) $(x-5)^2+(y$

$\ldots,6;8;10\}$ va $B=\{5;6;7;8;10\}$
$A\cup B$ to'plam elementlari

(9) $\sin 2^\circ+\sin 3^\circ+\sin 4^\circ+\sin 5^\circ+\ldots+\sin 180^\circ+$

$+\sin 355^\circ+\sin 356^\circ+\sin 357^\circ+\sin 358^\circ=$

$=(\sin 2^\circ+\sin 358^\circ)+(\sin 3^\circ+\sin 357^\circ)+(\sin 4^\circ+\sin 356^\circ)+$

$+(\sin 5^\circ+\sin 355^\circ)+\ldots+\sin 180^\circ=$

$=2\sin\frac{2^\circ+358^\circ}{2}\cos\frac{2-358^\circ}{2}+2\sin\frac{3^\circ+357^\circ}{2}\cdot\cos\frac{3-357^\circ}{2}+$

0 0

$+\ldots+\sin 180^\circ=0$ (C)

(10) $\sqrt{x^2+5x+2+\sqrt{(2-x)^2}}=\sqrt{x^2+5x+2+|2-x|}=$

$=\left|\begin{array}{l} x<-2 \text{ bo'lsa,} \\ |2-x|=2-x \end{array}\right|=\sqrt{x^2+5x+2+(2-x)}=$

$=\sqrt{(x+2)^2}=\left|\begin{array}{l} x<-2 \text{ bo'lsa} \\ |x+2|=-(x+2) \end{array}\right|=-(x+2)$ (B)

(11) $\frac{2}{3x}=\frac{-3}{4y}=\frac{4}{5z}$ | $y<0$ bo'lsa x va z qanday qatta sonlar

y - eng kichik son.

$\frac{2}{3x}=\frac{4}{5z}\Rightarrow 10z=12x\Rightarrow z=1{,}2x\Rightarrow$

$\Rightarrow$ demak $z>x>0$ va $y<0$ bo'lsa

$z>x>y$ bo'ladi (C)

Ак бароткома 2018 №2.

(14) $x\sqrt{x} - 7\sqrt{x} = 6$

$x\sqrt{x} - 4\sqrt{x} - 3\sqrt{x} - 6 = 0$

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

$\sqrt{x}(\sqrt{x}-2)(\sqrt{x}+2) - 3(\sqrt{x}+2) = 0$

$(\sqrt{x}+2)\cdot[\sqrt{x}(\sqrt{x}-2) - 3] = 0$

$\sqrt{x}+2 = 0 \Rightarrow \sqrt{x} = -2 \Rightarrow \varnothing$

$\sqrt{x}(\sqrt{x}-2) - 3 = 0$

$x - 2\sqrt{x} - 3 = 0$

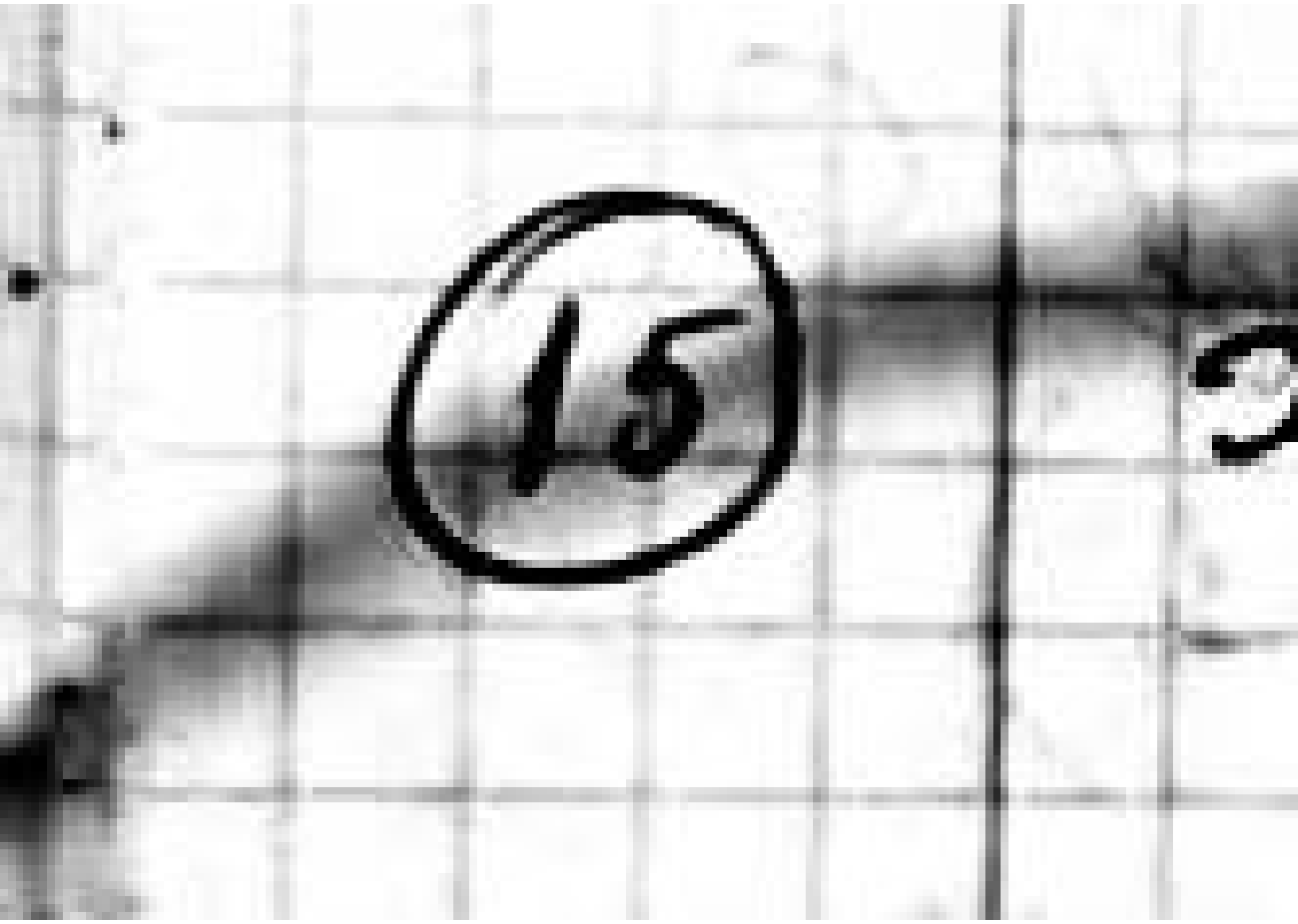
$(\sqrt{x}-3)(\sqrt{x}+1) = 0$

$\sqrt{x} - 3 = 0 \Rightarrow \sqrt{x} = 3 \Rightarrow \boxed{x = 9}$

$\sqrt{x}+1 = 0 \Rightarrow \sqrt{x} = -1 \Rightarrow \varnothing$

Лисол шартига асосан $x - \sqrt{x} = ?$

$x = 9 \Rightarrow x - \sqrt{x} = 9 - \sqrt{9} = 6$


15

$x^2+(k+2)x+2k-4=0$ $\quad x_1, x_2 < 2$

$k \in Z$; $k_{max} = ?$

A) $k=-2$

B) $k=-4$

C) $k=-1$ $\quad$ D) $k=-5$

C) $k=-1 \Rightarrow x^2+x-6=0 \Rightarrow (x+3)(x-2)=0 \Rightarrow$

$\Rightarrow x_1=-3;\ x_2=2;\quad x_2 \neq 2$

A) $k=-2 \Rightarrow x^2-8=0 \Rightarrow x_1=-2\sqrt{2};\ x_2=2\sqrt{2}$

$x_2 \neq 2.$

B) $k=-4 \Rightarrow x^2+4x-16=0 \Rightarrow$

$\Rightarrow x_{1,2}=-2\pm\sqrt{20} \Rightarrow x_1=-2-\sqrt{20};\quad x_2=-2+\sqrt{20}$

$x_2 \neq 2$

D) [redacted]

(D) $k=-5 \Rightarrow x^2+9x-14=0 \Rightarrow$

$\Rightarrow x_{1,2}=-4{,}5\pm\sqrt{4{,}5^2+14}=-4{,}5\pm\sqrt{34{,}25}$

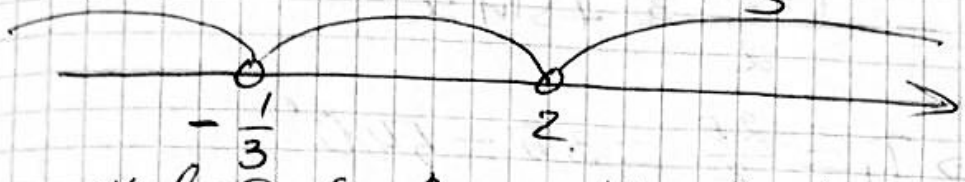
$x_1=-4{,}5-\sqrt{34{,}25};\quad x_2=-4{,}5+\sqrt{34{,}25};\quad x_1, x_2 < 2.$

(15) 2-уеуляеи вариант №1 ки

15-тести еи ееееееедан вариант

(16) $\left|\frac{4-2x}{1+3x}\right| > 0$ тенгсизликни ечинг.

$$\begin{cases} 4-2x \neq 0 \\ 1+3x \neq 0 \end{cases} \Rightarrow \begin{cases} x \neq 2 \\ x \neq -\frac{1}{3} \end{cases}$$



Жавоб: $(-\infty; -\frac{1}{3}) \cup (-\frac{1}{3}; 2) \cup (2; \infty)$

C

(17) $f(2x-3) = 3x+5$ $\quad f(f(1)) = ?$

$f(1)$ ни топамиз:

$f(1) = f(2x-3) \Rightarrow 1 = 2x-3 \Rightarrow x = 2$

$x=2 \Rightarrow f(2\cdot 2-3) = 3\cdot 2+5 \Rightarrow f(1) = 11$

$f(f(1)) = f(11) = ?$

$f(11) = f(2x-3) \Rightarrow 11 = 2x-3 \Rightarrow x = 7$

$x=7 \Rightarrow f(2\cdot 7-3) = 3\cdot 7+5 \Rightarrow f(11) = 26$

C

(17) II-усул

$f(2x-3) = 3x+5 \Rightarrow f(2x-3) = \frac{3}{2}(2x-3)+9,5 \Rightarrow$

$\Rightarrow 2x-3 = t \Rightarrow f(t) = \frac{3}{2}t + 9,5$

$f(1) = \frac{3}{2}\cdot 1 + 9,5 = 11 \Rightarrow f(1) = 11$

$f(f(1)) = f(11) = \frac{3}{2}\cdot 11 + 9,5 = 16,5 + 9,5 = 26$

C

(18) $y = \cos^2\left(\frac{x}{3} - \frac{\pi}{4}\right) + 2\sin x =$

$= \frac{1 + \cos 2\cdot\left(\frac{x}{3} - \frac{\pi}{4}\right)}{2} + 2\sin x = \frac{1 + \cos\left(\frac{2x}{3} - \frac{\pi}{2}\right)}{2} +$

$+ 2\sin x = \frac{1 + \sin\frac{2x}{3}}{2} + \sin x$

$\sin\frac{2x}{3} \Rightarrow T_1 = \frac{2\pi}{\frac{2}{3}} = 3\pi = 540^\circ$

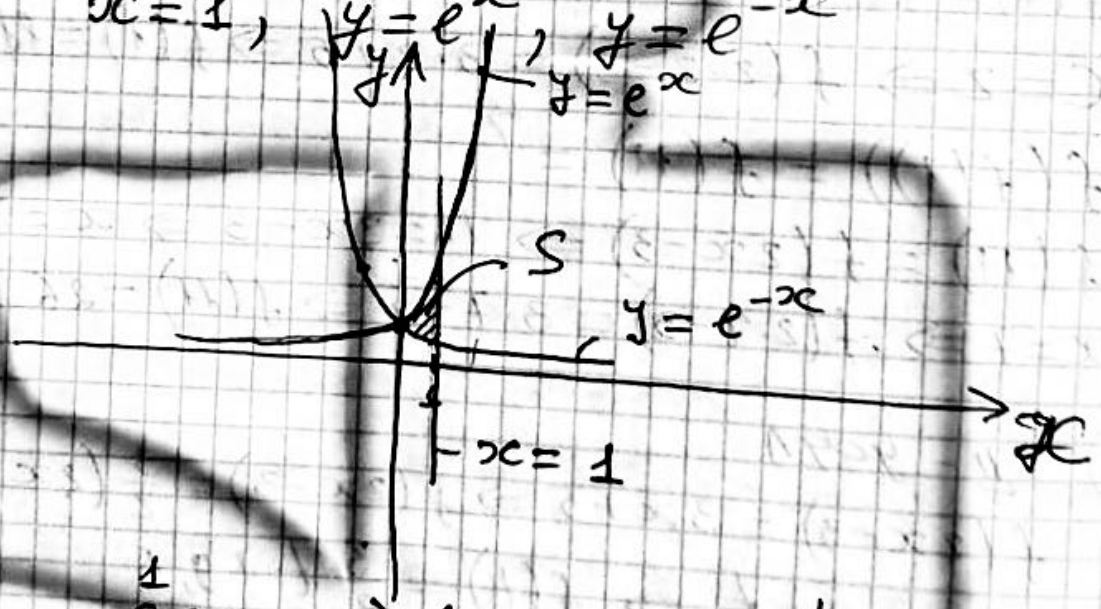
$\sin x \Rightarrow T_2 = 2\pi = 360^\circ$

$EKUK(T_1; T_2) = EKUK(540^\circ, 360^\circ) =$

$= 1080^\circ = 6\pi$

Javob: (B)

(19) $x = 1, \quad y = e^x, \quad y = e^{-x}$



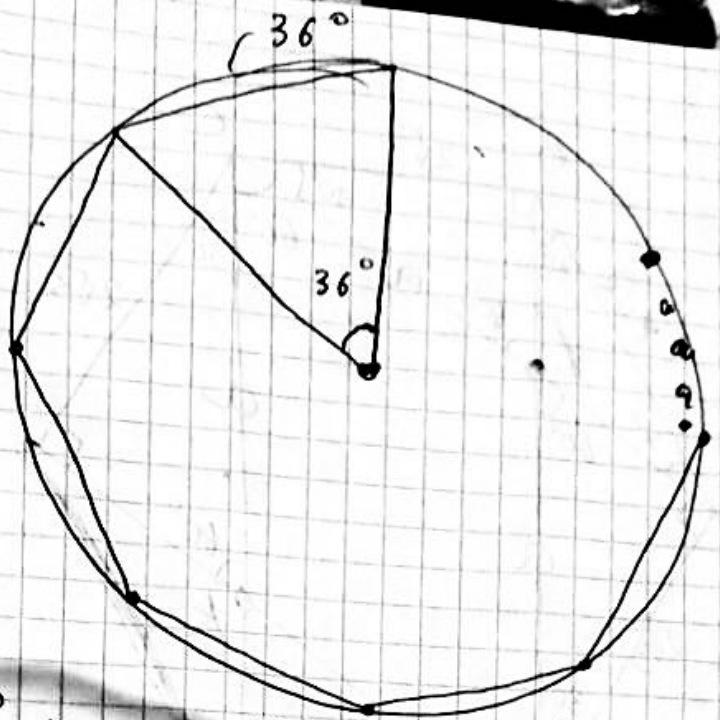
$S = \int_0^1 (e^x - e^{-x})\,dx = e^x + e^{-x}\Big|_0^1 =$

$= (e^1 + e^{-1}) - (e^0 + e^0) = e + e^{-1} - 2 =$

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

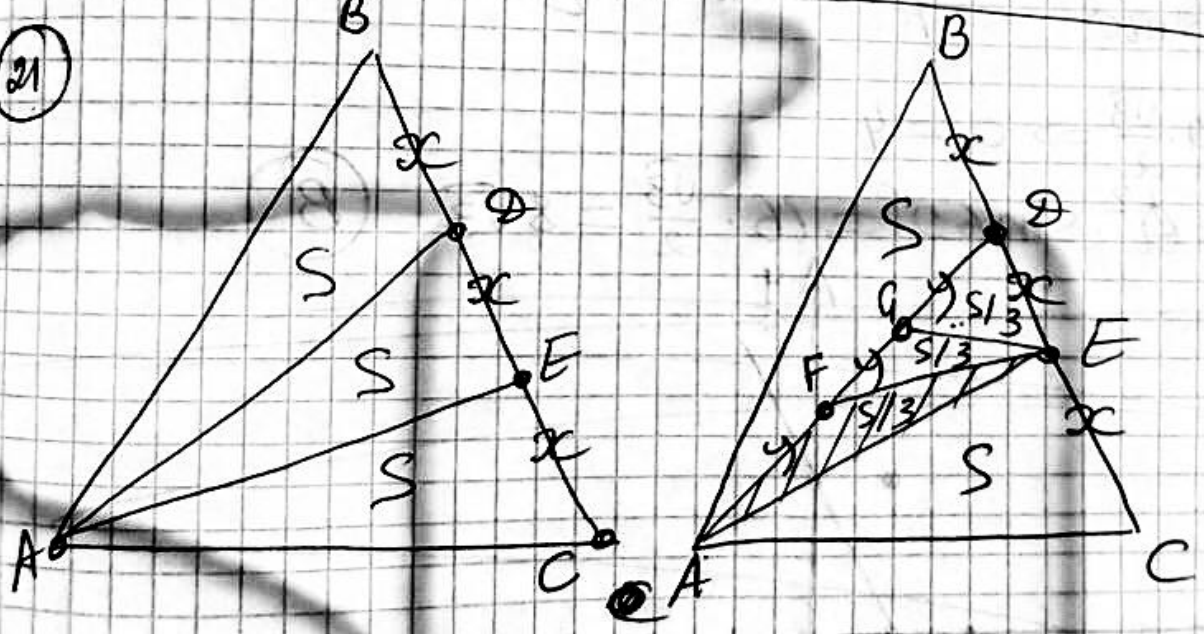
(A)

(20)



$$\alpha = 36^\circ \Rightarrow n = \frac{360^\circ}{\alpha} = \frac{360^\circ}{36^\circ} = 10$$ (B)

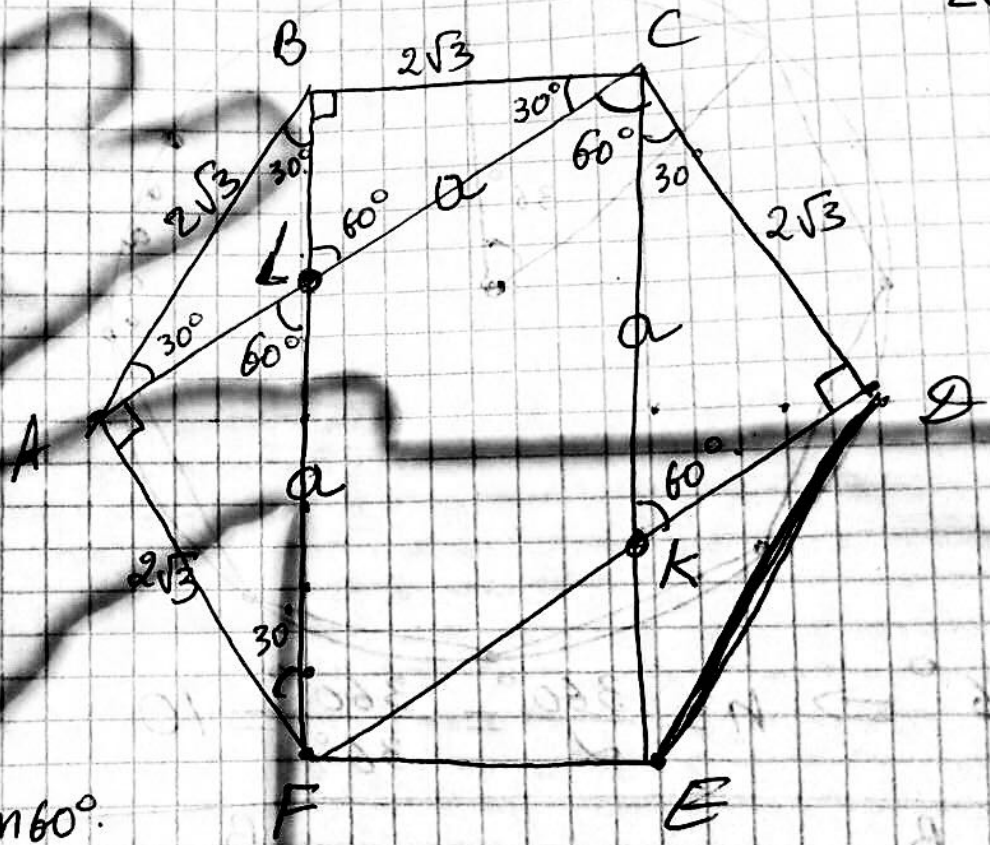
(21)



$$\frac{S_{AFE}}{S_{ABC}} = \frac{\frac{S}{3}}{3S} = \frac{1}{9}$$ (D)

22

$S_{LCKF} = ?$

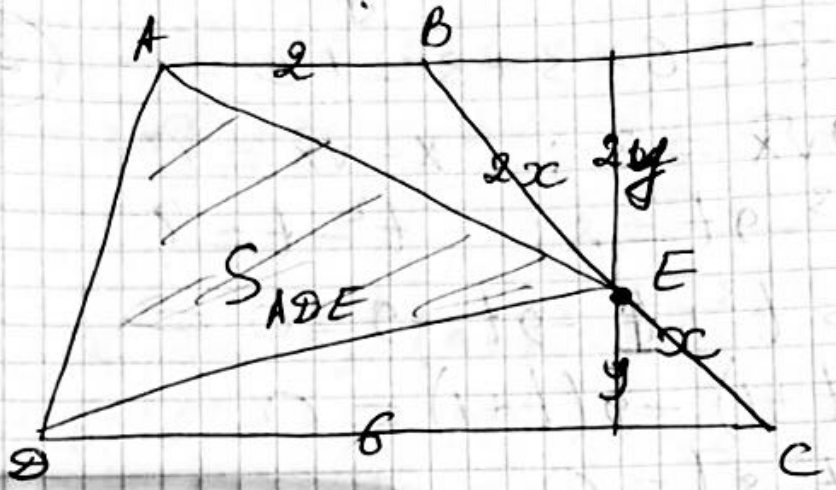


$\frac{2\sqrt{3}}{a} = \sin 60°$

$2\sqrt{3} = a \cdot \frac{\sqrt{3}}{2} \Rightarrow a = 4$

$S = a^2 \cdot \sin 60° = 16 \cdot \frac{\sqrt{3}}{2} = 8\sqrt{3}$ (B)

(23)



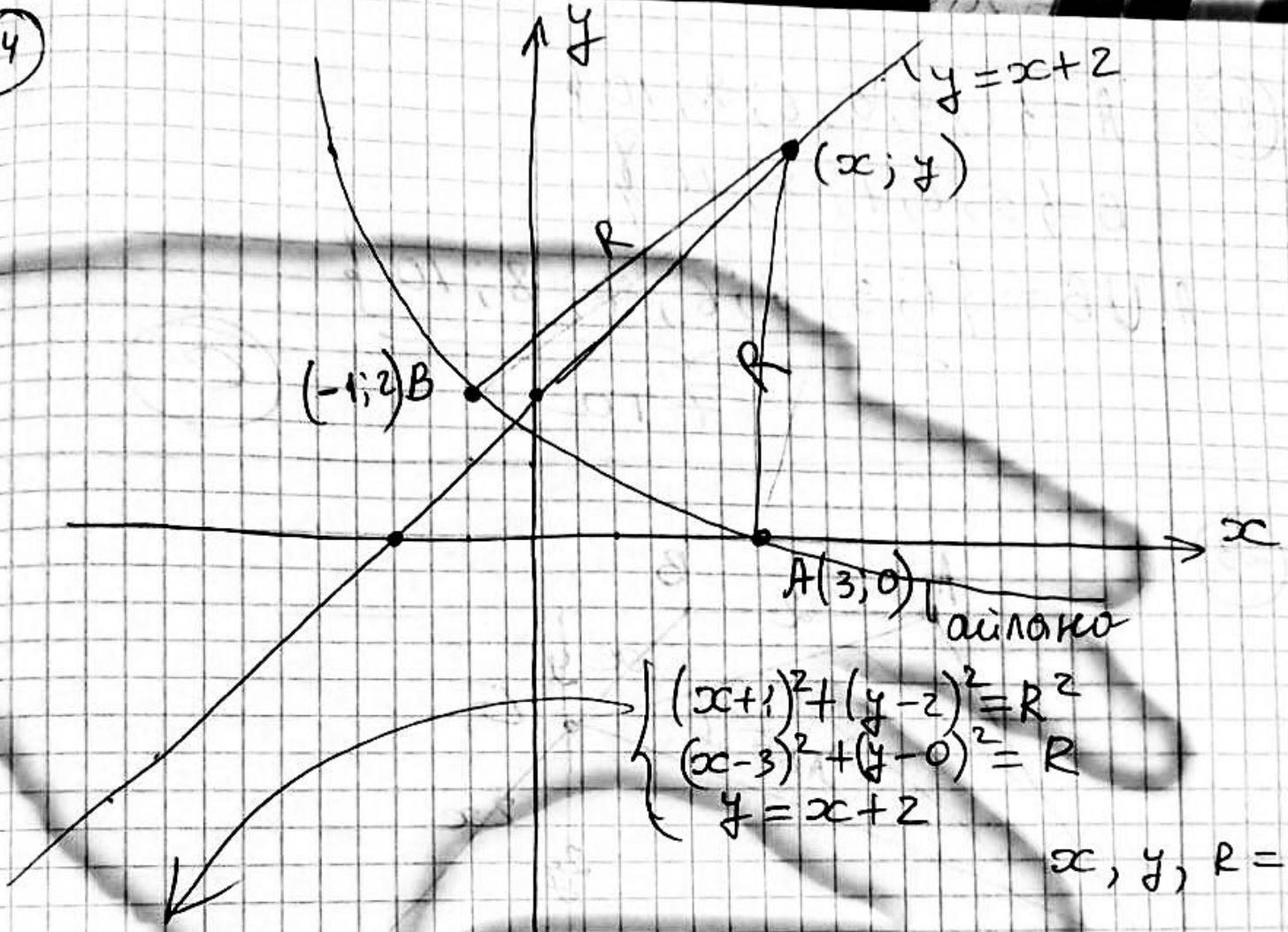
$$S_{TP} = \frac{2+6}{2} \cdot (2y + y) = 24 \Rightarrow 12y = 24 \Rightarrow y = 2;$$

$$S_{ABE} = \frac{1}{2} \cdot 2 \cdot 2y = 2y = 2 \cdot 2 = 4$$

$$S_{DEC} = \frac{1}{2} \cdot 6 \cdot y = 3y = 3 \cdot 2 = 6$$

$$S_{ADE} = S_{TP} - S_{ABE} - S_{DEC} = 24 - 6 - 4 = 14$$

(24)



$$\begin{cases} (x+1)^2+(y-2)^2=R^2 \\ (x-3)^2+(y-0)^2=R \\ y=x+2 \end{cases}$$

$x, y, R = ?$

$x^2+2x+1+y^2-4y+4=x^2-6x+9+y^2$

$$\begin{cases} 8x-4y=8 \\ y=x+2 \end{cases} \Rightarrow \quad 8x-4(x+2)=8$$

$4x-8=8 \Rightarrow x=\frac{16}{4}=3$

$x=3$

$y=x+2=3+2=5 \Rightarrow y=5$

$(x+1)^2+(y-2)^2=R^2$

$(3+1)^2+(5-2)^2=R^2 \Rightarrow R^2=25$

Айлана тенгламаси: $a=3,\ b=5,\ R=5$

Айлана тенгламаси $O(a;b)$

$(x-a)^2+(y-b)^2=R^2$.

$(x-3)^2+(y-5)^2=25$ (A)

(25) Ліворотнокоза

$A = \{1; 3, 5; 6; 8; 10\}$

$B = \{5; 6; 7; 8; 10\}$

$A \cup B = \{1; 3; 5; 6; 7; 8; 10\}$

7 по

(C)

(23)

(12) Ifodani soddalashtiring.

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

d) $1+\dfrac{b^2+c^2-a^2}{2bc} = \dfrac{2bc+b^2+c^2-a^2}{2bc} = \dfrac{(b+c)^2-a^2}{2bc} =$

$= \dfrac{(b+c-a)(b+c+a)}{2bc};$

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

(B)

(13) $5 + 5^{2x+y} + 5^{x+1} - 5^{x+y} = 0$

$5^{2x+y} - 5^{x+y} = 5^{x+1} + 5$

$x \neq 0$

$5^{x+y}(5^x - 1) = 5(5^x - 1) \quad | : (5^x - 1)$

$5^{x+y} = 5^1 \Rightarrow x + y = 1 \Rightarrow x = 1 - y$

(B)