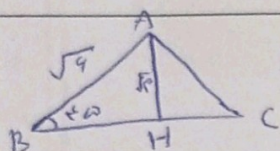


$$\left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{3}}{2}\right)\right) \left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{3}}{2}\right)\right) = \frac{1}{2} - \frac{3}{2} = -\frac{1}{2}$$

(الف)

$$\frac{1 + 2\left(\frac{1}{2}\right)}{2 + 1} = \frac{2}{3} = \frac{1}{2}$$

(ب)

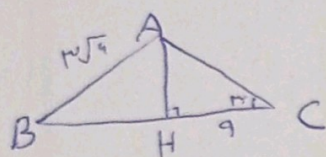


$$AH = \frac{\sqrt{2}}{2} \times \sqrt{2} = \sqrt{2}$$

$$AH^2 + CH^2 = AC^2 \quad (الف)$$

$$2 + CH^2 = 3$$

$$CH = 1$$



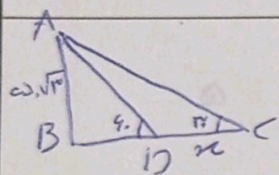
$$\rightarrow \frac{1}{\sqrt{2}} = \frac{x}{2} \rightarrow AH$$

$$AH = \frac{2}{\sqrt{2}}$$

$$\sin B = \frac{AH}{AB} = \frac{2}{2\sqrt{2}} = \frac{1}{\sqrt{2}} \quad (ب)$$

$$\sin B = \frac{\sqrt{2}}{2} \quad B = 45^\circ$$

$$B = 45^\circ$$



$$\frac{\sqrt{2}}{2} = \frac{BC}{2\sqrt{2}}$$

$$BC = 1$$

$$\frac{\sqrt{2}}{2} = \frac{BD}{2\sqrt{2}}$$

$$BD = 1$$

$$DC = 1 - 1 = 0 \quad (الف)$$

(ب)

$$\frac{\sqrt{2}}{2} = \frac{BC}{2}$$

$$BC = \sqrt{2}$$

$$\cot \alpha = \sqrt{2}$$

$$\tan \alpha = \frac{1}{\sqrt{2}}$$

$$1 + \cot^2 \alpha = \frac{1}{\sin^2 \alpha}$$

$$1 + 1 = \frac{1}{\sin^2 \alpha}$$

$$\sin \alpha = \frac{\sqrt{2}}{2}$$

$$\sin(135^\circ) = \sin(45^\circ + 90^\circ) = \frac{\sqrt{2}}{2} \times \frac{1}{2} + \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2} + \sqrt{2}}{2}$$

$$\frac{AB}{\sin C} = \frac{AC}{\sin B}$$

$$\frac{AB}{AC} = \frac{\frac{\sqrt{2} + \sqrt{2}}{2}}{\frac{1}{2}} = \frac{\sqrt{2} + \sqrt{2}}{1}$$

(ب)

$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times BE \times AB \times \sin B}{\frac{1}{2} \times BC \times BC \times \sin B} = \frac{2 \times 2}{2 \times 2} = \frac{1}{1} = \frac{1}{1}$$

مساحت برابر است

(ب)

$$r \left(\frac{1}{r} \times r \times r \times \frac{\sqrt{r}}{r} \right) = 4\sqrt{r} \rightarrow \omega$$

$$r \left(\frac{1}{r} \times AB \times BC \times \sin B \right)$$

$$r \times r \times \frac{1}{r} \times \frac{\sqrt{r}}{r} = r\sqrt{r} \rightarrow c$$

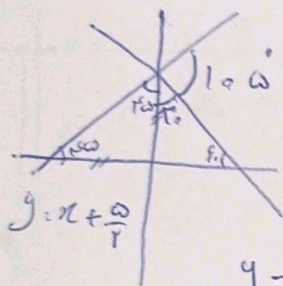
$$\tan \theta = \frac{r}{r} = \frac{1}{r}$$

$$\tan^2 \theta + 1 = \frac{1}{\cos^2 \theta}$$

$$\frac{1}{r} + 1 = \frac{1}{\cos^2 \theta}$$

$$\cos^2 \theta = \frac{r}{\omega}$$

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



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

$$y = mx + b \Rightarrow y = -\sqrt{r} + \frac{\omega}{r}$$

$$f(x) = -\cos x + \cos x + \cot x = \cot x$$

$$f\left(\frac{\omega\pi}{4}\right) = \cot\left(\frac{\omega\pi}{4}\right) = -\sqrt{r}$$

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