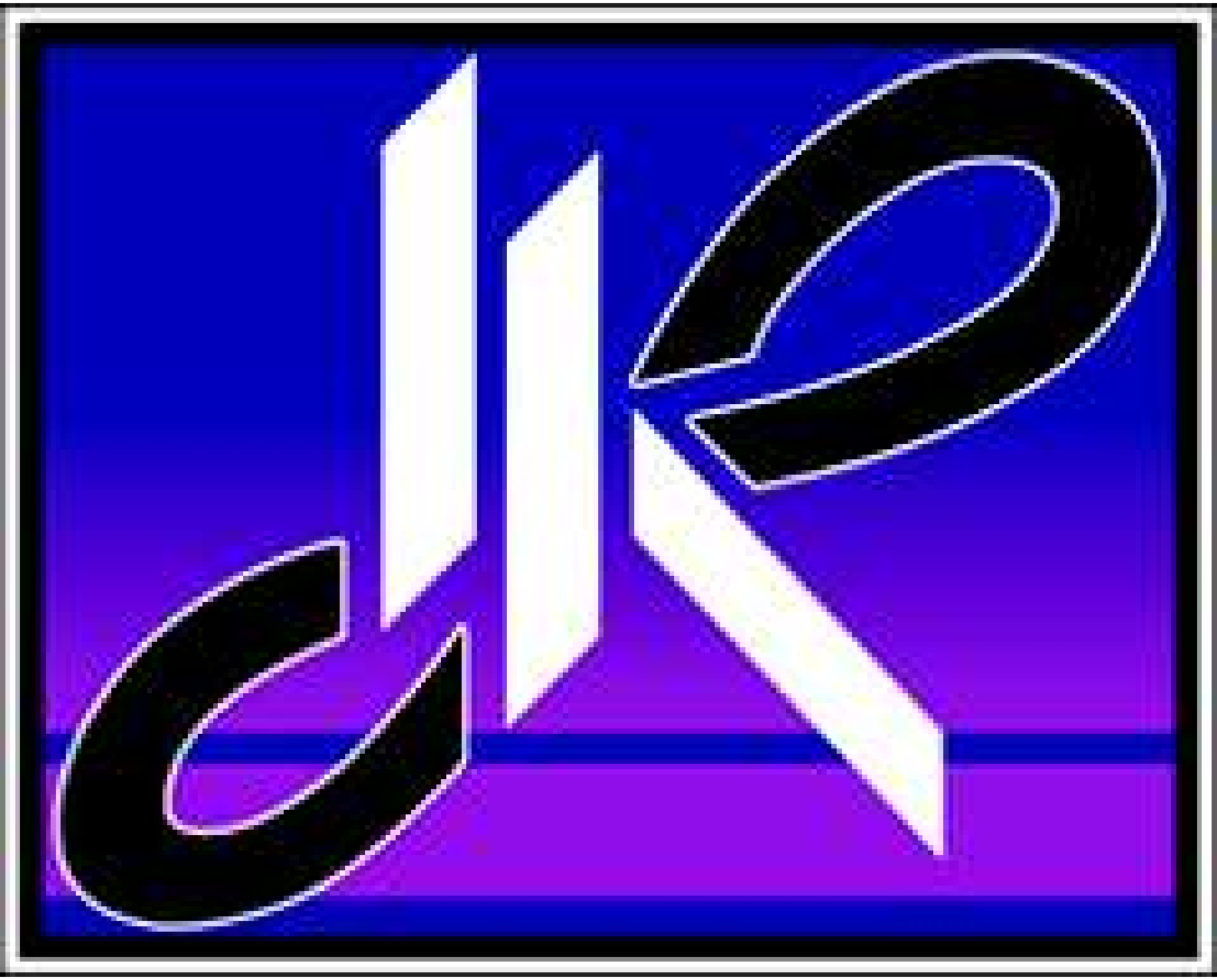

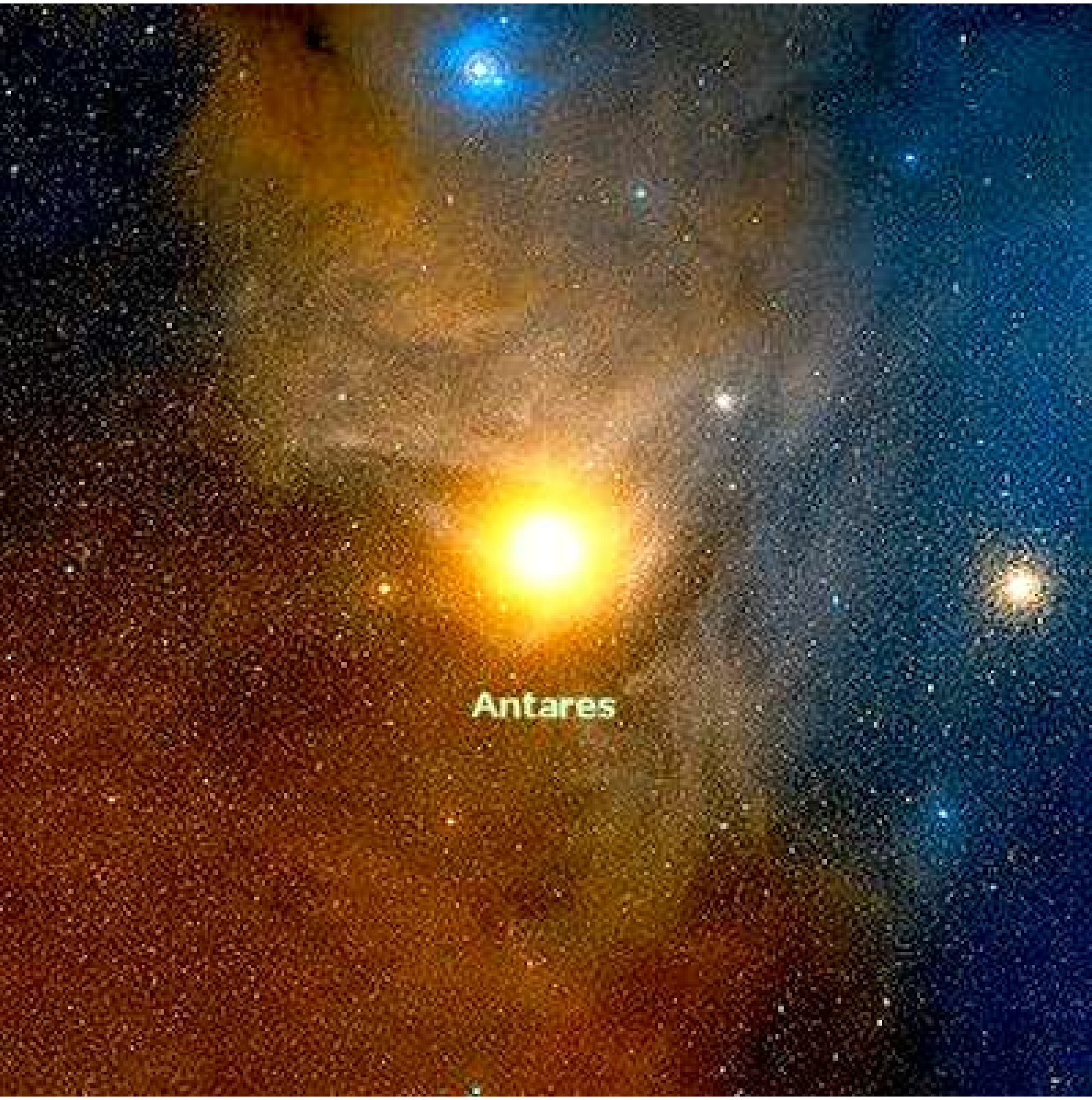

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ABITURIYENT–2010

(2010.7.1).

α,b va c raqamlar, abc+cba=1453

bo'lsa, $(\alpha+c)b$ ning qiymatini toping.

(αbc va cba uch honali sonlar).

Yechish;

$\alpha bc=100\alpha+10b+c.$

$cba=100c+10b+\alpha.$

$100c+100\alpha+10b+10b+\alpha+c.$

$100(\alpha+c)+20b+(\alpha+c).$

$(\alpha+c)(100+1)+20b.=101(\alpha+c)+20b.$

$101(\alpha+c)+20b=101\times13+20\times7.$

$\alpha+c=13.\ \ b=7.$

$13\times7=91.$ Javob; 91.

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ABITURIYENT–2010

(2010.7.2).

Berilgan ikki sonlardan biri 15 ga teng. Bu sonlarning EKUKi 75 ga, EKUBi esa 5 ga teng. Ikkinchi sonni toping.

Yechish;

$x \times y = EKUK(x \times y) \times EKUB(x \times y)$.

$x = 15$. $EKUB = 5$. $EKUK = 75$.

$y = ?$.

$15y = 5 \times 75. \Rightarrow x = \frac{375}{15} = 25.$ Javob; 25.

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ABITURIYENT–2010

(2010.7.3).

Hisoblang.

$$\left(89654\frac{2}{7}-89651\frac{1}{2}\right):1\frac{5}{21}+1\frac{4}{5}:2\frac{2}{5}.$$

Yechish;

$$\left(89654+\frac{2}{7}-89651-\frac{1}{2}\right):\frac{26}{21}+\frac{9}{5}:\frac{12}{5}.$$

$$\left(3+\frac{4-7}{14}\right)\times\frac{21}{26}+\frac{9}{5}\times\frac{5}{12}.$$

$$\left(\frac{42-3}{14}\right)\times\frac{21}{26}+\frac{3}{4}=\frac{39}{14}\times\frac{21}{26}+\frac{3}{4}.$$

$$\frac{3\times3}{2\times2}+\frac{3}{4}=\frac{9+3}{4}=\frac{12}{4}=3=\frac{15}{5}.$$ **Javob;** $\frac{15}{5}$.

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ABITURIYENT–2010

(2010.7.4)

Hisoblang.

$7{,}235\times10^{-4}+2{,}76\times10^{-3}$

Yechish;

$$7{,}235\times\frac{1}{10^4}=7{,}235\times\frac{1}{10000}=7{,}235\times0{,}0001=0{,}0007235.$$

$$2{,}76\times\frac{1}{10^3}=2{,}76\times\frac{1}{1000}=2{,}76\times0{,}001=0{,}00276.$$

$$0{,}0007235+0{,}00276=0{,}0034835.$$

Javob; $3{,}4835\times10^{-3}$.

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ABITURIYENT–2010

(2010.7.5)

Soddalashtiring.

$$\frac{\alpha^8+\alpha^4+1}{\alpha^6-1}.$$

Yechish.

$$\frac{\alpha^8+\alpha^2+\alpha^4-\alpha^2+1}{\alpha^6-1}=\frac{\alpha^2(\alpha^6-1)}{\alpha^6-1}+\frac{\alpha^4+\alpha^2+1}{\alpha^6-1}$$

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

$$\frac{\alpha^2(\alpha^2-1)+1}{(\alpha-1)(\alpha+1)}=\frac{\alpha^4-\alpha^2+1}{(\alpha-1)(\alpha+1)}.$$ Javob; $\frac{\alpha^4-\alpha^2+1}{(\alpha-1)(\alpha+1)}$.

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ABITURIYENT–2010

(2010.7.6)

b=$2\sqrt{3}$ va c=$3\sqrt{2}$ bo'lsa,

$\sqrt{c^2-4bc+4b^2}+\sqrt{b^2-2bc+c^2}$ ning qiymatini toping.

Yechish.

$\sqrt{(c-2b)^2}+\sqrt{(b-c)^2}$.

$2\sqrt{3}=3,4641$.

$2\times 2\sqrt{3}=6,9282$.

$3\sqrt{2}=4,24264$.

$$\underset{3\sqrt{2}<2\times 2\sqrt{3}}{\overset{c<2b}{|c-2b|}}+\underset{2\sqrt{3}<3\sqrt{2}}{\overset{b<c}{|b-c|}}=2b-c+c-b=b.$$

b=$2\sqrt{3}$. Javob; $2\sqrt{3}$.

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ABITURIYENT–2010

(2010.7.7)

Hisoblang.

$$\frac{\sqrt{5-3\sqrt{2,(6)}}}{\sqrt{2}}+\frac{\sqrt{5+3\sqrt{2,(6)}}}{\sqrt{2}}.$$

Yechish.

$$\frac{\sqrt{5-3\sqrt{\frac{24}{9}}}}{\sqrt{2}}+\frac{\sqrt{5+3\sqrt{\frac{24}{9}}}}{\sqrt{2}}=\frac{\sqrt{5-2\sqrt{6}}}{\sqrt{2}}+\frac{\sqrt{5+2\sqrt{6}}}{\sqrt{2}}.$$

$$\frac{\sqrt{2-2\sqrt{6}+\sqrt{3}}}{\sqrt{2}}+\frac{\sqrt{2+2\sqrt{3}+3}}{\sqrt{2}}=\frac{\sqrt{(\sqrt{2}-\sqrt{3})^2}}{\sqrt{2}}+\frac{\sqrt{(\sqrt{2}+\sqrt{3})^2}}{\sqrt{2}}.$$

$\sqrt{3}=1{,}73205.\ \sqrt{2}=1{,}41421.$

$$\frac{|\sqrt{2}-\sqrt{3}|}{\sqrt{2}}+\frac{\sqrt{3}+\sqrt{2}}{\sqrt{2}}=\overset{\sqrt{2}<\sqrt{3}}{=}\frac{(\sqrt{3}-\sqrt{2})\sqrt{2}}{2}+\frac{(\sqrt{3}+\sqrt{2})\sqrt{2}}{2}.$$

$$\frac{\sqrt{6}-2+\sqrt{6}+2}{2}=\frac{2\sqrt{6}}{2}=\sqrt{6}.$$ **Javob;** $\sqrt{6}$.

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ABITURIYENT–2010

(2010.7.8)

$8x^2-9x+2=0$ tenglama ildizlari o'rta arifmetigining o'rta geometrigiga nisbatini toping.

Yechish.

$$x_{1,2}=\frac{9\pm\sqrt{81-4\times8\times2}}{2\times8}=\frac{9\pm\sqrt{81-64}}{16}=\frac{9\pm\sqrt{17}}{16}.$$

$$x_1=\frac{9+\sqrt{17}}{16},\ x_2=\frac{9-\sqrt{17}}{16}.$$

$$a=\frac{x_1+x_2}{2}=\frac{\frac{9+\sqrt{17}}{16}+\frac{9-\sqrt{17}}{16}}{2}=\frac{\frac{9+\sqrt{17}+9-\sqrt{17}}{16}}{2}=\frac{18}{16\times2}=\frac{9}{16}.$$

$$b=\sqrt{x_1x_2}=\sqrt{\frac{9+\sqrt{17}}{16}\times\frac{9-\sqrt{17}}{16}}=\sqrt{\frac{81-17}{256}}=\sqrt{\frac{64}{256}}=\sqrt{\frac{1}{4}}=\frac{1}{2}.$$

$$\frac{a}{b}=\frac{\frac{9}{16}}{\frac{1}{2}}=\frac{9}{8}=1\frac{1}{8}.$$ Javob; $1\frac{1}{8}$.

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ABITURIYENT–2010

(2010.7.9)

$x+y=7$ va $xy=10$ bo'lsa, x^3+y^3 ning qiymatini toping.

Yechish.

$(x+y)(x^2-xy+y^2)=7(x^2+2xy+y^2-3xy)$.

$7((x+y)^2-3\times 10)=7(49-30)=7\times 19=133$. Javob; 133.

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ABITURIYENT–2010

(2010.7.10)

$$\frac{(\mathbf{x}-5)(9\mathbf{x}-20-\mathbf{x}^2)}{1+\mathbf{x}}\geqslant 0.$$

Yechish.

$\mathbf{x}\neq -1.\ \mathbf{x}\neq 5$

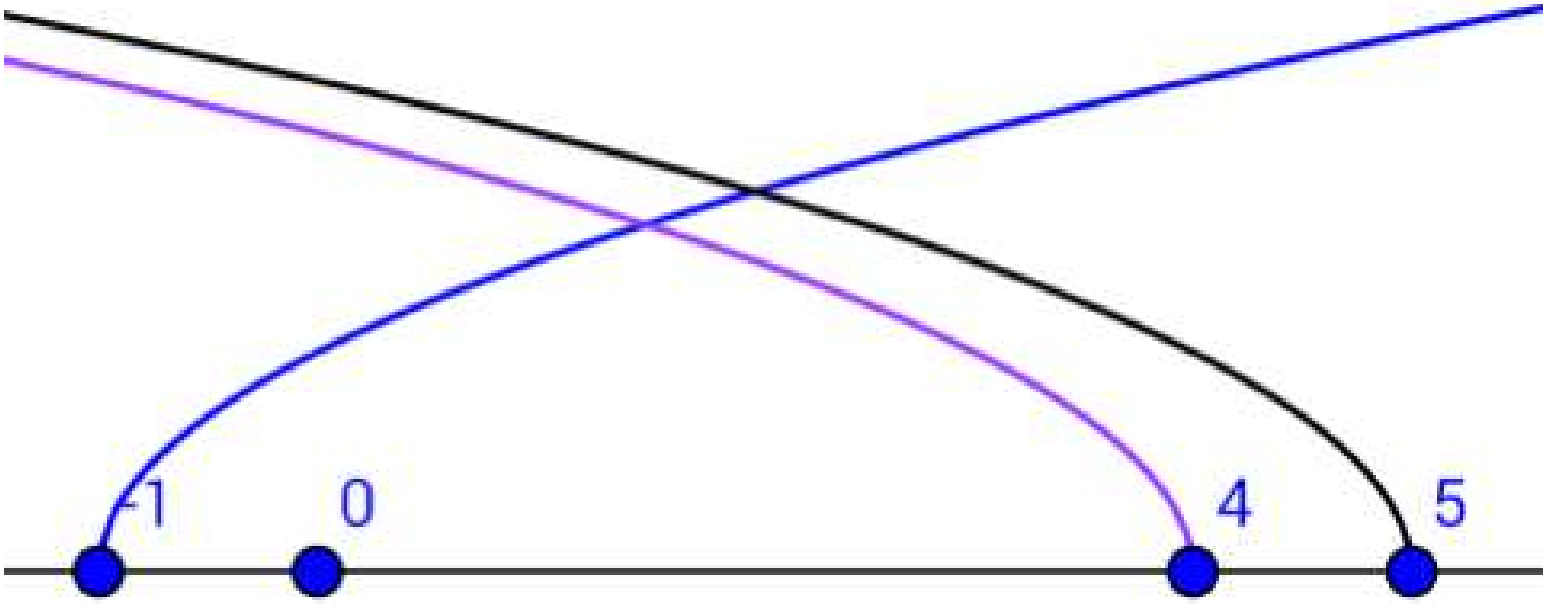
$\mathbf{x}-5\geqslant 0.\ \mathbf{x}\geqslant 5.$

$$9\mathbf{x}-20-\mathbf{x}^2\geqslant 0\Big|^{-1} \Rightarrow \mathbf{x}^2-9\mathbf{x}+20\leqslant 0.$$

$(\mathbf{x}-5)(\mathbf{x}-4)\leqslant 0. \Rightarrow \mathbf{x}\leqslant 5.\ \mathbf{x}\leqslant 4.$

$1+\mathbf{x}>0.\ \mathbf{x}>-1.$

$(-1;4]\cup\{5\}$ **Javob;** $(-1;4]\cup\{5\}$.



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ABITURIYENT–2010

(2010.7.11)

$|-abc|=-abc$, $|a-b|=-b+a$ va $|-b|=b$.

bo'lsa quydagilardan qaysi biri to'g'ri?

Yechish.

$b>0$. $a>b$. $c<0$.

$c<0<b<a$. Javob; $c<0<b<a$.

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ABITURIYENT–2010

(2010.7.12)

Tenglamaning ildizlari yig'indisini toping.

$$(x^2-3x-28)(x+5)\sqrt{7x-10-x^2}=0$$

Yechish.

$$\sqrt{7x-10-x^2}=\frac{0}{(x^2-3x-28)(x+5)}.$$

$$\sqrt{(x-2)(x-5)}=0.$$

$x_1=2.\ x_2=5.\ \ 5+2=7.$ Javob; 7.

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ABITURIYENT–2010

(2010.7.13)

Arifmetik progressiyaning uchinchi va oltinchi hadlari yig'indisi 13 ga, o'n birinchi va sakkizinchi hadlar ayirmasi 9 ga teng. Progressiyaning beshinchi hadini toping.

Yechish.

$a_3+a_6=13.$

$a_{11}-a_8=9.$

$a_1+10d-a_1-7d=9.$

$3d=9.\ d=3.$

$a_1+2d+a_1+5d=13.$

$2a_1+7\times3=13. \Rightarrow a_1=\frac{13-21}{2}=\frac{-8}{2}=-4.$

$a_5=a_1+4d=-4+4\times3=8.$ Javob; 8.

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ABITURIYENT–2010

(2010.7.14)

Otaning yoshi uchta farzandlari yoshi yig'indisidan 3 martta katta. 4 yildan keyin otaning yoshi farzandlari yoshlari yig'indisidan 2 martta katta bo'lib qoladigan bo'lsa, otani hozirgi yoshini toping.

Yechish.

$3\mathbf{x}+4=2(\mathbf{x}+12)$

$3\mathbf{x}+4=2\mathbf{x}+24.$

$3\mathbf{x}-2\mathbf{x}=24-4. \Rightarrow \mathbf{x}=20.$

$3\times 20=60.$ Javob; 60.

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ABITURIYENT–2010

(2010.7.15)

Ikki jo'mrak hovuzni 10 va 15 soatda to'ldiradi. Hovuzning yarmi to'lgunga qadar ikki jo'mrakni ochib qo'yib, yarmi to'lgandan so'ng ikkinchi jo'mrak yopib qo'yilsa, hovuzning to'lishi uchun hammasi bo'lib necha soat vaqt ketadi?

Yechish.

$$\frac{1}{10}+\frac{1}{15}=\frac{3+5}{30}=\frac{1}{6}.$$

$$\frac{1}{2}:\frac{1}{6}=\frac{1}{2}\times 6=3.$$

$$\frac{1}{2}:\frac{1}{10}=\frac{1}{2}\times 10=5.$$

$5+3=8$. Javob; 8.

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ABITURIYENT–2010

(2010.7.16)

Quydagi funlsiyalardan qaysilari juft funksiya.

I. $\oint(x)=(x-4)^2+8x$. II. $\oint(x)=x^3+x$.

III. $\oint(x)=x^4+3x^2+5$. IV. $\oint(x)=x^2-4x+4$.

V. $\oint(x)=\dfrac{x^4-16}{(x-2)(x+2)}$.

Yechish.

$x=\pm 1$.

I. $\oint(\pm 1)=(-1-4)^2-8=25-8=17$.

II. $\oint(-1)=-1-1=-2$.

III. $\oint(-1)=1+3+5=9$.

IV. $\oint(-1)=1+4+4=9$.

V. $\oint(-1)=\dfrac{1-16}{(-1-2)(-1+2)}=\dfrac{-15}{-3}=5$.

Javob; I,III va V.

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ABITURIYENT–2010

(2010.7.17)

k ning qanday qiymatlarida

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

tenglama ikkita turli manfiy ildizga ega bo'ladi?

Yechish.

$2k+4>0.\ k>-2.\varnothing$

$6k-3>0.\ k>\frac{1}{2}=0{,}5.$ **Javob;** $(0{,}5;\infty)$.

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ABITURIYENT–2010

(2010.7.18)

Tengsizlik x ning nechta butun qiymatida o'rinli?

$$4(0,2)^{x^2+x-2}-15(0,2)^{x^2+x-1}\geqslant 1.$$

Yechish.

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

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

$$x_1=-2.\ x_2=1.\ \Rightarrow 1\geqslant 1$$

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

$$x_{1,2}=\frac{-1\pm\sqrt{1+4}}{2}=\frac{-1\pm\sqrt{5}}{2}.$$

$$x_1=\frac{-1-\sqrt{5}}{2}.\ x_2=\frac{-1+\sqrt{5}}{2}.\ \Rightarrow 5\geqslant 1.$$ Javob; 4.

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ABITURIYENT–2010

(2010.7.19)

Agar $\lg 5=\alpha$ va $\lg 3=b$ bo'lsa,

$\log_{750}180$ ni α va b orqali ifodalang.

Yechish.

$$\log_{750}(180)=\frac{\lg 180}{\lg 750}.$$

$180\|2$	$750\|2$	$180=2^2\times 3^2\times 5$
$90\|2$	$375\|3$	$750=2\times 3\times 5^3.$
$45\|3$	$125\|5$	
$15\|3$	$25\|5$	
$5\|5$	$5\|5$	
1	1	

$$\frac{\lg(2^2\times 3^2\times 5)}{\lg(2\times 3\times 5^3)}=\frac{2\lg 2+2\lg 3+\lg 5}{\lg 2+\lg 3+3\lg 5}=\frac{2(1-\lg 5)+2b+\alpha}{1-\lg 5+b+3\alpha}.$$

$$\frac{2-2\alpha+2b+\alpha}{1-\alpha+b+3\alpha}=\frac{2b+2-\alpha}{2\alpha+b+1}.$$ Javob; $\frac{2b+2-\alpha}{2\alpha+b+1}.$

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ABITURIYENT–2010

(2010.7.20)

$\frac{\pi}{2}<x<\pi$, $\sin x=\frac{2}{5}$ bo'lsa, $\sin 2x=?$

Yechish.

$\sin 2x=2\sin x\cos x$.

$$\cos x=-\sqrt{1-\sin^2 x}=-\sqrt{1-\left(\frac{2}{5}\right)^2}=-\sqrt{1-\frac{4}{25}}=-\frac{\sqrt{21}}{5}.$$

$-2\times\frac{2}{5}\times\frac{\sqrt{21}}{5}=-\frac{4\sqrt{21}}{25}$. **Javob;** $-\frac{4\sqrt{21}}{25}$.

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ABITURIYENT–2010

(2010.7.21)

$y=\sin\frac{2x}{3}+\operatorname{tg}\frac{x}{4}+\cos\frac{x}{3}$ funksiyaning

eng kichik musbat davrini toping.

Yechish.

eng kichik musbat davr.

$\sin x\ T=2\pi. \Rightarrow \frac{2x}{3}=2\pi. \Rightarrow x=\frac{6\pi}{2}=3\pi.$

$\operatorname{tg}x\ T=\pi. \Rightarrow \frac{x}{4}=\pi \Rightarrow x=4\pi.$

$\cos x\ T=2\pi \Rightarrow \frac{x}{3}=2\pi \Rightarrow x=6\pi.$

$y=3\pi+4\pi+6\pi.$

$EKUK=12. \Rightarrow 12\pi$ Javob; 12π.

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ABITURIYENT–2010

(2010.7.22)

Tengsizlik sistemasini yeching.

$$\begin{cases} \sin x > \dfrac{\sqrt{3}}{2} \\ \cos x > \dfrac{\sqrt{3}}{2} \end{cases}$$

Yechish.

Asosiy ayniyatga qaraganda kvadratlar yig'indisi 1 dan oshib ketadi.

Javob; Ø.

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ABITURIYENT–2010

(2010.7.23)

Ushbu $y=\ln(3x^3+4\sin 4x)$ funksiyaning hosilasini toping.

Yechish.

$$\frac{1}{3x^3+4\sin 4x}\times 9x^2+4\cos 4x\times 4.$$

$$\frac{9x^2+16\cos 4x}{3x^3+4\sin 4x}.$$ Javob; $\frac{9x^2+16\cos 4x}{3x^3+4\sin 4x}$.

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ABITURIYENT–2010

(2010.7.24)

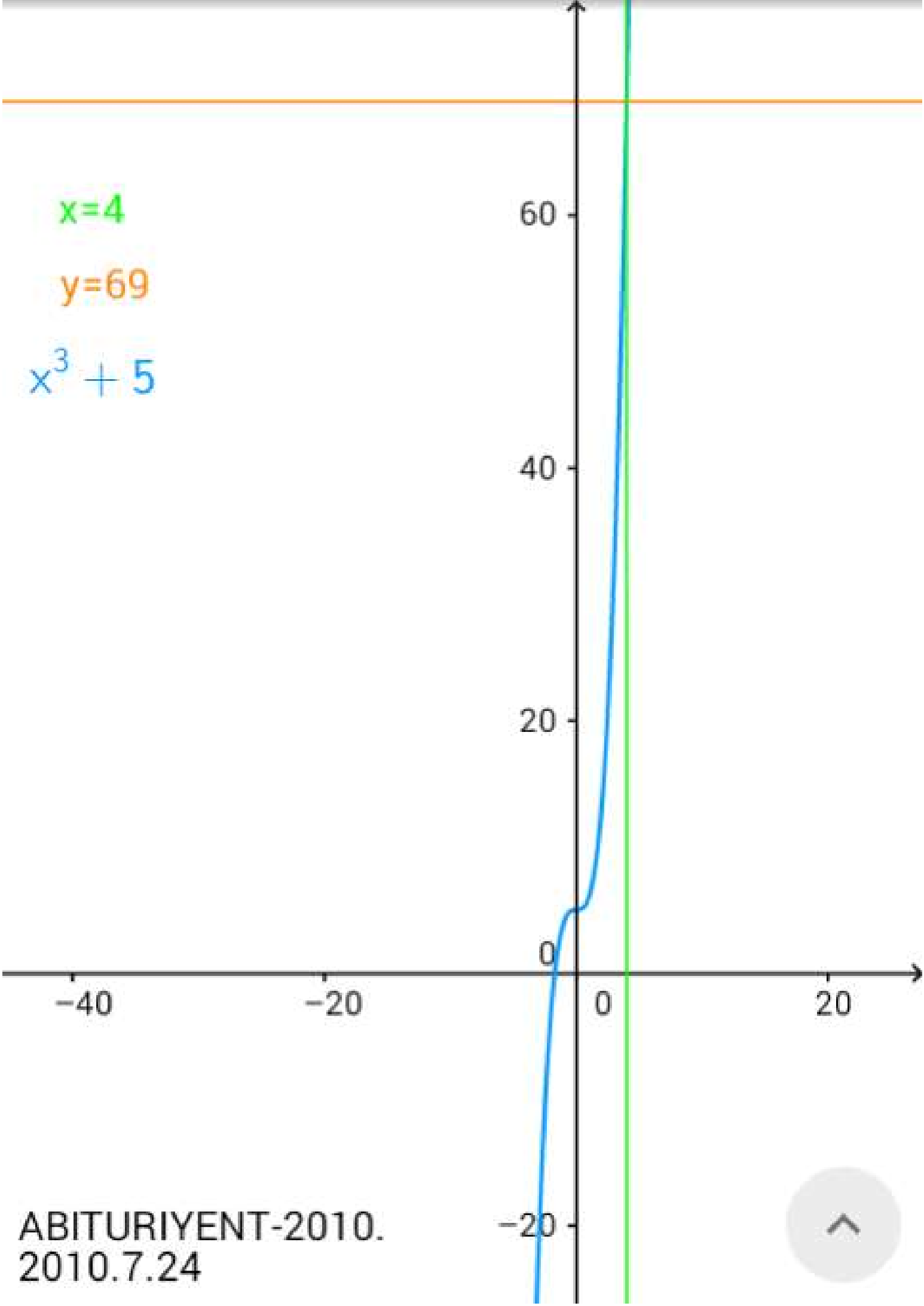
$y=x^3+5$, $y=69$ va $x=0$ chiziqlar bilan chegaralangan sohaning yuzini toping.

Yechish.

$x^3+5=69. \Rightarrow x^3=69-5=64. \Rightarrow x=4.$

$$S=\int_0^4(64-x^3)dx=64x-\frac{x^4}{4}\Big|_0^4 \longrightarrow.$$

$$64\times4-\frac{4^4}{4}=256-64=192.$$ **Javob; 192.**



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ABITURIYENT–2010

(2010.7.25)

Uzunligi 7,2 sm bo'lgan kesma 4:5 nusbatta ikki bo'lakka bo'lindi. Bu bo'laklar uzunliklari ayirmasini toping.

Yechish.

$$4\mathbf{x}+5\mathbf{x}=7,2. \Rightarrow 9\mathbf{x}=\frac{72}{10}. \Rightarrow \mathbf{x}=\frac{\frac{36}{5}}{9}.$$

$$\frac{36}{5\times 9}=\frac{4}{5}=0,8.$$

$$4\times\frac{8}{10}=\frac{16}{5}=3,2. \quad 5\times\frac{8}{10}=4.$$

$4-3,2=0,8.$ Javob; 0,8.

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ABITURIYENT–2010

(2010.7.26)

ABC teng tomonli uchburchakning B uchidan AC tomonda joylashgan D nuqtaga kesma o'tkazildi. Hosil bo'lgan BDC uchburchakning DC tomoni 4 ga teng va DBC burchak 15° bo'lsa, $|AB|=?$

Yechish.

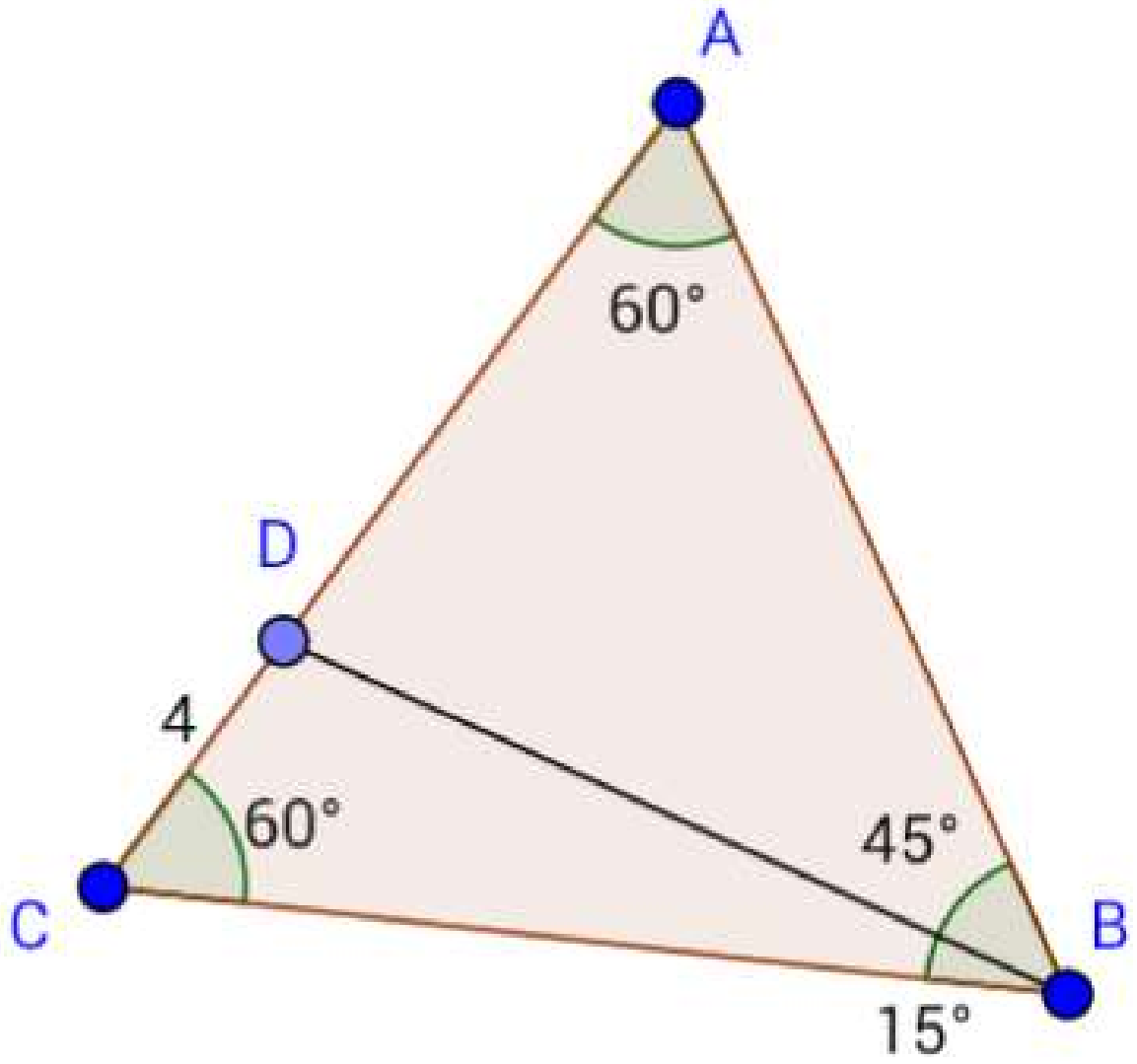
$$\frac{a}{\sin\alpha}=\frac{b}{\sin\gamma}=\frac{4}{\sin 15^\circ}=\frac{b}{\sin 75^\circ}.$$

$$\sin 15^\circ=\sqrt{\frac{1-\cos 30^\circ}{2}}=\frac{\sqrt{2-\sqrt{3}}}{2}.$$

$$\sin 75^\circ=\sqrt{\frac{1-\cos 150^\circ}{2}}=\frac{\sqrt{2+\sqrt{3}}}{2}.$$

$$\frac{4}{\frac{\sqrt{2-\sqrt{3}}}{2}}=\frac{b}{\frac{\sqrt{2+\sqrt{3}}}{2}}. \Rightarrow \frac{8}{\sqrt{2-\sqrt{3}}}=\frac{2b}{\sqrt{2+\sqrt{3}}}.$$

$$\frac{8\sqrt{2-\sqrt{3}}}{2-\sqrt{3}}=\frac{2b\sqrt{2+\sqrt{3}}}{2+\sqrt{3}}. \Rightarrow 4\sqrt{3}+8.$$ Javob; $4\sqrt{3}+8$.



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ABITURIYENT–2010

(2010.7.27)

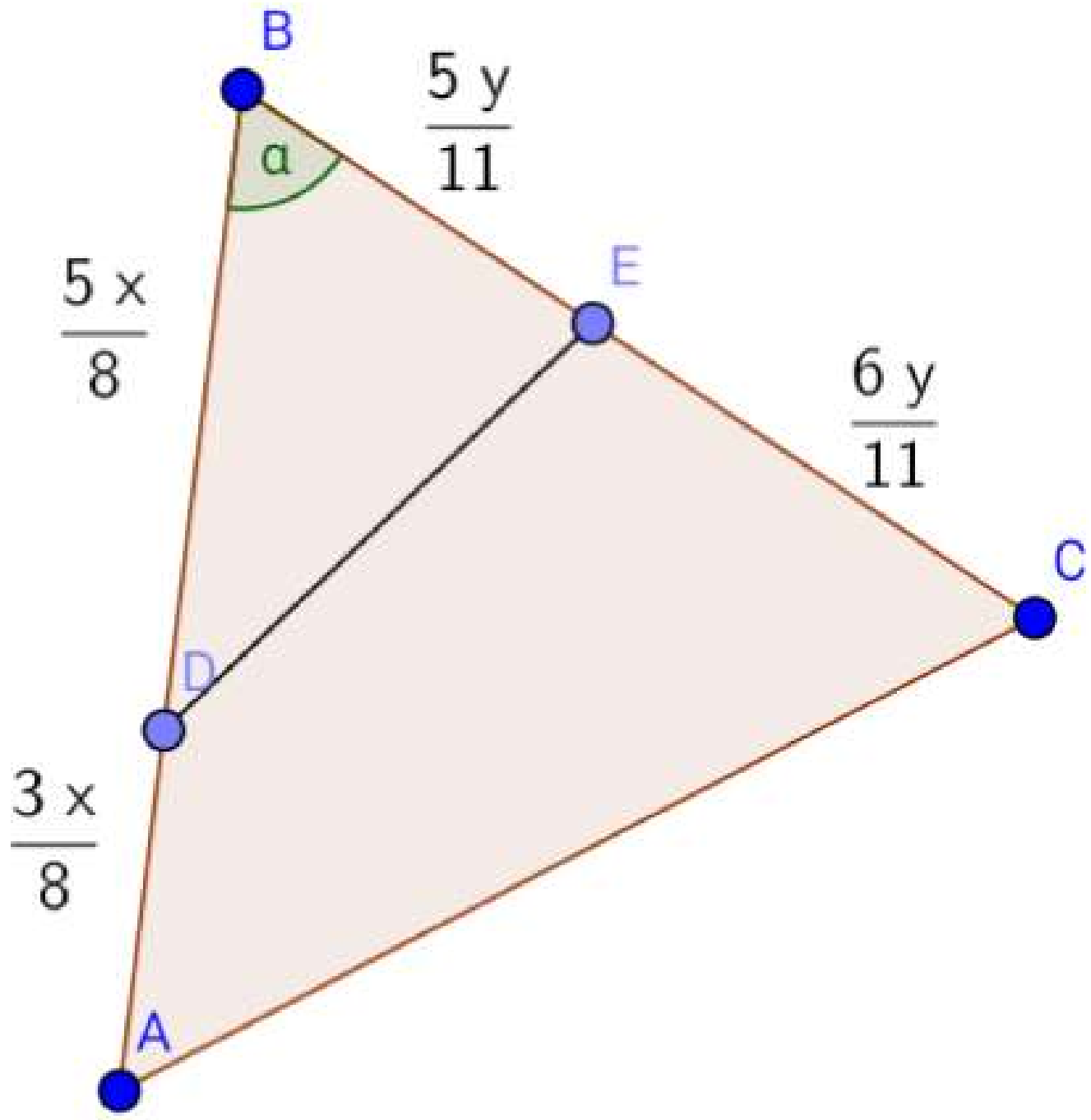
ABC uchburchakning AB tomonidan D nuqta va BC tomonidan E nuqta olindi. $3AD=5BD$ va $6EC=5BE$ bo'lsa, ABC uchburchak yuzining BDE uchburchak yuziga nisbatini toping.

Yechish.

$AD=BD=x.\ 3+5=8. \Rightarrow \frac{3x}{8}=\frac{5x}{8}.$

$EC=BE=y.\ 5+6=11. \frac{5y}{11}=\frac{6y}{11}.$

$$\frac{S_{ABC}}{S_{BDE}}=\frac{xysinx}{\frac{3x}{8}\times\frac{6y}{11}\times sinx}=\frac{88}{18}=\frac{44}{9}.$$ Javob; $\frac{44}{9}$.



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ABITURIYENT–2010

(2010.7.28)

Quyda keltirilganlardan mulohazalardan qaysi biri noto'g'ri?

A) Muntazam oltiburchakning tashqi burchagi ichki burchagining yarmiga teng.

B) Muntazam beshburchak ichki burchagining tashqi burchagiga nisbati 3:2.

C) Muntazam sakkizburchakning tashqi burchagi ichki burchagining uchdan biriga teng.

D) Muntazam o'nburchakning icki burchagi tashqi burchagidan 5 martta katta.

Javob; D.

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ABITURIYENT–2010

(2010.7.29)

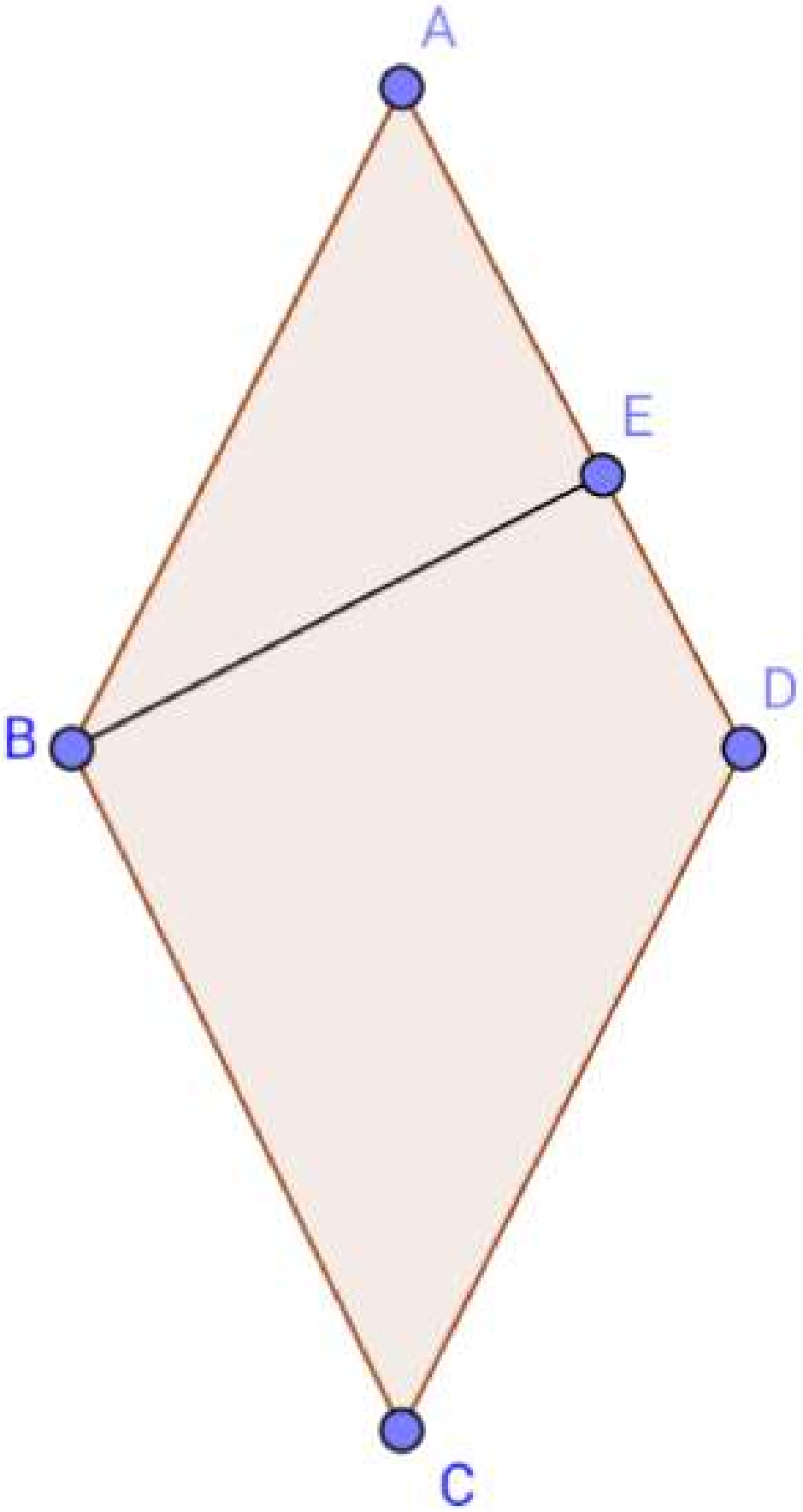
Rombning o'tmas burchagidan tushurilgan balandligi uni yuzalari mos ravishda $3,36\ \text{sm}^2$ va $20,64\ \text{sm}^2$ bo'lgan uchburchak va to'rtburchakka ajratdi. Balandlik $4,8$ smga teng bo'lsa, rombning perimetrini toping.

Yechish.

$S_1+S_2=3,36+20,64=24\ \text{sm}^2$.

$$S=ah. \Rightarrow a=\frac{S}{h}=\frac{24\ \text{sm}^2}{4,8\ \text{sm}}=5\ \text{sm}.$$

$P=4a=4\times5=20\ \text{sm}=0,2$ m. Javob; $0,2$ m.



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ABITURIYENT–2010

(2010.7.30)

To'rtta niqta aylanani $3;4;5$ **va** 6 **sonlarga proporsional yoylarga ajratadi. Shu to'rtta nuqtani ketma–ket tutashtirganda hosil bo'lgan to'rtburchakning dioganallari orasidagi kichik burchakni toping.**

Yechish.

$3\mathbf{x}+4\mathbf{x}+5\mathbf{x}+6\mathbf{x}=18\mathbf{x}.$

$18\mathbf{x}=360^\circ. \Rightarrow \mathbf{x}=20^\circ$

$3\mathbf{x}=3\times 20=60^\circ.$

$4\mathbf{x}=4\times 20^\circ=80^\circ.$

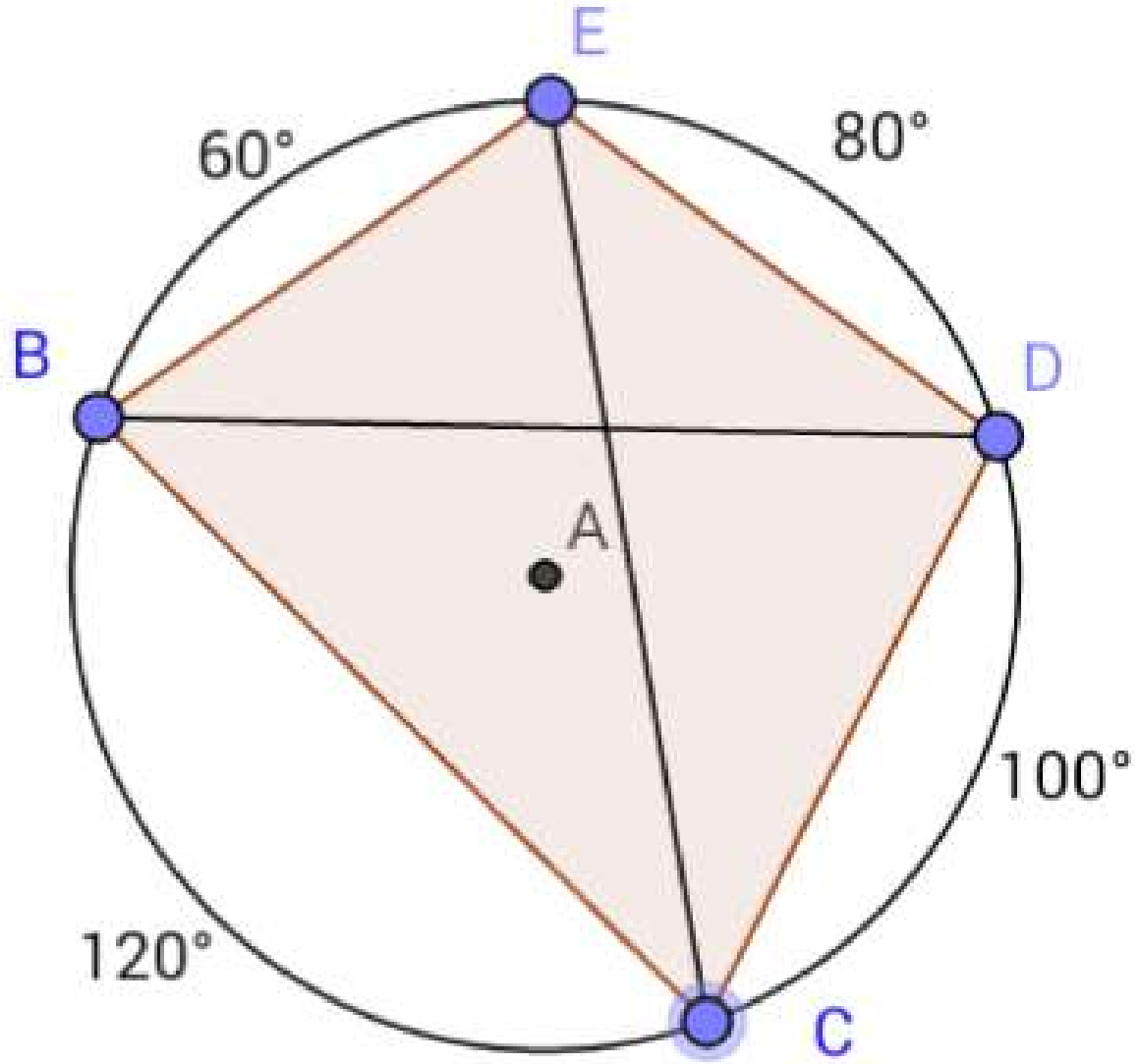
$5\mathbf{x}=5\times 20^\circ=100^\circ.$

$6\mathbf{x}=6\times 20=120^\circ.$

$\mathbf{AD}=120^\circ. \Rightarrow \boldsymbol{\alpha}=\dfrac{120^\circ}{2}=60^\circ$

$\mathbf{BC}=80^\circ \Rightarrow \boldsymbol{\delta}=\dfrac{80^\circ}{2}=40^\circ.$

$60^\circ+40^\circ=100^\circ. \Rightarrow 180^\circ-100^\circ=80^\circ.$ Javob; $80^\circ.$



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ABITURIYENT–2010

(2010.7.31)

Doiraga ichki chizilgan to'g'ri to'rtburchakning tomonlari 4 va 6 ga teng bo'lsa, doiraning yuzini toping.

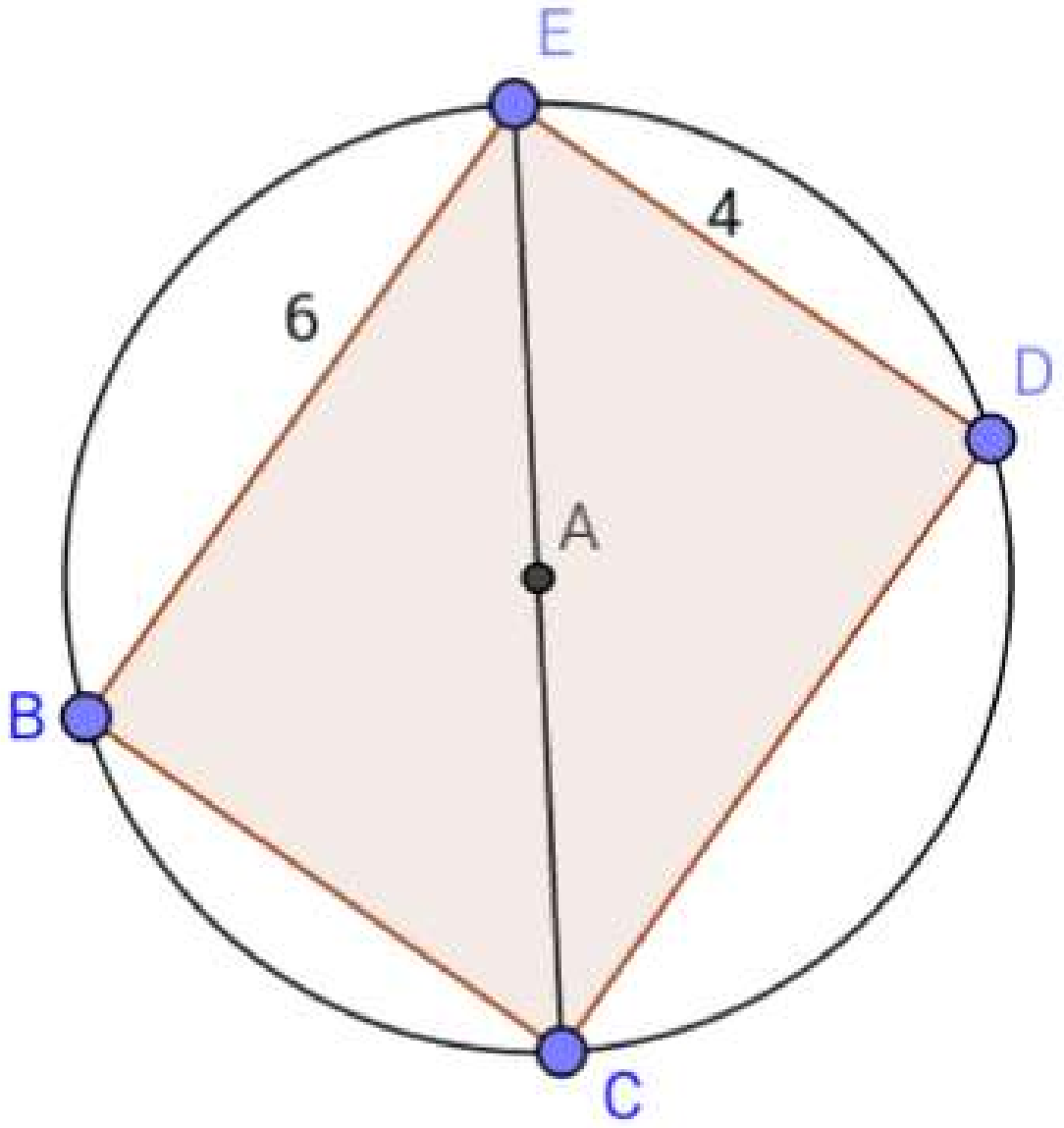
Yechish.

$$C^2=A^2+B^2 \Rightarrow C=\sqrt{4^2+6^2}=2\sqrt{13}.$$

$$d=2\sqrt{13}$$

$$R=\sqrt{13}.$$

$$S=\pi R^2=\sqrt{13^2}\times\pi=13\pi.$$ Javob; 13π.



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ABITURIYENT–2010

(2010.7.32)

A$(-4;1;3)$ **va** **B**$(-2;4;5)$ **nuqtalar orasidagi masofani toping.**

Yechish.

$$AB=\sqrt{(x_2-x_1)^2+(y_2-y_1)^2+(z_2-z_1)^2}.$$

$x_1=-4.\ x_2=-2.$

$y_1=1.\ y_2=4.$

$z_1=3.\ z_2=5.$

$$AB=\sqrt{(-2+4)^2+(4-1)^2+(5-3)^2}$$

$\sqrt{4+9+4}=\sqrt{17}.$ Javob; $\sqrt{17}.$

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ABITURIYENT–2010

(2010.7.33)

Parallelogramning tomonlari $\vec{\alpha}=(4;2;-2)$ va $\vec{b}=(-3;1;4)$ vektordan iborat. Bu parallelogramning dioganallari uzunliklari yig'indisini toping.

Yechish.

$$\left(\vec{\alpha}\pm\vec{b}\right)=\left(x_1\pm x_2;y_1\pm y_2;z_1\pm z_2\right).$$

$$\left|\vec{x}\right|=\sqrt{x^2+y^2+z^2}.$$

$$\left(\vec{\alpha}+\vec{b}\right)=(4-3;2+1;-2+4)=(1;3;2).$$

$$d_1=(1;3;2).\Rightarrow\left|\vec{d_1}\right|=\sqrt{1+9+4}=\sqrt{14}.$$

$$\left(\vec{\alpha}-\vec{b}\right)=(4+3;2-1;-2-4)=(7;1;-6).$$

$$d_2=(7;1;-6).\Rightarrow\left|\vec{d_2}\right|=\sqrt{49+1+36}=\sqrt{86}.$$

$$d_1+d_2=\sqrt{14}+\sqrt{86}.$$ Javob; $\sqrt{14}+\sqrt{86}$.

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ABITURIYENT–2010

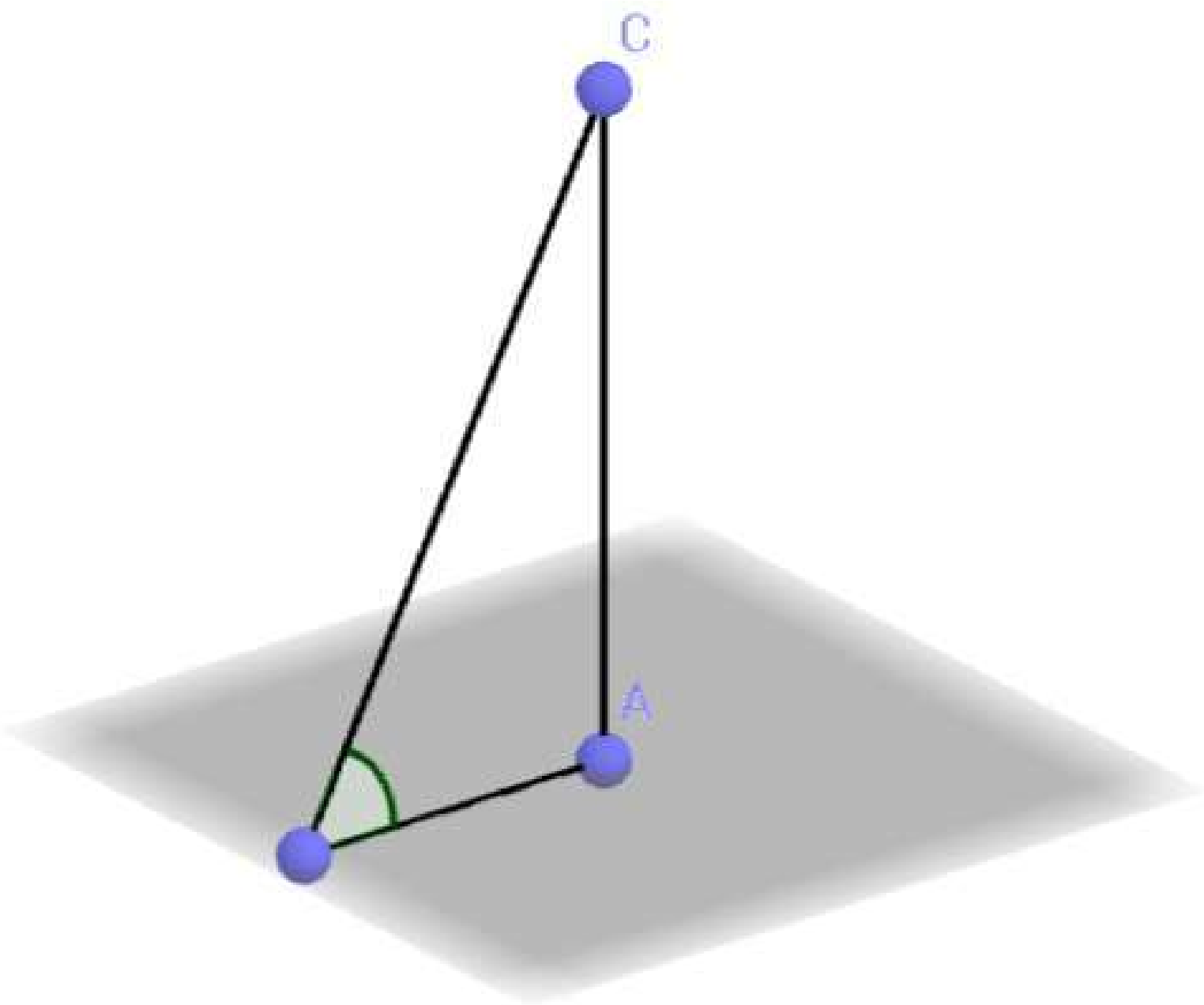
(2010.7.34)

Tekislikda og'ma va perependikular tushurilgan. Og'ma va tekislik orasidagi burchak $\arccos\frac{24}{25}$ ga, og'maning uzunligi 50 ga teng. Og'maning tekislikdagi proeksiyasini toping

Yechish.

$$\frac{24}{25}=\frac{x}{50}. \Rightarrow 50\times 24=25x.$$

$$x=\frac{50\times 24}{25}=2\times 24=48.$$ Javob; 48.



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ABITURIYENT–2010

(2010.7.35)

Muntazam oltiburchakli to'g'ri prizmaning yon yog'i kvadratdan iborat bo'lib, kvadratning dioganali $4\sqrt{2}$ ga teng. Prizmaning hajmini toping.

Yechish.

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

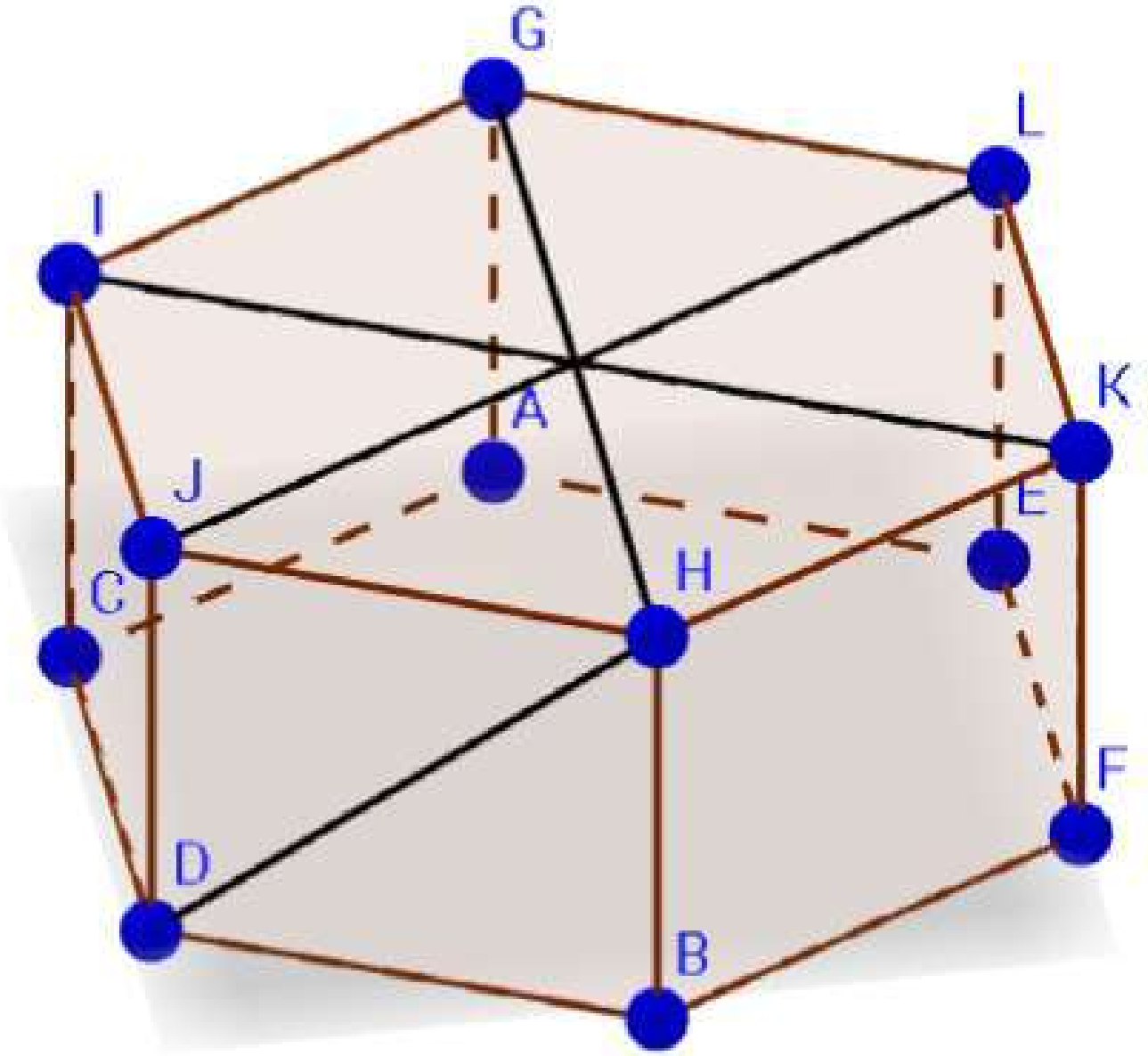
$4\sqrt{2}=\sqrt{16\times 2}=\sqrt{32}=\sqrt{16+16}=c$.

$c^2=4^2+4^2$.

$S=\frac{\sqrt{3}}{4}\times a^2=\frac{\sqrt{3}}{4}\times 4^2=4\sqrt{3}. \Rightarrow 6\times 4\sqrt{3}=24\sqrt{3}.$

$h=4.\ S_{asos}=24\sqrt{3}.$

$V=S_{asos}\times h=24\sqrt{3}\times 4=96\sqrt{3}.$ Javob; $96\sqrt{3}$.



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ABITURIYENT–2010

(2010.7.36)

Sharning radiusi 1 birlikka orttirilganda, to'la sirti 44π ga ortgan bo'lsa, hosil bo'lgan sharning hajmini toping.

Yechish.

$R_2=R_1+1.\quad S_2=S_1+44\pi.\ S_2=4\pi R_2^2$

$S_1=4\pi R_1^2.$

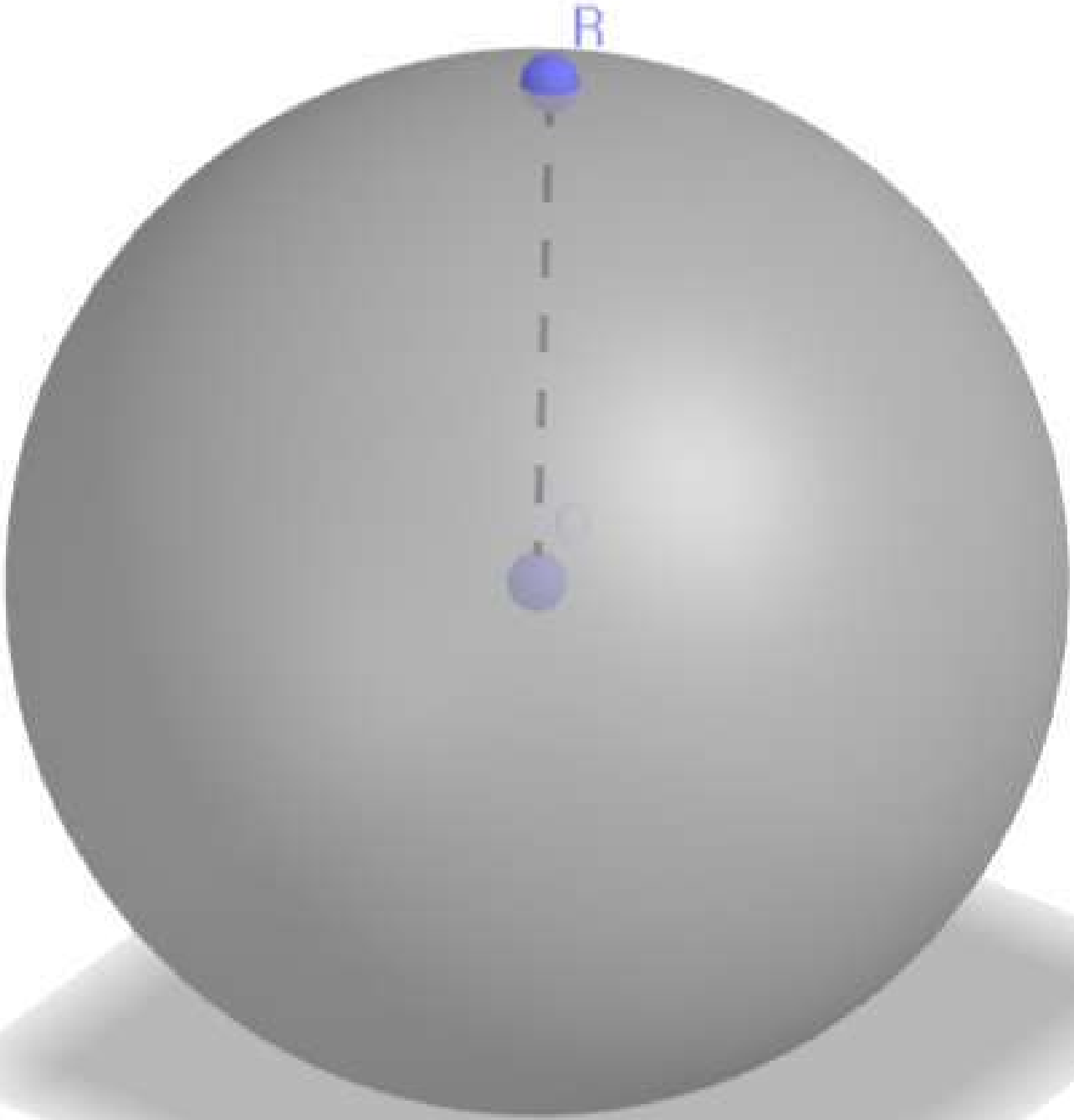
$4\pi R_2^2=4\pi R_1^2+44\pi \Rightarrow 4\pi R_2^2=4\pi\left(R_1^2+11\right).$

$R_2^2=R_1^2+11.$

$\left(R_1+1\right)^2=R_1^2+11. \Rightarrow R_1^2+2R_1+1=R_1^2+11.$

$R_1=\frac{11-1}{2}=5.\ R_2=5+1=6.$

$V=\frac{4}{3}\pi R_2^3=\frac{4}{3}\pi 6^3=288\pi.$ Javob; 288π.



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