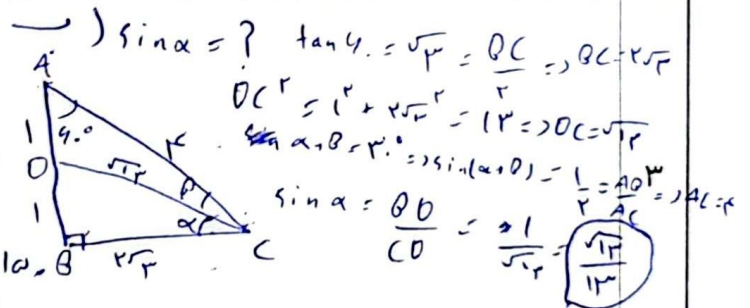
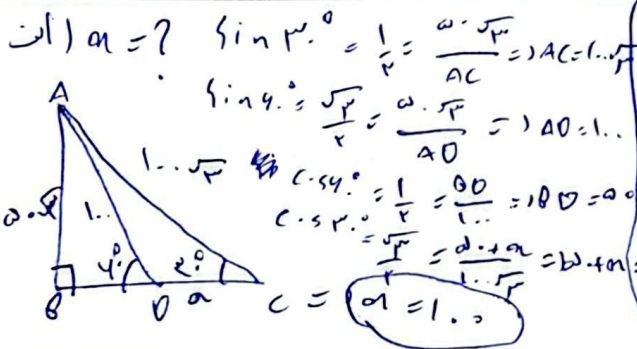
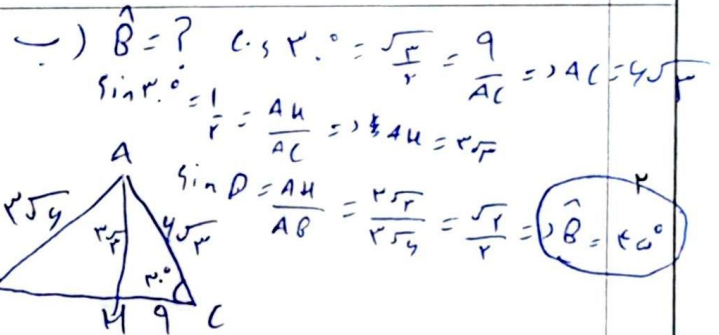
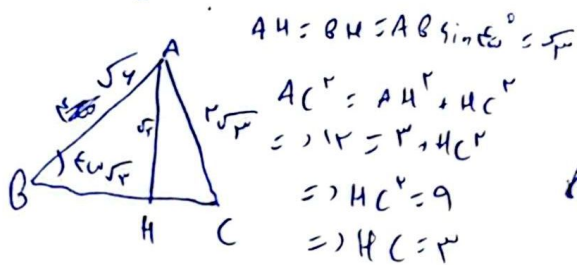


$$\sin(135^\circ - 45^\circ) = \left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right) \left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{2}}{2}\right)\right)$$

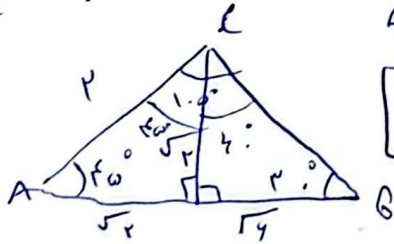
$$= \frac{\sqrt{2}-\sqrt{2}}{2} \times \frac{\sqrt{2}+\sqrt{2}}{2} = \frac{-1}{2}$$

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

۱) $HC = ?$

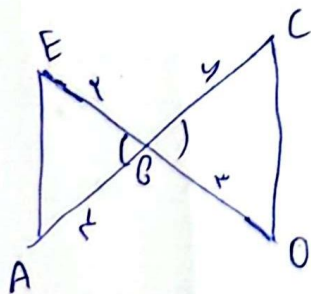


$$\frac{AB}{AC} = ?$$



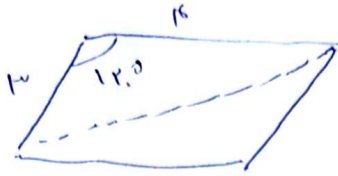
$$\frac{AB}{AC} = \frac{\sqrt{2} + \sqrt{2}}{2}$$

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



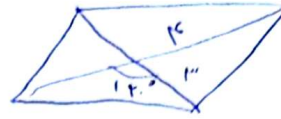
$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \sin B \times 2 \times 2}{\frac{1}{2} \sin D \times 2 \times 2} = \left(\frac{4}{9}\right)$$

الف



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

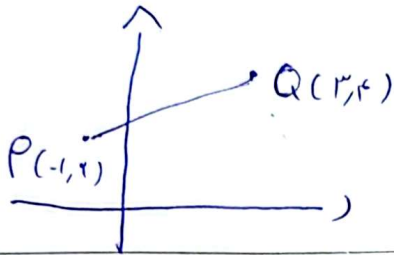
ب)



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

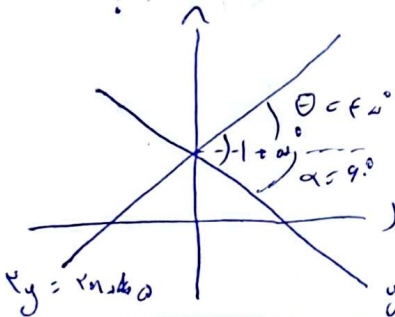
$\cos \theta = ?$

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



$$\frac{1}{\cos \theta} = \sec \theta = \frac{r}{f} \Rightarrow \cos \theta = \frac{f}{r} = \frac{r}{\sqrt{r^2 + 1}} = \frac{r}{\sqrt{r^2 + 1}}$$

$mb = ?$



$$y = r \cos \omega \Rightarrow y = r \cos \omega \Rightarrow \tan \theta = 1 \Rightarrow \theta = 45^\circ$$

$$\tan 45^\circ = 1 \Rightarrow m = 1 \quad \tan 135^\circ = -1 \Rightarrow m = -1$$

$$y = m \cos \omega = 1 \cos \omega = \cos \omega$$

$$r \cos \omega = -1 \cos \omega$$

$$\Rightarrow r \cos \omega = -\cos \omega$$

$$\Rightarrow b = -1$$

$$\Rightarrow mb = -1 \times 1 = -1$$

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

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

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

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