

کلاس دهم دفتر اول

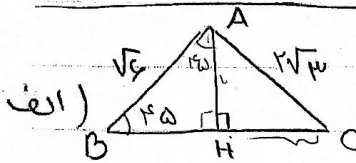
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آینا سکریمی

الف) $(\sin 135^\circ + \sin 225^\circ)(\cos 135^\circ - \cos 150^\circ) =$ ①

$$\left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right) \left(+\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{3}}{2}\right)\right) = \frac{\sqrt{2}-\sqrt{2}}{2} \times \frac{\sqrt{2}+\sqrt{3}}{2} = \frac{2-2}{4} = 0$$

ب) $\frac{1 + 3 \tan^2 210^\circ}{4 \cos^2 330^\circ + 2 \cos^2 225^\circ} = \frac{1 + 3 \times \left(\frac{\sqrt{3}}{3}\right)^2}{4 \times \left(\frac{\sqrt{3}}{2}\right)^2 + 2 \times \left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{2+1} = \frac{2}{3} = \frac{1}{\frac{3}{2}} = \frac{1}{\sqrt{\frac{9}{4}}}$

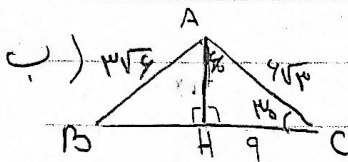


HC = ?

$$(\sqrt{4})^2 + CH^2 = (2\sqrt{3})^2$$

$$AH = \frac{\sqrt{4}}{2} \times \sqrt{4} = \frac{\sqrt{16}}{2} = \sqrt{4}$$

$$CH^2 = 12 - 4 = 8 \quad \boxed{CH = 2\sqrt{2}}$$



B̂ = ?

$$\frac{\sqrt{3}}{2} \times AC = 9 \quad AC = 9 \times \frac{2}{\sqrt{3}} = \frac{18}{\sqrt{3}} = \frac{18\sqrt{3}}{3} = 6\sqrt{3}$$

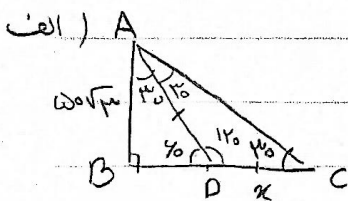
$$AH = \frac{1}{2} \times 6\sqrt{3} = 3\sqrt{3}$$

$$BH^2 + (3\sqrt{3})^2 = (6\sqrt{3})^2$$

$$BH^2 = 36 - 27 = 9$$

$$BH = \sqrt{9} = 3$$

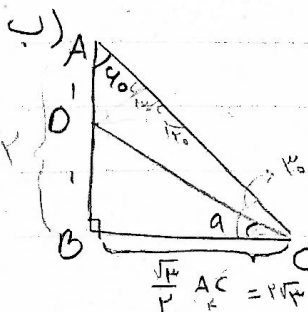
$\rightarrow \overline{BH} = \overline{AH}, \hat{H} = 90^\circ \rightarrow \boxed{\hat{B} = 45^\circ}$



$$\frac{\sqrt{3}}{2} \times AD = 50\sqrt{3}$$

$$AD = 50\sqrt{3} \times \frac{2}{\sqrt{3}} = 100$$

$$\rightarrow \overline{AD} = \overline{DC} \quad \boxed{x = 100}$$



$\sin a = ?$

$$\frac{1}{2} AC = 1$$

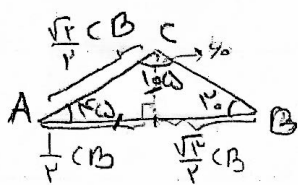
$$AC = 2$$

$$(1\sqrt{3})^2 + 1^2 = DC^2$$

$$12 + 1 = DC^2$$

$$DC = \sqrt{13}$$

$$\sin a = \frac{1}{\sqrt{13}} = \frac{\sqrt{13}}{13}$$

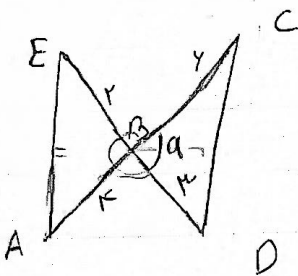


$$\frac{AB}{AC} = ? \quad \frac{\frac{1+\sqrt{r}}{r} \cancel{CB}}{\frac{\sqrt{r}}{r} \cancel{CB}} = \frac{1+\sqrt{r}}{\sqrt{r}} = \frac{\sqrt{r}+\sqrt{r}}{r}$$

(K)

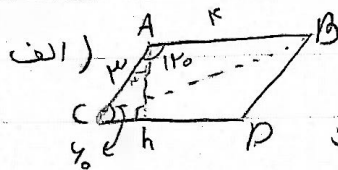
$$\frac{\sqrt{r}}{r} AC = \frac{1}{r} CB$$

$$AC = \frac{\sqrt{r}}{r} CB$$



$$\frac{S_{ADE}}{S_{BCD}} = ? \quad \frac{\frac{1}{2} \times r \times r \times \sin \alpha^\circ}{\frac{1}{2} \times r \times r \times \sin \alpha^\circ} = \sqrt{\frac{r}{9}}$$

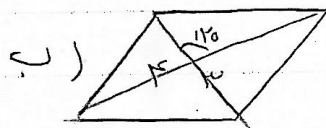
(A)



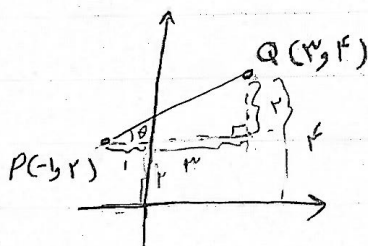
$$Ah = \frac{\sqrt{r}}{r} \times r = \frac{\sqrt{r}}{r}$$

$$\text{Solus: } \frac{\sqrt{r}}{r} \times r = \sqrt{r}$$

(Y)



$$S = \frac{1}{2} \times r \times r \times \sin 120^\circ = \sqrt{r}$$

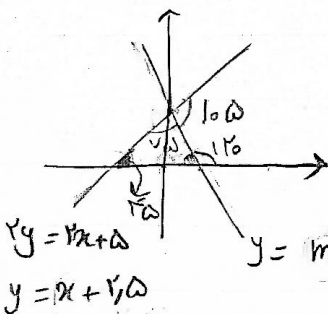


$$\cos \theta = \frac{r}{PQ} = \frac{r}{\sqrt{r}} = \frac{\sqrt{r}}{r}$$

$$PQ^2 = r^2 + r^2$$

$$PQ = \sqrt{r} = \sqrt{r}$$

(V)



$$mb = ?$$

(A)

$$x = 0 \rightarrow y = r/2 \rightarrow b = r/2$$

$$y = x + \frac{r}{2}$$

$$y = x + \frac{r}{2}$$

$$\tan = 1 \rightarrow r/2$$

$$y = mx + b$$

$$m = \tan 135^\circ = -\sqrt{r}$$

$$mb = -\sqrt{r} \times \frac{r}{2} = \frac{-\sqrt{r}}{2}$$

Juhan Nama

$$f(x) = \cos(\pi + x) + \sin\left(\frac{x}{y} - x\right) - \tan\left(\frac{y\pi}{y} + x\right) = \quad \text{--- (9)}$$

$$f(x) = -\cancel{\cos x} + \cancel{\cos x} - (-\cot x) = \cot x$$

$$f\left(\frac{5\pi}{9}\right) = f(100^\circ) = \cot 100^\circ = \frac{\cos 100^\circ}{\sin 100^\circ} = \frac{\frac{-\sqrt{y}}{y}}{\frac{1}{y}} = \frac{-\sqrt{y}}{1} = -\sqrt{y}$$

$$\sin\left(\frac{14\pi}{y} + x\right) + \cos\left(\frac{10\pi}{y} - x\right) = \sin\left(1\pi + \frac{\pi}{y} + x\right) + \cos\left(y\pi + \frac{\pi}{y} - x\right) \quad \text{--- (10)}$$

$$\cos(y\pi + x) - \sin(4\pi - x) \quad \cos(y\pi + x) - \sin(4\pi - x)$$

$$\frac{\cos x - \sin x}{-\cos x - (-\sin x)} = \frac{\cos x - \sin x}{\sin x - \cos x} = \sqrt{-1}$$