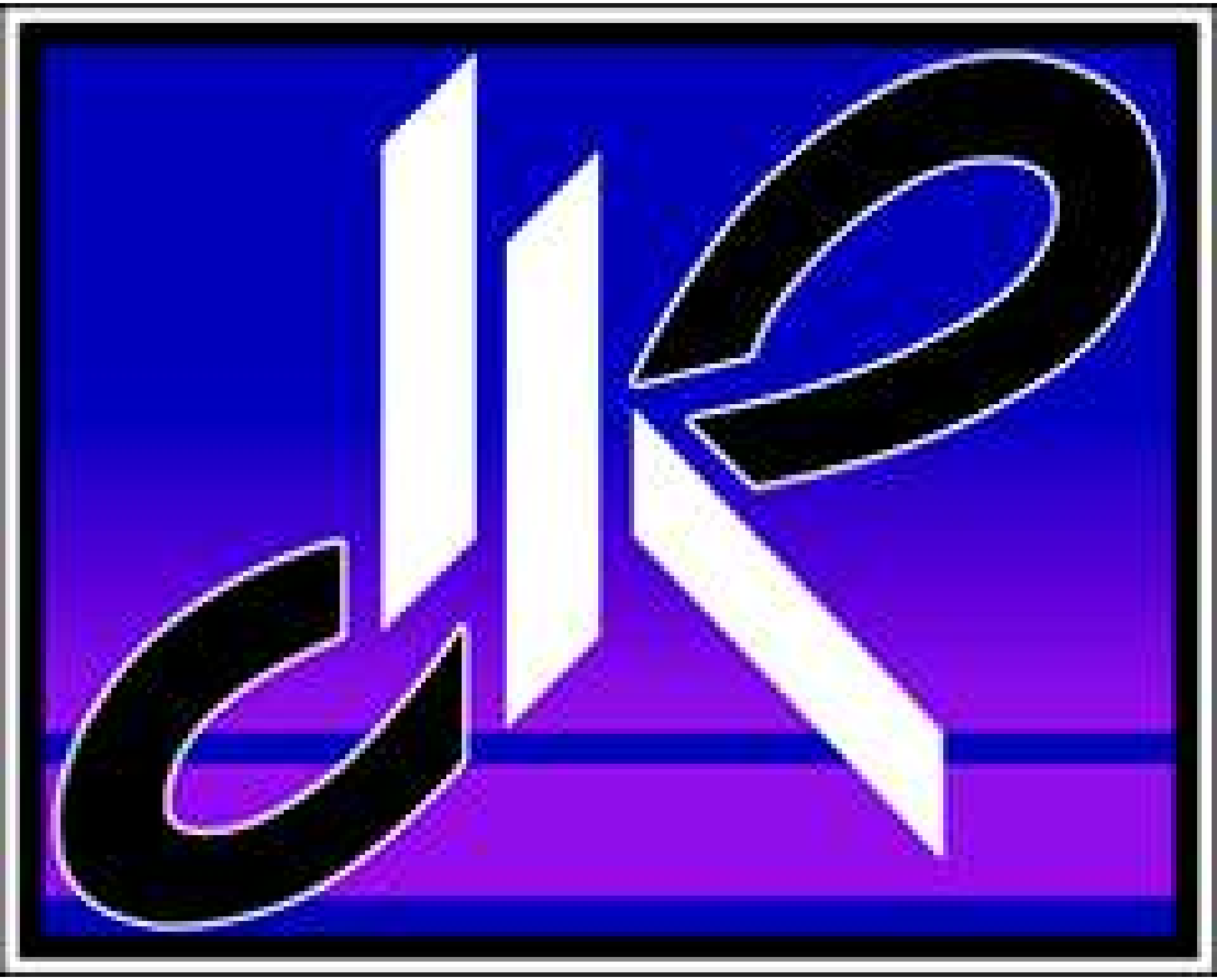

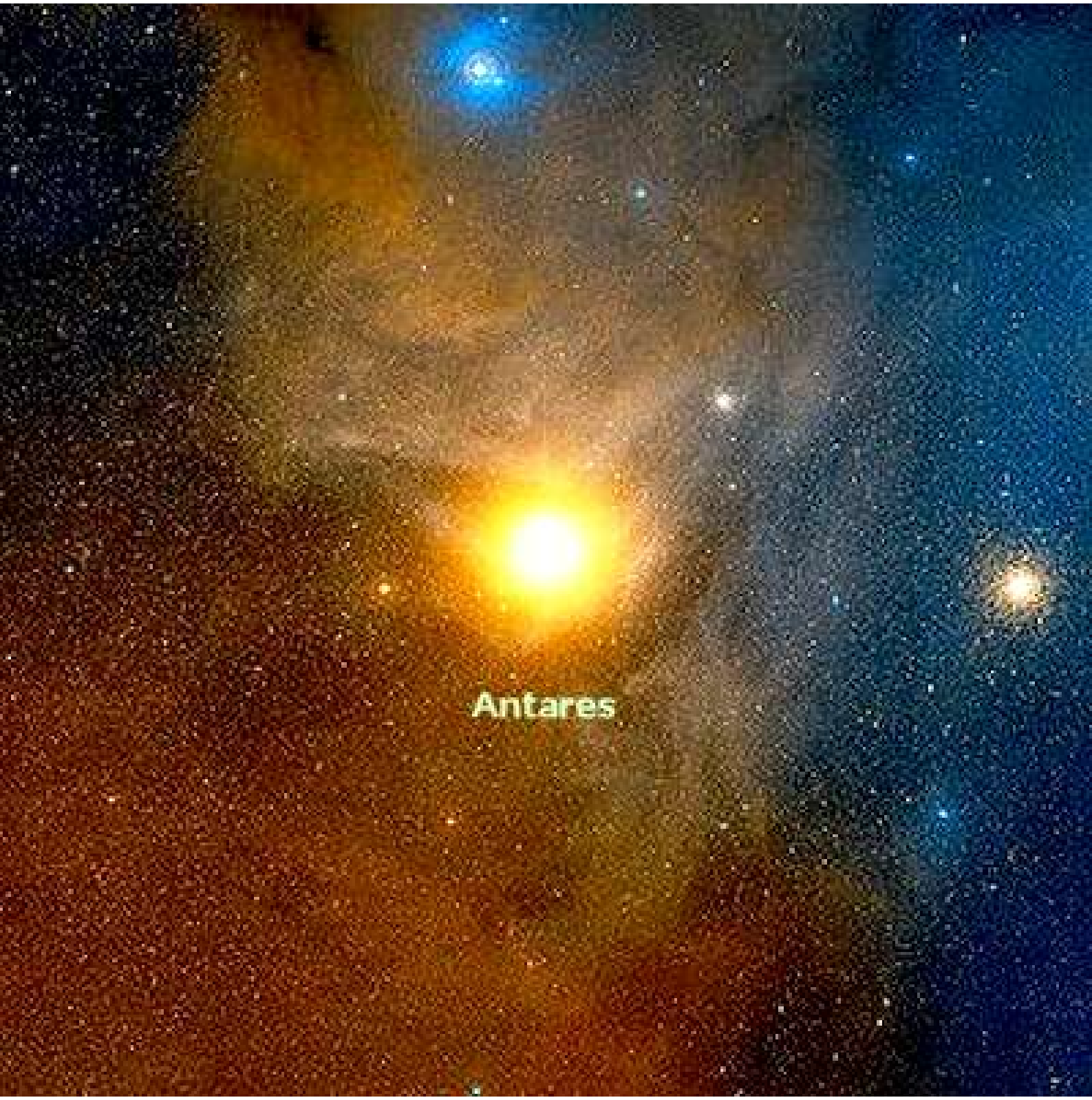

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ABITURYENT⇒2010.

(2010.4–5.1)

8 ga bo'linganda 3, 12 ga bo'linganda 7, 15 ga bo'linganda 10 qoldiq qoladigan eng kichik sonni toping?

Yechish.

EKUK$(8;12;15)-5$

$8\times15-5=115$. Javob; 115.

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(2010.4–5.2)

Hisoblang.

$$\frac{\left(\frac{1}{2}+\frac{1}{3}\right)-\left(\frac{1}{4}-\frac{1}{5}\right)}{\left(\frac{1}{6}+\frac{1}{4}\right)+\left(\frac{1}{10}-\frac{1}{8}\right)}.$$

Yechish.

$$\frac{\left(\frac{3+2}{6}\right)-\left(\frac{5-4}{20}\right)}{\left(\frac{2+3}{12}\right)+\left(\frac{4-5}{40}\right)}=\frac{\frac{5}{6}-\frac{1}{20}}{\frac{5}{12}-\frac{1}{40}}=\frac{\frac{50-3}{60}}{\frac{50-3}{120}}.$$

$\frac{1}{\frac{1}{2}}=2$. Javob; 2.

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ABITURYENT⇒2010.

(2010.4–5.3)

Quydagilardan qaysi birini chekli o'nli kasrga aylantirib bo'lmaydi?

$1)\ \frac{3}{128};\ \ 2)\ \frac{13}{13};\ \ 3)\ \frac{3}{75};\ \ 4)\ \frac{19}{175};$

Yechish.

mahraji 2^n yoki 5^n.

$128=2^7.$

$75=3\times5^2. \Rightarrow \frac{3}{3\times5^2}=\frac{1}{25}.$

$175=7\times5^2. \Rightarrow \frac{19}{7\times5^2}\text{Ø}.$ Javob; 4.

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ABITURYENT⇒2010.

(2010.4–5.4)

$\alpha = \underbrace{9\times 9\times 9\times .....9}_{15\ ta.};$

$b = \underbrace{27^9+27^9+27^9+....+27^9}_{27\ ta.};$ bo'lsa,

$\frac{\alpha}{b}$ nisbati nechaga teng?

Yechish.

$\alpha = 9^{15}.\quad b = 27\times 27^9 = 27^{10}.$

$\alpha = 3^{30}.\quad b = 3^{30}.$

$\frac{\alpha}{b} = \frac{3^{30}}{3^{30}} = 1.$ Javob; 1.

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(2010.4–5.5)

x va y haqiqiy sonlar bo'lsa,

$2x^2-2xy+y^2-2x+2$ **ifodaning eng kichik qiymati nechaga teng?**

Yechish.

$x^2+x^2-2xy+y^2-2x+1+1.$

$x^2-2xy+y^2+x^2-2x+1+1.$

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

$x-y=0.$

$x-1=0.$

$1>0.$ Javob; 1.

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ABITURYENT⇒2010.

(2010.4–5.6)

Hisoblang

$$\frac{\sqrt{6-6\sqrt{0,(88)}}}{\sqrt{3+6\sqrt{0,(22)}}}-\frac{\sqrt{6+6\sqrt{0,(88)}}}{\sqrt{3-6\sqrt{0,(22)}}}.$$

Yechish.

$$\frac{\sqrt{6-6\sqrt{\frac{8}{9}}}}{\sqrt{3+6\sqrt{\frac{2}{9}}}}-\frac{\sqrt{6+6\sqrt{\frac{8}{9}}}}{\sqrt{3-6\sqrt{\frac{2}{9}}}}=\frac{\sqrt{4-6\times\frac{2\sqrt{2}}{3}+2}}{\sqrt{2+6\times\frac{\sqrt{2}}{3}+1}}-\frac{\sqrt{4+6\times\frac{2\sqrt{2}}{3}+2}}{\sqrt{2-6\times\frac{\sqrt{2}}{3}+1}}.$$

$$\frac{\sqrt{4-4\sqrt{2}+2}}{\sqrt{2+2\sqrt{2}+1}}-\frac{\sqrt{4+4\sqrt{2}+2}}{\sqrt{2-2\sqrt{2}+1}}=\frac{\sqrt{(2-\sqrt{2})^2}}{\sqrt{(\sqrt{2}+1)^2}}-\frac{\sqrt{(2+\sqrt{2})^2}}{\sqrt{(\sqrt{2}-1)^2}}.$$

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

$$\frac{2\sqrt{2}-2-2+\sqrt{2}-2\sqrt{2}-2-2-\sqrt{2}}{2-1}=-8.$$ **Javob; −8.**

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ABITURYENT⇒2010.

(2010.4–5.7)

Tenglamani yeching.

$$\frac{2(3\mathbf{x}+4)+3(2\mathbf{x}+4)}{-3(2\mathbf{x}+4)+4(2\mathbf{x}-3)}=\frac{4}{3}$$

Yechish.

$$\frac{6\mathbf{x}+8+6\mathbf{x}+12}{-6\mathbf{x}-12+8\mathbf{x}-12}=\frac{4}{3}.$$

$$\frac{12\mathbf{x}+20}{2\mathbf{x}-24}=\frac{4}{3}. \Rightarrow \frac{2(6\mathbf{x}+10)}{2(\mathbf{x}-12)}=\frac{4}{3}.$$

$$3(6\mathbf{x}+10)=4(\mathbf{x}-12).$$

$$18\mathbf{x}+30=4\mathbf{x}-48.$$

$$18\mathbf{x}-4\mathbf{x}=-48-30.$$

$$14\mathbf{x}=-78.$$

$$\mathbf{x}=-\frac{78}{14}=-\frac{39}{7}=-5\frac{4}{7}.$$ Javob; $-5\frac{4}{7}$.

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ABITURIYNT–2010.

(2010.4–5.8)

$(x^2+3x+2)(x^2+3x+7)=24$

tenglamaning haqiqiy ildizlari yig'indisini toping.

Yechish.

$x^2+3x=t.$

$(t+2)(t+7)=24.$

$t^2+7t+2t+14-24=0.$

$t^2+9t-10=0.$

$t_{1,2}=\frac{-9\pm\sqrt{81+40}}{2}=\frac{-9\pm11}{2}.\ x_1=-10.\ x_2=1.$

$x^2+3x+10=0.\ \Rightarrow x\notin R\ \varnothing.$

$x^2+3x-1=0.$

$x_{1,2}=\frac{-3\pm\sqrt{9+4}}{2}=\frac{-3\pm\sqrt{13}}{2}.\ x_1=\frac{-3-\sqrt{13}}{2}.\ x_2=\frac{-3+\sqrt{13}}{2}.$

$x_1+x_2=\frac{-3-\sqrt{13}}{2}+\frac{-3+\sqrt{13}}{2}=\frac{-3-\sqrt{13}-3+\sqrt{13}}{2}=-3.$ Javob; $-3.$

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ABITURYENT⇒2010.

(2010.4–5.9)

$$\begin{cases} \dfrac{\alpha-b}{b}=\dfrac{3}{2} \\ 1-\dfrac{b}{\alpha}=c \end{cases} \text{ bo'lsa, } c=?.$$

Yechish.

$$\begin{cases} 2\alpha-2b=3b \\ \dfrac{\alpha-b}{\alpha}=c \end{cases} . \Rightarrow \begin{cases} \alpha=\dfrac{5b}{2}. \\ \dfrac{\dfrac{5b}{2}-b}{\dfrac{5b}{2}}=c. \end{cases}$$

$$\frac{\frac{5b-2b}{2}}{\frac{5b}{2}}=c. \Rightarrow \frac{3b}{5b}=\frac{3}{5}=c. \quad \text{Javob; } \frac{3}{5}.$$

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ABITURYENT⇒2010.

(2010.4–5.10)

$$\frac{(x-1)(5-x)^4}{x^3+2x^2}\leqslant 0$$

tengsizlikni qanoatlantiruvchi nechta butun son mavjud.

Yechish.

$x-1\leqslant 0.\ x\leqslant 1.$

$5-x\leqslant 0.\Rightarrow x\geqslant 5.$

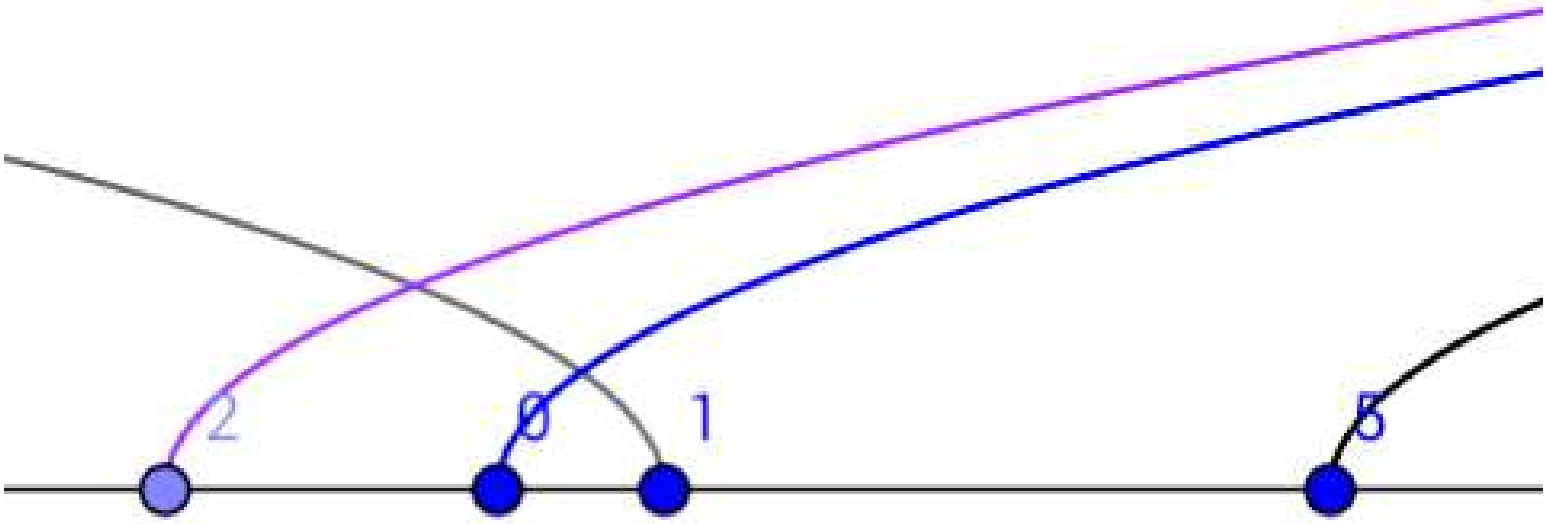
$x^3+2x^2>0.\Rightarrow x^2(x+2)>0.$

$x>0.\ x>-2$

$$(-\infty;-2)\overset{+}{\cup}(-2;0)\overset{(-)}{\cup}(0;1)\overset{\leqslant}{\cup}(1;5)\overset{+}{\cup}(5;\infty)\overset{\leqslant}{}$$

$(-2;0)\cup(0;1]\cup[5;\infty).$

$-1;1;5.$ Javob; 3.



ABITURIYENT-2010.4-5.10

2010.4-5.10

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ABITURYENT⇒2010.

(2010.4–5.11)

$|x^2-2x-3|=|x-3|$ tenglamaning ildizlari yig'indisi qaysi javobda to'g'ri ko'rsatilgan?

Yechish.

$x^2-2x-3=x-3.$

$x^2-3x=0.$

$x=0 \quad x=3.$

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

$-x^2+x+6=0.|^{-1}. \Rightarrow x^2-x-6=0.$

$x^2-2x-3=-x+3. \quad x^2-x-6=0.$

$x_{1,2}=\frac{1\pm\sqrt{1+4\times6}}{2}=\frac{1\pm5}{2}. \; x_1=3. \; x_2=-2.$

$x_{1,2}=\frac{1\pm\sqrt{1+4\times6}}{2}=\frac{1\pm5}{2}. \; x_1=3. \; x_2=-2.$

$-x^2+2x+3=-x+3. \; -x^2+3x=0|^{-1}.$

$x^2-3x=0. \; x(x-3)=0. \; x_1=0. \; x_2=3.$

$x_1=0. \; x_2=-2. \; x_3=3.$

$-2+3=1.$ Javob; 1.

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ABITURYENT⇒2010.

(2010.4–5.12)

Tenglamani yeching.

$\sqrt{x-\sqrt{x+8}}=2.$

Yechish.

$\left(\sqrt{x-\sqrt{x+8}}\right)^2=4.$

$x-\sqrt{x+8}=4.$

$\sqrt{x+8}=x-4.$

$x+8=x^2-4x+16.$

$-x^2+9x-8=0\Big|^{-1}. \Rightarrow x^2-9x+8=0.$

$x_{1,2}=\frac{9\pm\sqrt{81-4\times8}}{2}=\frac{9\pm7}{2}.$ $x_1\neq1.$ $x_2=8.$ Javob; 8.

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ABITURYENT⇒2010.

(2010.4–5.13)

n ta hadning yig'indisi n^2+2n bo'lgan arifmetik progressiyaning umumiy hadi ko'rinishini toping.

Yechish.

$n=1.$

$S_1=1+2=3.$

$n=2.$

$S_2=4+4=8.$

$a_1=3.$

$a_1+a_2=8. \Rightarrow a_2=8-a_1=8-3=5.$

$d=a_2-a_1=5-3=2.$

$a_1=3.\ d=2.$

$a_n=a_1+(n-1)d.$

$a_n=3+2(n-1)=3+2n-2=2n+1.$

Javob; $a_n=2n+1.$

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(2010.4–5.14)

Go'zal ikki yil oldin, Dono 2 yil kechroq tug'ilganda ularning yoshlari orasidagi farq 7 ga teng bo'lardi. Dono va Go'zalning hozirgi yoshlari yig'indisi 9 ga teng va Go'zal Donodan katta bo'lsa, Dononi hozirgi yoshini toping.

Yechish.

Go'zal=x.

Dono=y.

$x+y=9.\ x=9-y.$

$(x+2)-(y-2)=7.$

$9-y+2-y+2=7.$

$-2y+13=7 \Rightarrow\ y=\frac{7-13}{-2}=3.$ Javob; 3.

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ABITURYENT⇒2010.
(2010.4–5.15)

Tramvay tezligini har soatda 10 km/s ga orttirib manzilga 3 soatda yetib bordi.
Agar shu manzilga tezligi har soatda
10 km/s ga kamaytirib yursaydi
5 soatda yetib borardi. Tramvayning
manzili necha km?

Yechish.

$3v+30=5v-100.$

$-2v=-130.$

$v=65.$

$S=3v+30=195+30=225.$ Javob; 225.

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ABITURYENT⇒2010.

(2010.4–5.16)

Funkdiyaning aniqlanish sohasini toping

$$y=\sqrt{5-x-\frac{6}{x}}.$$

Yechish.

$$5-x-\frac{6}{x}\geqslant 0.$$

$$x>0.$$

$$-x^2+5x-6\geqslant 0\Big|^{-1}.\ x^2-5x+6=0.$$

$$x_{1,2}=\frac{5\pm\sqrt{25-4\times 6}}{2}=\frac{5\pm 1}{2}.\ x_1=3.\ x_2=2.$$

$(-\infty;0)\cup[2;3]$ Javob; $(-\infty;0)\cup[2;3]$.

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ABITURYENT⇒2010.

(2010.4–5.17)

Quydagi tenglamaning yechimlari nechita?

$3^{x^2-x}+3^{2+x-x^2}=10.$

Yechish.

$y=y$

$y=3^{(x^2-x)(2+x-x^2)}=(x^2-x)(2+x-x^2)=0.$

$y=10.$

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

$-x^2+x+2=0\Big|^{-1}.\ x^2-x-2=0.$

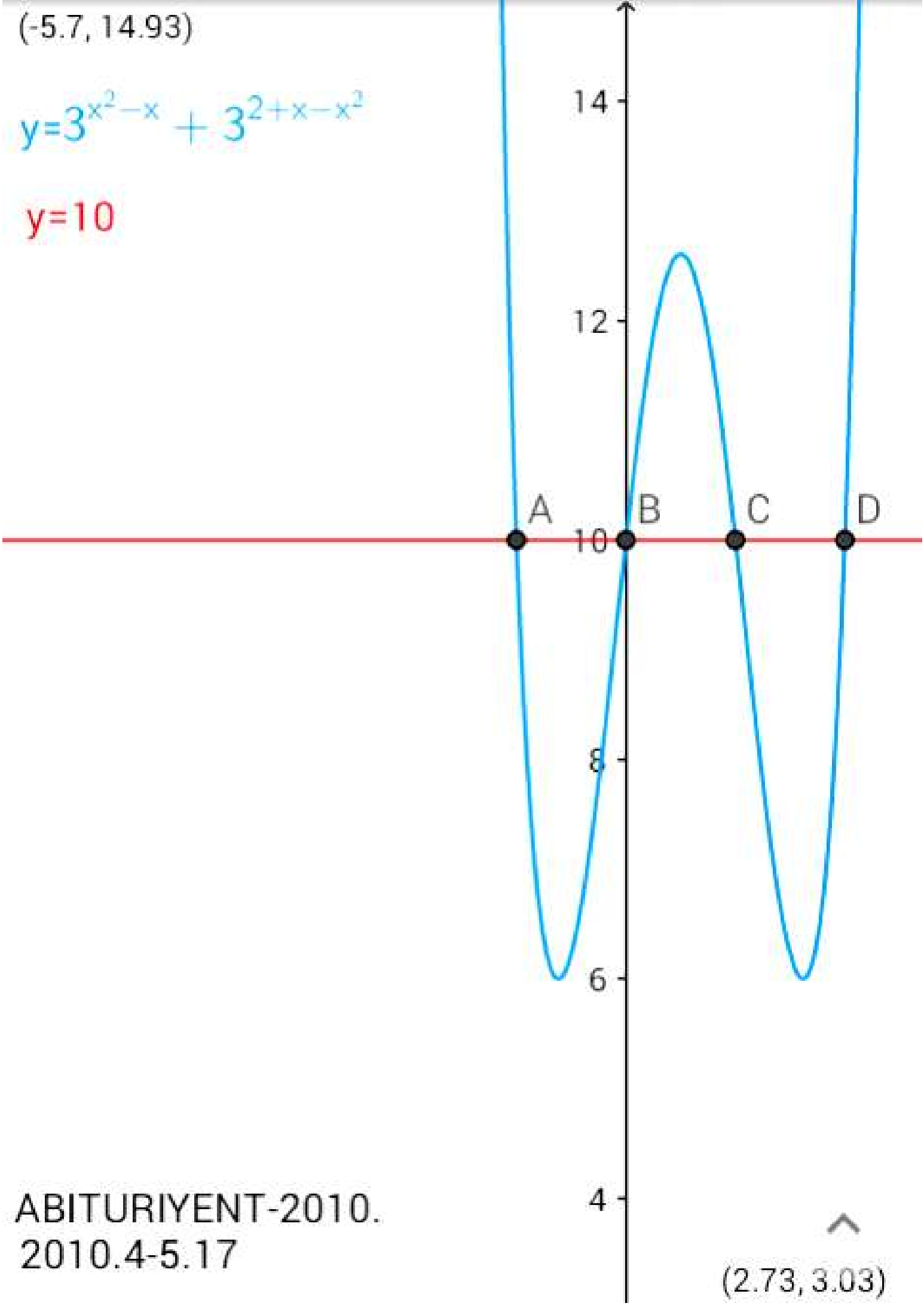
$x^2+x-2x-2=0.\ \Rightarrow\ x(x+1)-2(x+1).$

$x=2.\ x=-1.\ \ 0;-1;1;2$ Javob; 4.

(-5.7, 14.93)

$y=3^{x^2-x}+3^{2+x-x^2}$

$y=10$



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2010.4-5.17

(2.73, 3.03)

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ABITURYENT⇒2010.

(2010.4–5.18)

Quydagilardan nechtasi to'g'ri?

(I) $\log_5 125=3$. (II) $\log_{\frac{1}{5}}\frac{1}{35}=-2$

III) $\log_2\frac{1}{8}=-3$. IV) $\log_{\sqrt{3}}\sqrt[3]{81}=1$.

Yechish.

$\log_5 125=\log_5 5^3=3\log_5 5=3.$

$\log_{\frac{1}{5}}\frac{1}{25}=\log_{5^{-1}}5^{-2}=2\log_5 5=2.$

$\log_2\frac{1}{8}=\log_2 2^{-3}=-3\log_2 2=-3.$

$\log_{\sqrt{3}}\sqrt[3]{81}=\log_{3^{\frac{1}{2}}}3^{\frac{4}{3}}=\frac{4}{3}\times 2\log_3 3=\frac{8}{3}$. Javob; 2.

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ABITURYENT⇒2010.

(2010.4–5.19)

Hisoblang.

$$\sin\frac{\pi}{12}\times\sin\frac{\pi}{6}-\cos\frac{\pi}{6}\times\cos\frac{\pi}{12}.$$

Yechish.

$\cos(x+y)=\cos x\times\cos y+\sin x\times\sin y.$

$$-\cos\frac{\pi}{6}\times\cos\frac{\pi}{12}+\sin\frac{\pi}{12}\times\sin\frac{\pi}{6}=-\cos\left(\frac{\pi}{12}+\frac{\pi}{6}\right).$$

$$-\cos\left(\frac{3\pi}{12}\right)=-\cos\frac{\pi}{4}=-\frac{\sqrt{2}}{2}.$$ Javob; $-\frac{\sqrt{2}}{2}$.

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ABITURYENT⇒2010.

(2010.4–5.20)

Hisoblang.

$$\frac{\cos 74^\circ - \cos 14^\circ}{\sin 44^\circ}.$$

Yechish.

$$\cos x - \cos y = -2\sin\frac{x+y}{2}\sin\frac{x-y}{2}.$$

$$\cos 74^\circ - \cos 14^\circ = -2\sin\frac{74^\circ+14^\circ}{2}\sin\frac{74^\circ-14^\circ}{2}.$$

$$-2\sin 44^\circ \sin 30^\circ.$$

$$\frac{-2\sin 44^\circ \sin 30^\circ}{\sin 44^\circ} = -2\times\frac{1}{2} = -1.$$ Javob; -1.

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ABITURYENT⇒2010.

(2010.4–5.21)

Tenglamani yeching.

$$\cos\left(3x+\frac{\pi}{4}\right)=\frac{\sqrt{2}}{2}.$$

Yechish.

$$\arccos\left(\cos\left(3x+\frac{\pi}{4}\right)\right)=\arccos\frac{\sqrt{2}}{2}.$$

$$3x+\frac{\pi}{4}=\pm\frac{\pi}{4}+2\pi k.$$

$$3x+\frac{\pi}{4}=-\frac{\pi}{4}+2\pi k. \Rightarrow \ 3x=\frac{-2\pi}{4}+2\pi k.$$

$$x=-\frac{\pi}{6}+\frac{2\pi k}{3}. \ k\in Z$$

$$3x+\frac{\pi}{4}=\frac{\pi}{4}+2\pi k. \ \Rightarrow x=\frac{2\pi k}{3}. \ k\in Z.$$

Javob; $\frac{2\pi k}{3}; -\frac{\pi}{6}+\frac{2\pi k}{3}. \ k\in Z.$

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ABITURYENT⇒2010.

(2010.4–5.22)

$\oint(x)=x^{1+x^2}$ bo'lsa, $\oint'(1)=?$

Yechish.

$$\oint'(x)=\left(2x\ln x+\frac{x^2+1}{x}\right)x^{x^2+1}.$$

$$\oint(1)=\left(2x\ln 1+\frac{1+1}{1}\right)=2.$$ Javob; 2.

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ABITURYENT⇒2010.

(2010.4–5.23)

Bosib o'tilgan yo'l formulasi $S(t)=t^3+2t^2+5$ (m) bo'lgan avtomabilning 5–soniyadagi tezligini toping.

Yechish.

$S'(t)=(t^3+2t^2+5)'=(3t^2+4t)'=6t+4.$

$S'(5)=6\times5+4=34.$ Javob; 34.

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ABITURYENT⇒2010.

(2010.4–5.24)

$\int_0^3 \frac{2x+3}{2x+1}\,dx=\alpha+\ln 7$ bo'lsa,

α nechaga teng?

Yechish.

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

$$\int_0^3\left(1+\frac{2}{2x+1}\right)dx=\int dx+2\int\frac{1}{2x+1}dx.$$

$$x+\ln(|2x+1|)\Big|_0^3 \longrightarrow 3+\ln(7).$$

$3+\ln 7=\alpha+\ln 7$ $\alpha=3$. Javob; 3.

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ABITURYENT⇒2010.

(2010.4–5.25)

Ayirmasi 40° bo'lgan qo'shni burchaklarning nisbati qaysi javobda ko'rsatilgan?

Yechish.

$\frac{180^\circ-40^\circ}{2}=70^\circ$ $70^\circ+40^\circ=110^\circ$.

$\mathbf{x}=110^\circ$. $\mathbf{y}=70^\circ$.

$\frac{110}{70}=\frac{11}{7}$. Javob; $\frac{11}{7}$.

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ABITURYENT⇒2010.

(2010.4–5.26)

Quydagi shakilda

$AE\perp ED$; $AD\perp DC$; va $AB\perp BC$.

$|BC|=|CD|=|ED|=2$. va $|AB|=3$

bo'lsa, AE tomon uzunligini toping.

Yechish.

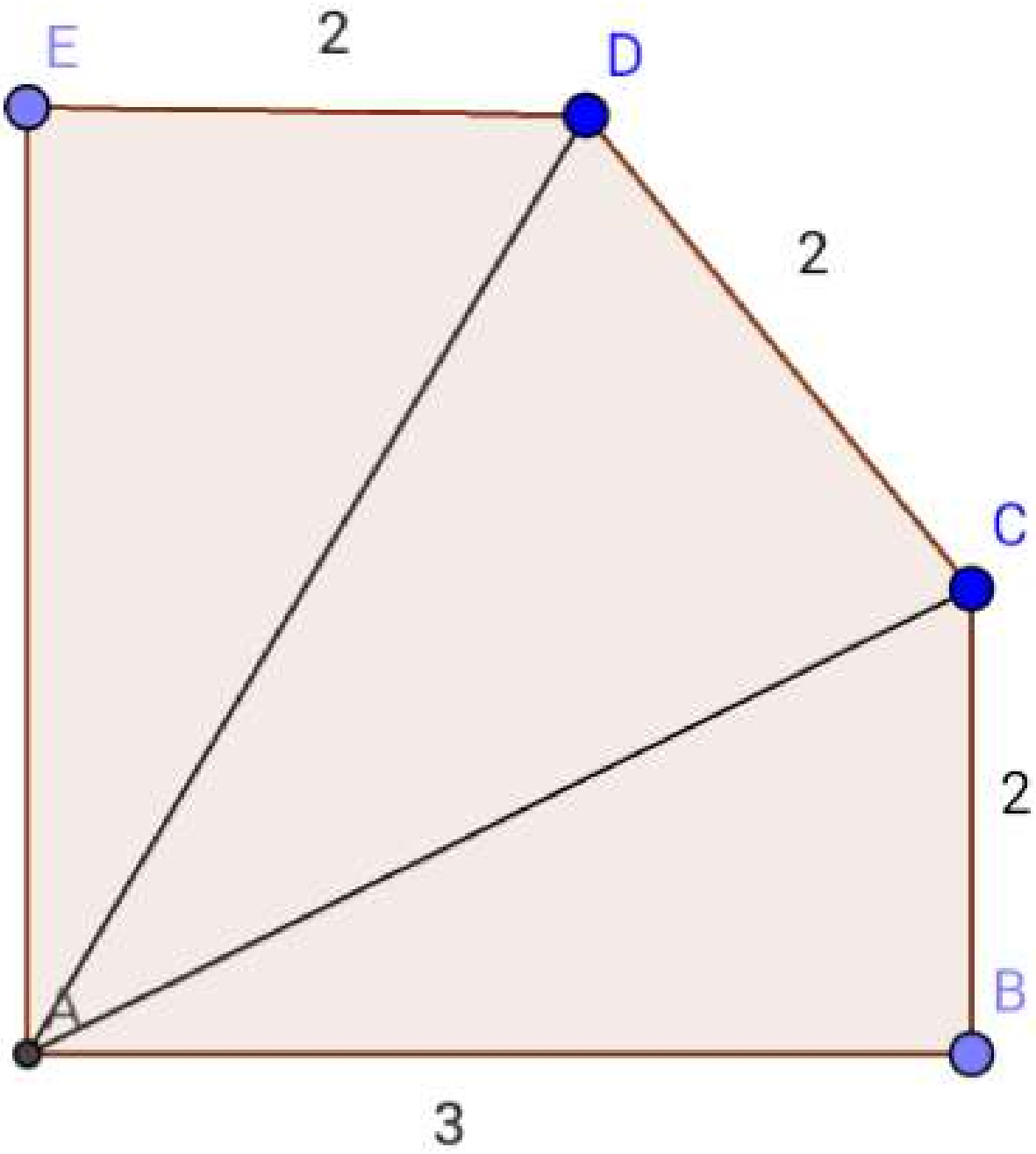
$c^2=a^2+b^2$.

$C=\sqrt{9+4}=\sqrt{13}$

$b^2=c^2-a^2$

$b=\sqrt{13-4}=\sqrt{9}=3$.

$a=\sqrt{9-4}=\sqrt{5}$. Javob; $\sqrt{5}$.



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2010.4-5.26

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(2010.4–5.27)

ABD uchburchakning A uchidan BD tomonga AC chiziq o'tkazilgan.

$\angle CAB=90^\circ$, $|AB|=c$, $|AC|=b$, $|BC|=\alpha$ va $|CD|=d$.

berilganlardan foydalanib ACD uchburchakni yuzini toping.

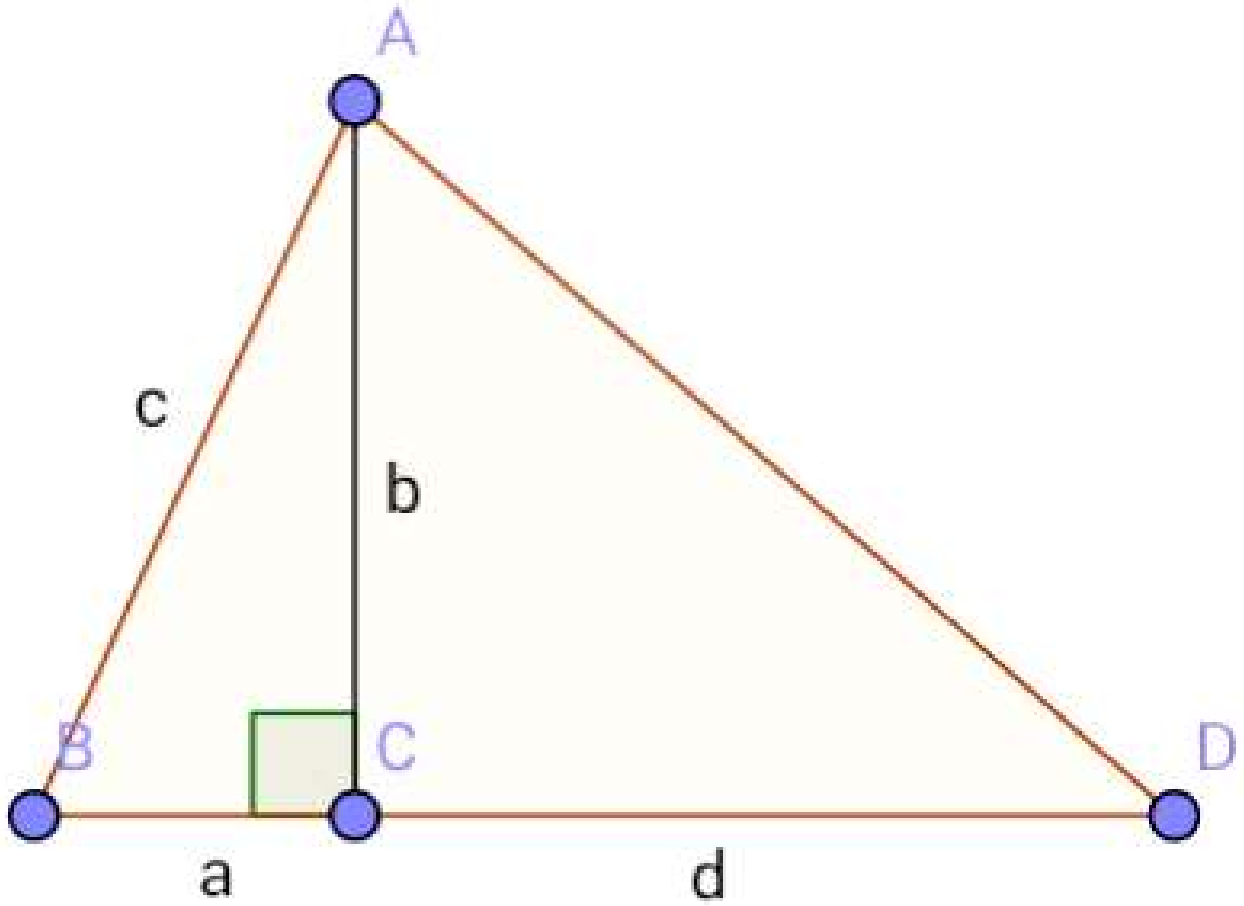
Yechish.

$$S_{AB}=c.\ \sin\alpha=\frac{b}{a}.$$

$$S_{\triangle ABD}=\frac{1}{2}(c(a+d))\frac{b}{a}=\frac{b}{2a}(ca+cd)=\frac{bca}{2a}+\frac{bcd}{2a}=\frac{bca+bcd}{2a}.$$

$$S_{\triangle ABD}=S_{\triangle ABD}-\frac{bc}{2}=\frac{bca+bcd}{2a}-\frac{bc}{2}.$$

$$\frac{bca+bcd-bca}{2a}=\frac{bcd}{2a}.$$ Javob; $\frac{bcd}{2a}$.



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2010.4-5.27

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ABITURYENT⇒2010.

(2010.4–5.28)

ABCDEF muntazam oltiburchakning FB dioganali $4\sqrt{3}$. Shu oltiburchakning yuzasini toping.

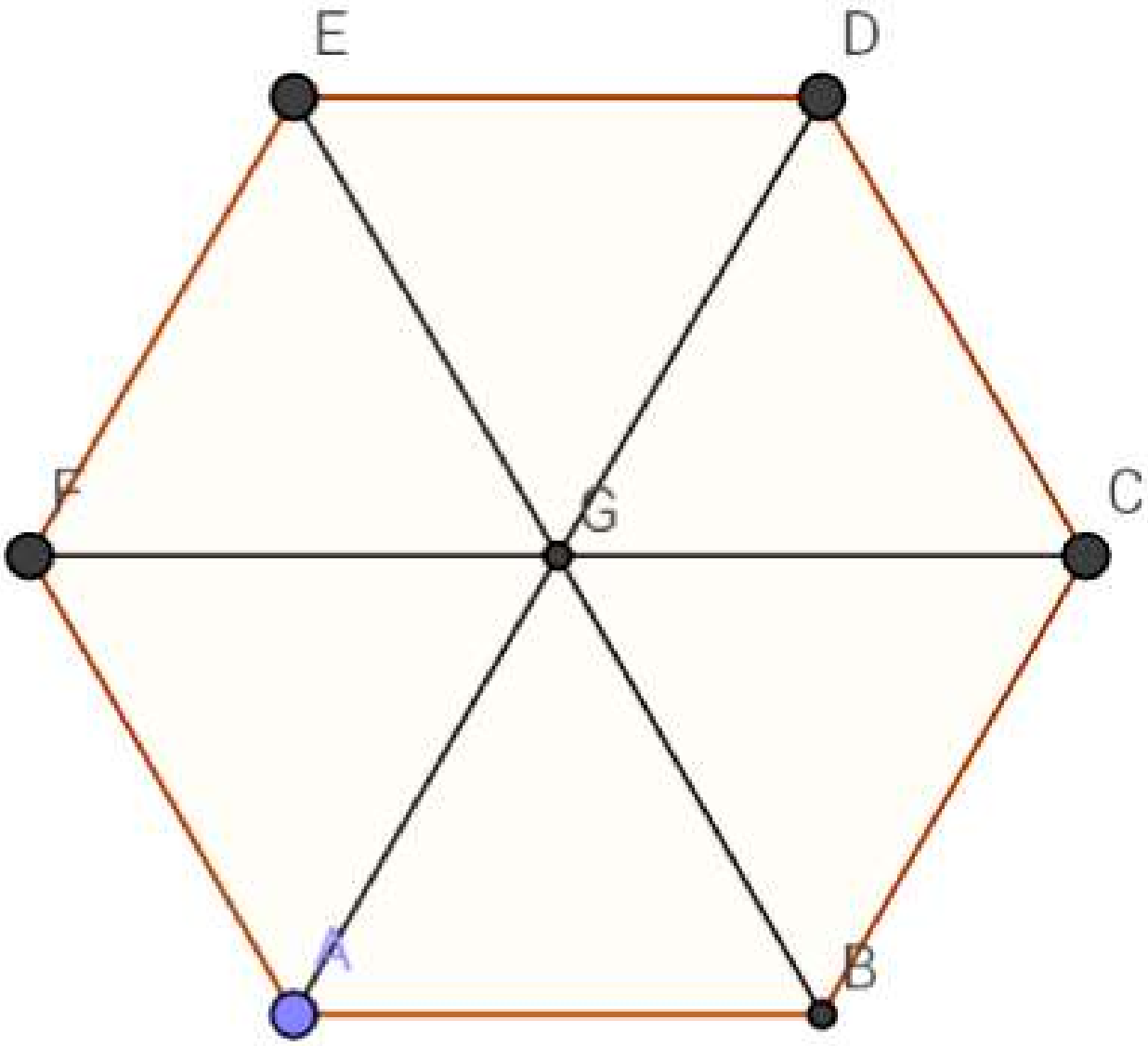
Yechish.

$$\frac{4\sqrt{3}}{2}=2\sqrt{3}.$$

$$S=\frac{a^2\sqrt{3}}{4}.$$

$$S=\frac{(2\sqrt{3})^2\sqrt{3}}{4}=\frac{12\sqrt{3}}{4}=3\sqrt{3}.$$

$6\times 3\sqrt{3}=18\sqrt{3}$. Javob; $18\sqrt{3}$.



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(2010.4–5.29)

ABCD qavariq to'rtburchakda

$|AB|=|AD|=3\sqrt{2}$, $|BC|=|CD|=5$.

$AB\perp AD$ bo'lsa, ABCD to'rtburchakning yuzasini toping.

Yechish.

$BD^2=AB^2+AD^2$.

$c=\sqrt{(3\sqrt{2})^2+(3\sqrt{2})^2}=\sqrt{18+18}=\sqrt{36}=6$.

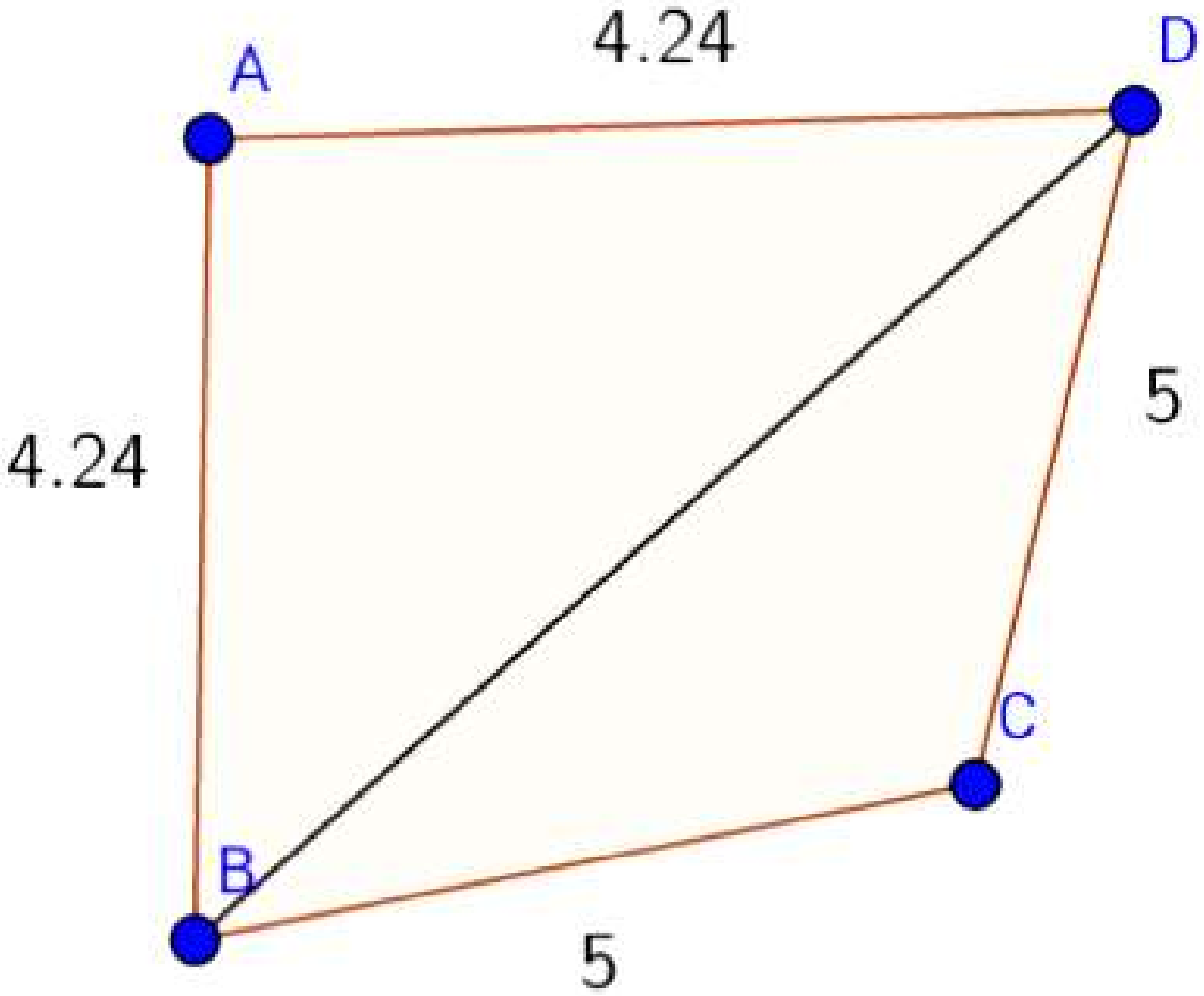
$P=\frac{a+b+c}{2}=\frac{6+5+5}{2}=8$.

$S=\sqrt{P(P-a)(P-b)(P-c)}$.

$S_1=\sqrt{8(8-5)(8-5)(8-2)}=\sqrt{8\times3\times3\times2}=12$.

$S_2=\frac{a\times b}{2}=\frac{3\sqrt{2}\times3\sqrt{2}}{2}=\frac{9\times2}{2}=9$.

$S=S_1+S_2=12+9=21$. Javob; 21.



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(2010.4–5.30)

ABCD trapetsiyaning A va B o'tkir burchaklari yig'indisi 160° ga teng. C va D burchaklarning bissekterissalari E nuqtada kesishsa, CED burchakning toping.

Yechish.

$A+B+C+D=360^\circ$.

$A+B=160^\circ$.

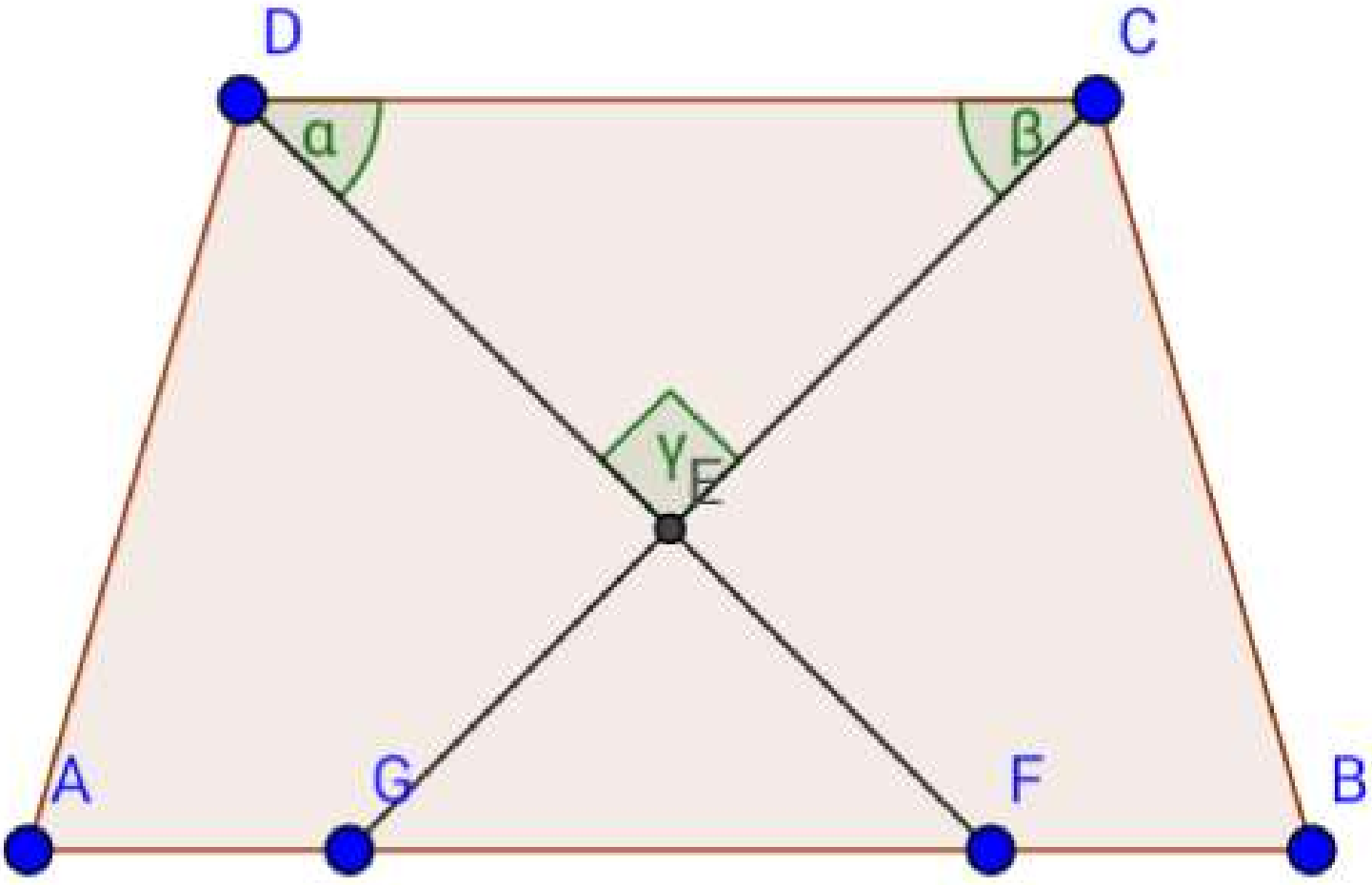
$C+D=360^\circ-160^\circ=200^\circ$.

$C+D=200^\circ$.

$C=100$. $D=100$.

$\frac{100}{2}=50$. $\alpha+\beta=100$.

$\alpha+\beta+\gamma=180^\circ$ $\gamma=180^\circ-100^\circ=80^\circ$. Javob; 80°.



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(2010.4–5.31)

Aylananing AB va CD vatarlari E nuqtada 90° burchak ostida kesishadi. $|AE|=2$, $|CE|=4$ va $|ED|=6$ bo'lsa aylananing radiusini toping.

Yechish.

$AE\times BE=CE\times DE$.

$AE=2$. $CE=4$. $ED=6$. $BE=x$.

$2x=6\times 4. \Rightarrow x=\frac{24}{2}=12.$

$BD=\sqrt{BE^2+ED^2}=\sqrt{12^2+6^2}=6\sqrt{5}.$

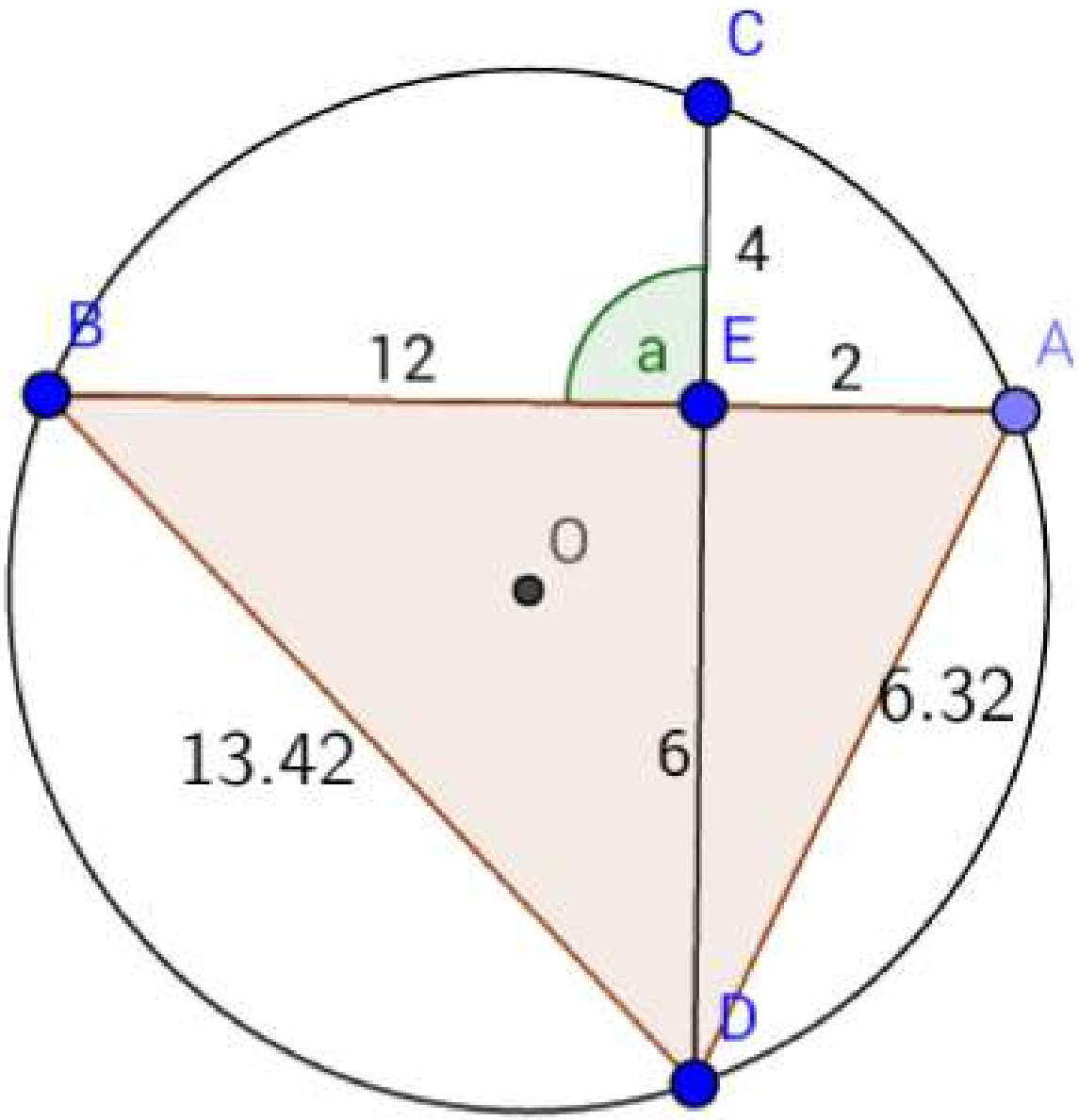
$AD=\sqrt{AE^2+ED^2}=\sqrt{2^2+6^2}=2\sqrt{10}.$

$AB=AE+BE.=12+2=14.$

$S_{\triangle ABD}=\frac{1}{2}\times ED\times AB=\frac{1}{2}\times 6\times 14=42.$

$S=\frac{AD\times BD\times AB}{4R}. \Rightarrow R=\frac{AD+BD+AB}{4S}.$

$R=\frac{2\sqrt{10}\times 6\sqrt{5}\times 14}{4\times 42}=\sqrt{10}\times\sqrt{5}=\sqrt{50}=5\sqrt{2}.$ Javob; $5\sqrt{2}$.



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(2010.4–5.32)

Rasimda ko'rsatilgan kvadratning tomoni 4 sm. Uning ichiga to'rtta bir xil aylananing chorak qisimli yoylar chizilgan. Yoylar orasidagi sohaning yuzini toping.

Yechish.

$AB=AC=BD=DC=4.$

$BG=GD=BE=AE=AF=FC=DH=HC=2.$

$S_{\square ABCD}=\alpha^2.$

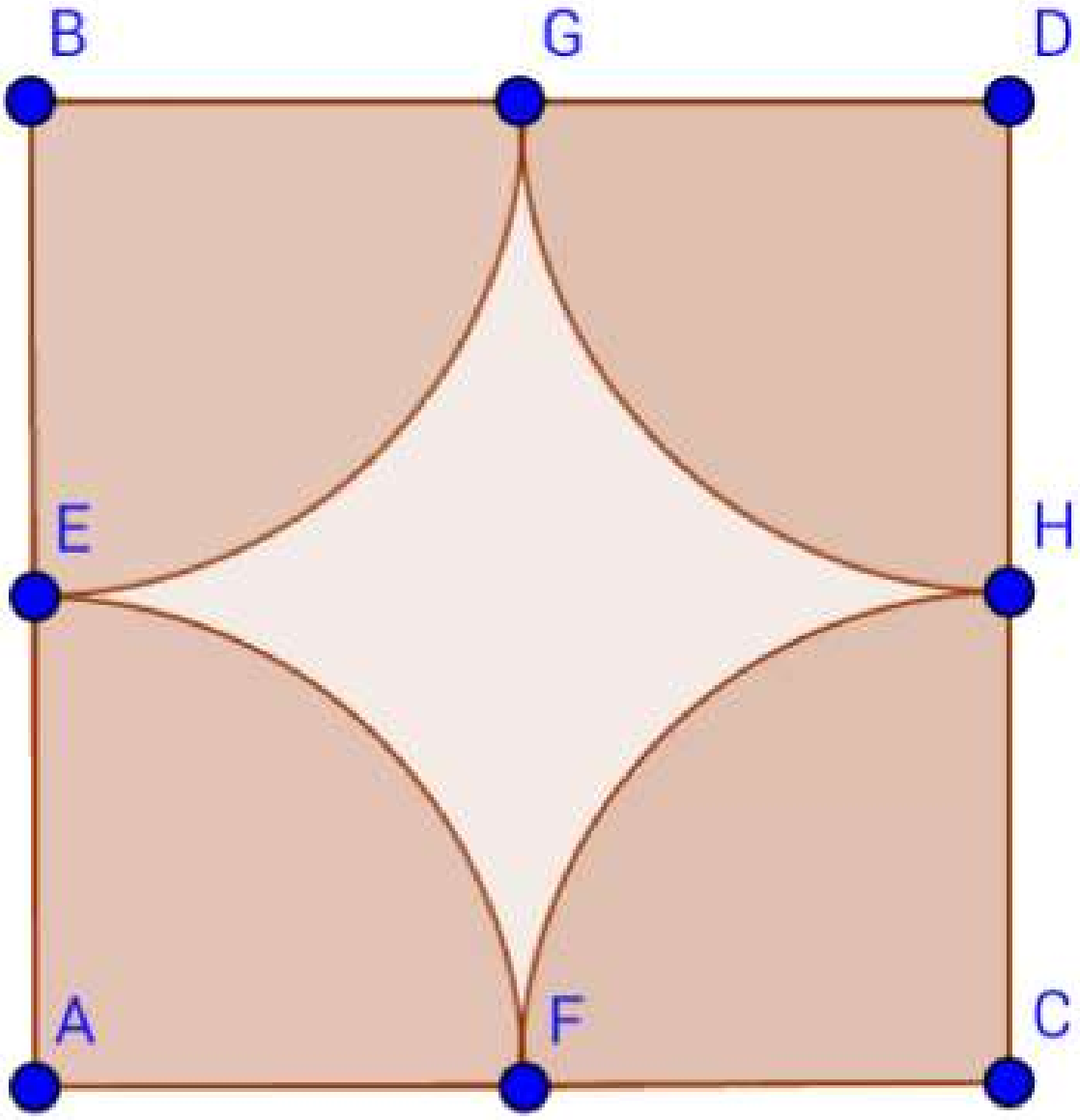
$\alpha=4. \Rightarrow$

$S_{\square ABCD}=16.$

$S=\pi R^2.$

$R=2. \quad S=4\pi.$

$S_x=S_{\square ABCD}-S=16-4\pi.$ Javob; $16-4\pi.$



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ABITURIYNT–2010.

(2010.4–5.33)

A(α,–1), B(α+3,8), va C(–3,α–1) nuqtalar bir to'g'ri chiziqda yotsa, α ning qiymati nechaga teng.

Yechish.

$A(x_1;y_1)$ $B(x_2;y_2)$ $C(x_3;y_3)$

$x_1=\alpha$. $x_2=\alpha+3$. $x_3=-3$.

$y_1=-1$. $y_2=8$. $y_3=\alpha-1$.

$$\frac{x_1-x_2}{x_2-x_3}=\frac{y_1-y_2}{y_2-y_3}.$$

$$\frac{\alpha-\alpha-3}{\alpha+3+3}=\frac{-1-8}{8-\alpha+1}. \Rightarrow \frac{-3}{\alpha+6}=\frac{-9}{9-\alpha}.$$

$$-3(7-\alpha)=-9(\alpha+6).$$

$$-27+3\alpha=-9\alpha-54.$$

$$9\alpha+3\alpha=-54+27.$$

$$12\alpha=-27.$$

$$\alpha=-\frac{27}{14}=-\frac{9}{4}.$$ Javob; $-\frac{9}{4}$.

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ABITURIYNT–2010.

(2010.4–5.34)

ABC tomoni 4 sm bo'lgan teng tomonli uchburchak bo'lsa,

$\overrightarrow{AB}\times\overrightarrow{AC}+\overrightarrow{BA}\times\overrightarrow{BC}=?.$

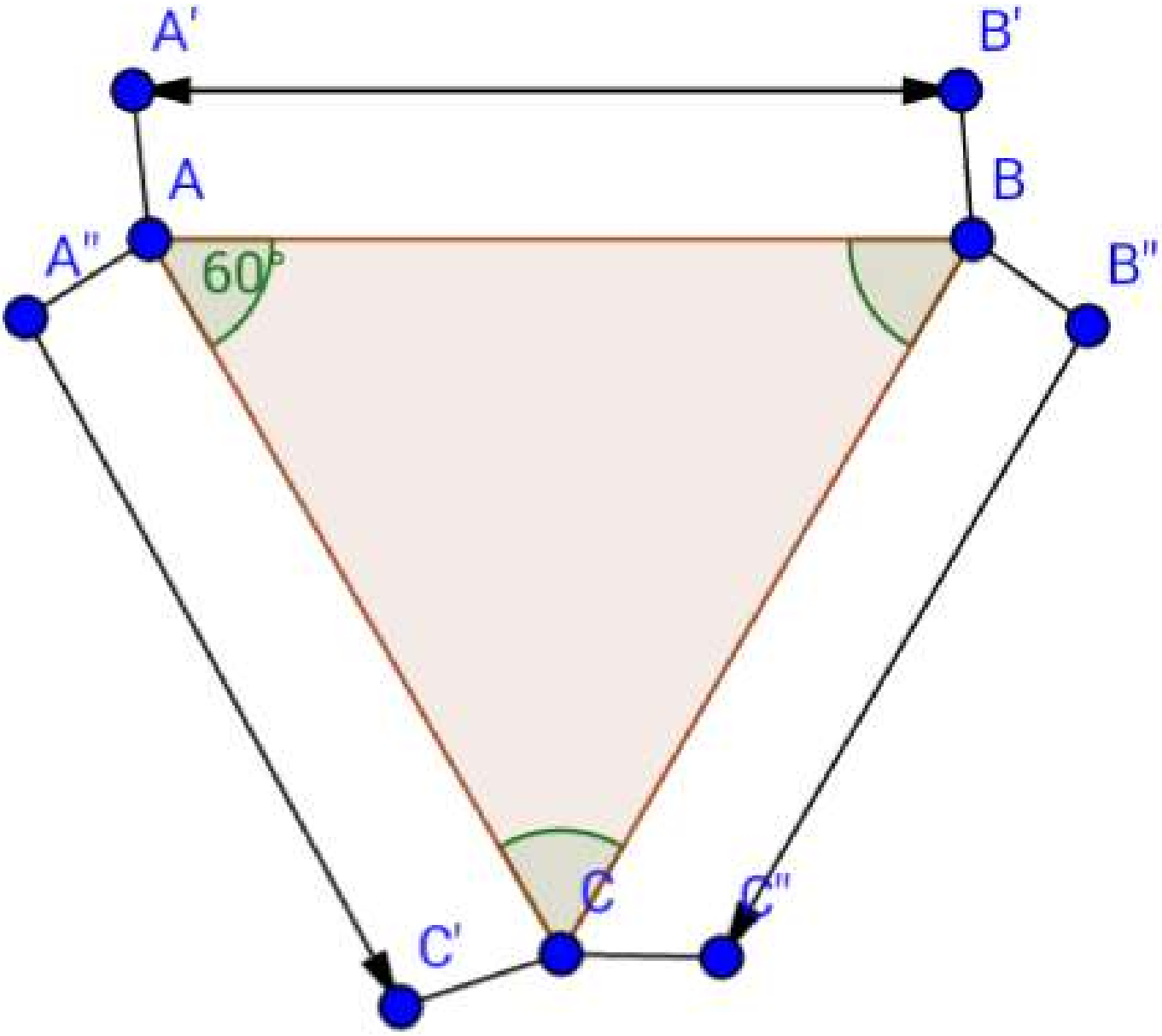
Yechish.

$\overrightarrow{AB}=4.\ \overrightarrow{AC}=4.\ \overrightarrow{BA}=4.\ \overrightarrow{BC}=4.$

$\cos\alpha=60^\circ.$

$4\times4\times\cos60^\circ+4\times4\times\cos60^\circ.$

$16\times\frac{1}{2}+16\times\frac{1}{2}=8+8=16.$ Javob; 16.



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(2010.4–5.35)

Asosining tomonlari 4 va 6 ga teng bo'lgan to'g'ri burchakli parallelpipedning ichida suv bor. Bu suvni ichiga tomoni 3 ga teng bo'lgan kub tashlandi. Kubning $\frac{2}{3}$ qismi botganda, kub parallelpiped tubiga tegib qoldi. Kub tashlanishdan avval parallelpiped ichidagi suvning balandligi nechaga teng bo'lgan?

Yechish.

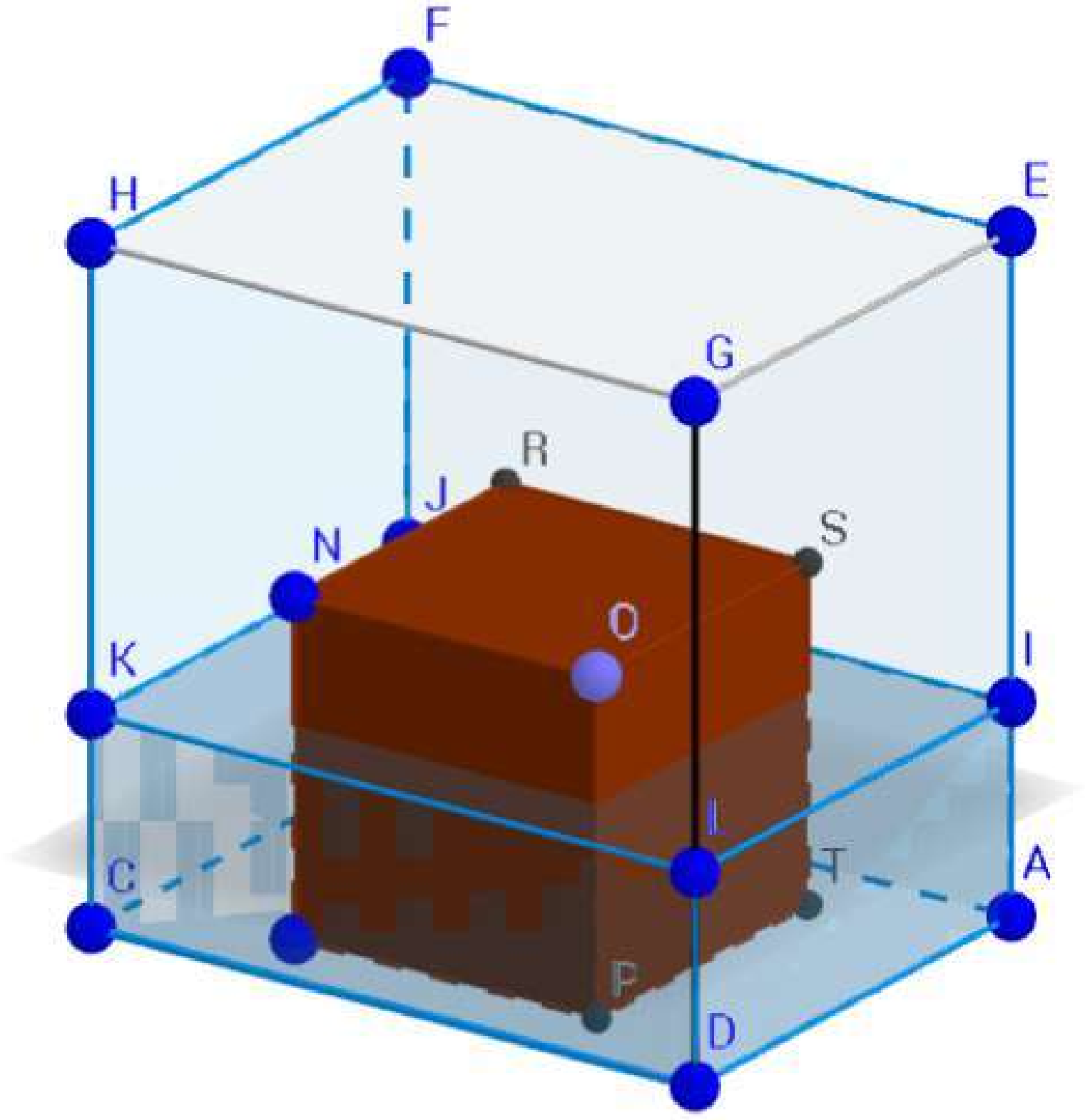
Kub hajmi$=3\times3\times3=27$.

Suvga botgan balandlik$=2$.

$$\frac{27\times2}{3}+4\times6\mathbf{h}=6\times4\times2.$$

$$18+24\mathbf{h}=48.$$

$$\mathbf{h}=\frac{48-18}{24}=\frac{30}{24}=\frac{5}{4}=1{,}25.$$ Javob; 1,25.



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ABITURIYNT–2010.

(2010.4–5.36)

Radiusi 3 ga teng bo'lgan sharni o'z ichiga sig'dira oladigan eng kichik hajimli slindirning hajmini toping.

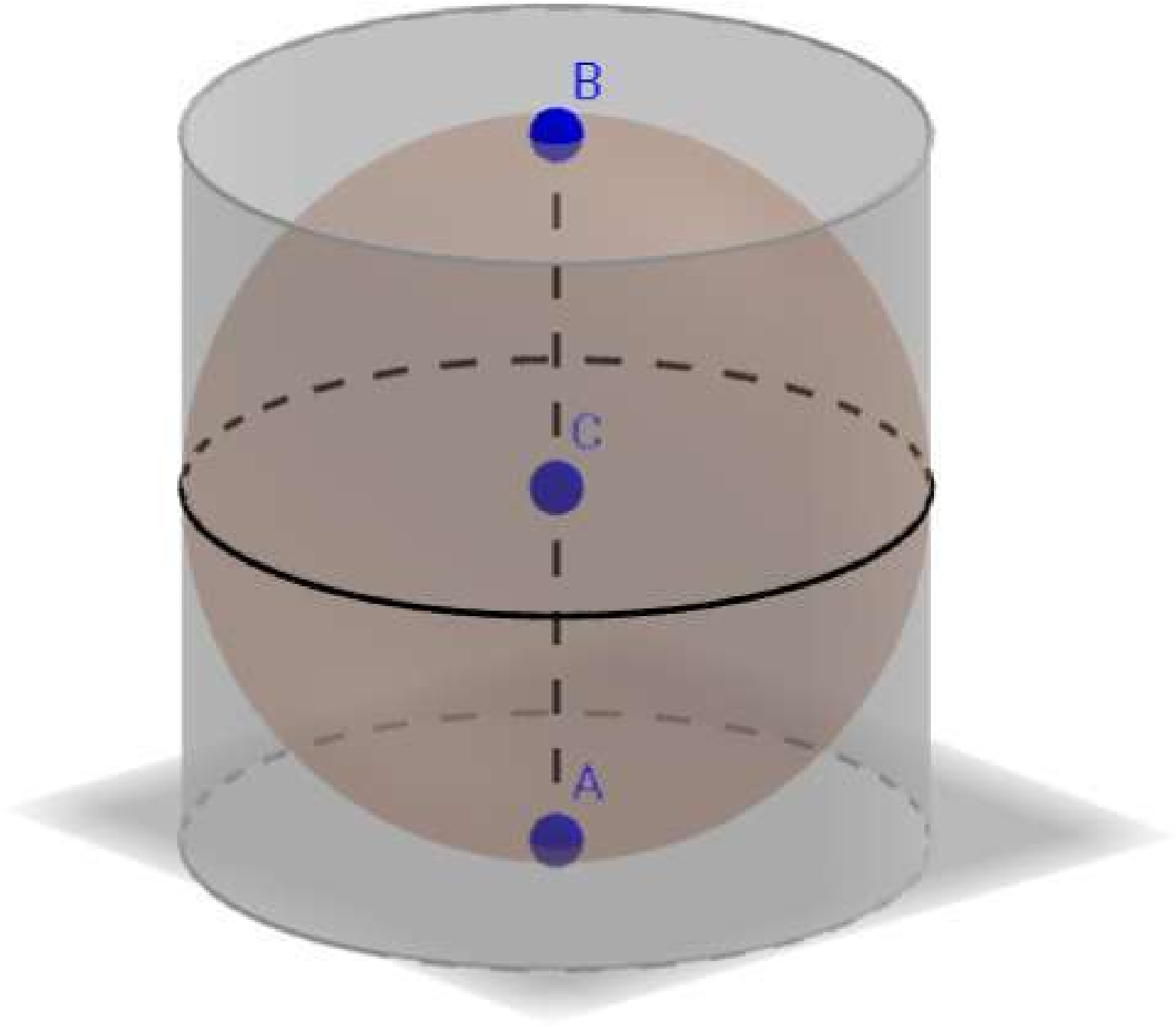
Yechish.

$R_c=R,\ \ h_c=2R.$

$R=3.$

$V_c=\pi R_c^2\times h_c=\pi R^2\times 2R=2\pi R^3.$

$2\pi\times 3^3=2\pi\times 27=54\pi.$ Javob; 54π.



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