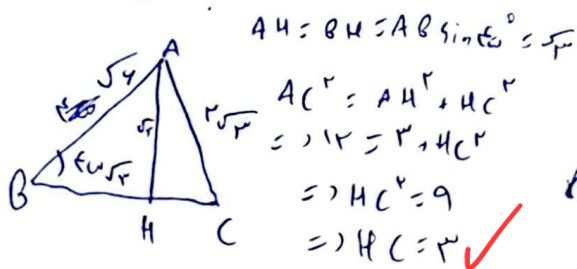


$$\sin(135^\circ - 45^\circ) = \left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right) \left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{2}}{2}\right)\right)$$

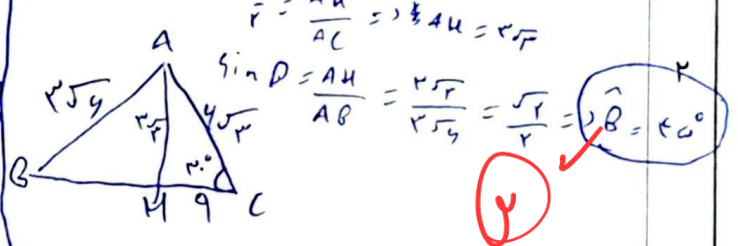
$$= \frac{\sqrt{2}-\sqrt{2}}{2} \times \frac{\sqrt{2}+\sqrt{2}}{2} = \frac{-1}{2}$$

$$\frac{1+\tan^2 45^\circ}{\sec^2 45^\circ + \sec^2 45^\circ} = \frac{1+1}{2+2} = \frac{2}{4} = \frac{1}{2}$$

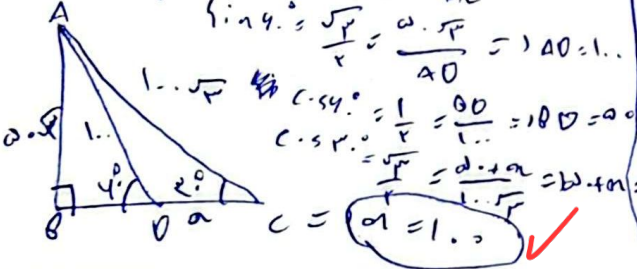
۱) $HC = ?$



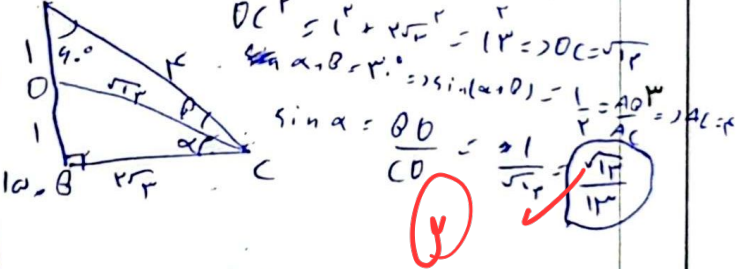
۲) $B = ?$ $\cos 45^\circ = \frac{AH}{AC} = \frac{1}{\sqrt{2}} \Rightarrow AC = \sqrt{2}$



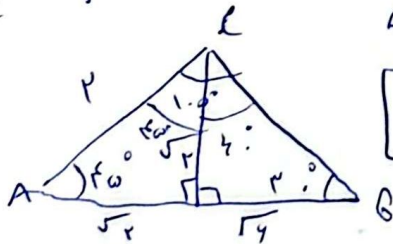
۳) $\alpha = ?$ $\sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{AO}{AC} \Rightarrow AC = \sqrt{2}$



۴) $\sin \alpha = ?$ $\tan 45^\circ = \frac{QC}{QC} = 1 \Rightarrow QC = 1$



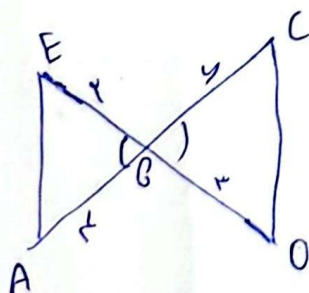
$\frac{AB}{AC} = ?$



$AB = \sqrt{2} + \sqrt{2}$

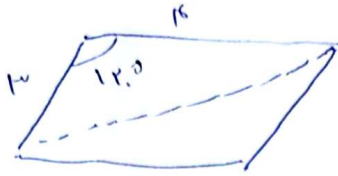
$AC = 2$

$\frac{AB}{AC} = \frac{\sqrt{2} + \sqrt{2}}{2}$



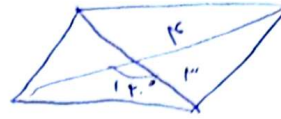
$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \sin B \times 2 \times 2}{\frac{1}{2} \sin D \times 2 \times 2} = \frac{2}{2} = 1$

الف



$$S = \frac{1}{2} r \times r \times \sin 120^\circ = \frac{1}{2} r^2 \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4} r^2$$

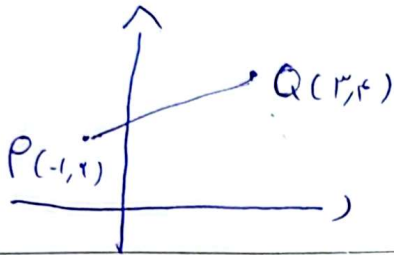
ب)



$$S = \frac{1}{2} ab \sin \alpha = \frac{1}{2} r \times r \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4} r^2$$

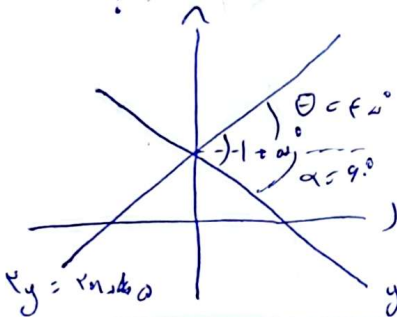
$\cos \theta = ?$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{f - r}{r - (-1)} = \frac{r - r}{r + 1} = \frac{0}{r + 1} = 0 = \tan \theta$$



$$\frac{1}{\cos \theta} = \sec \theta = \frac{1}{\cos \theta} = \frac{r}{r} = 1 \Rightarrow \cos \theta = 1 \Rightarrow \theta = 0^\circ$$

$mb = ?$



$$y = x + \omega \Rightarrow y = x + r/\omega \Rightarrow \tan \theta = 1 \Rightarrow \theta = 45^\circ$$

$$\tan 45^\circ = 1 \Rightarrow m = 1$$

$$y = mx + b = 1x + b$$

$$x + r/\omega = 1x + b$$

$$\Rightarrow r/\omega = b$$

$$\Rightarrow b = r/\omega$$

$$\Rightarrow mb = 1 \times r/\omega = r/\omega$$

$$f(\alpha) = \cos(\pi + \alpha) + \sin(\frac{\pi}{4} - \alpha) - \tan(\frac{\pi}{4} + \alpha) = -\cos \alpha + \sin \alpha - (\cot \alpha + 1) = -\cos \alpha + \sin \alpha - \cot \alpha - 1$$

$f(\frac{\omega \pi}{4}) = ?$

$$f(1\omega) = \cos(1\omega) = -\sqrt{2}$$

$$\frac{\sin(\frac{14\pi}{4} + \alpha) + \cos(\frac{10\pi}{4} - \alpha)}{\cos(\frac{14\pi}{4} + \alpha) - \sin(\frac{10\pi}{4} - \alpha)} = \frac{\cos \alpha + (-\sin \alpha)}{-\cos \alpha + \sin \alpha} = -1$$