

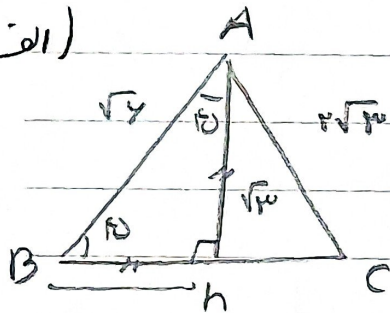
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$$\text{الف) } \left(\frac{\sqrt{2}}{2} + \frac{(-\sqrt{2})}{2} \right) \left(\frac{\sqrt{2}}{2} - \frac{(-\sqrt{2})}{2} \right) = \left(\frac{\sqrt{2}}{2} \right)^2 - \left(\frac{-\sqrt{2}}{2} \right)^2 \quad (1)$$

$$\Rightarrow \frac{2}{4} - \frac{2}{4} = \frac{-1}{2}$$

$$\text{ب) } \frac{1 + 3 \left(\frac{\sqrt{2}}{2} \right)^2}{4 \left(\frac{\sqrt{2}}{2} \right)^2 + 2 \left(\frac{-\sqrt{2}}{2} \right)^2} = \frac{1+1}{2 \left(\frac{2}{2} + \frac{1}{2} \right)} = \frac{1}{\frac{3}{2}} = \frac{2}{3}$$

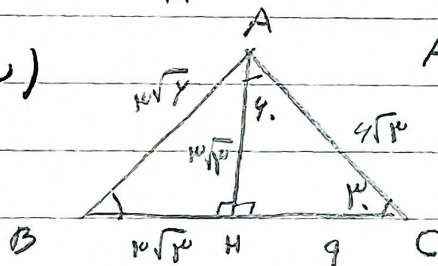
الف)



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

$$HC \Rightarrow (2\sqrt{2})^2 - \sqrt{2}^2 = \sqrt{12 - 2} = \sqrt{10} \rightarrow \sqrt{10} = \boxed{3}$$

ب)



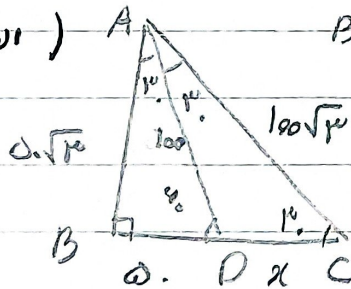
$$AC \Rightarrow AC \times \frac{\sqrt{2}}{2} = 9 \rightarrow AC = 9 \times \frac{2}{\sqrt{2}} = 6\sqrt{2}$$

$$AH \rightarrow AC \times \sin 45^\circ \rightarrow 6\sqrt{2} \times \frac{1}{2} = 3\sqrt{2}$$

$$BH \rightarrow (10\sqrt{2})^2 - (3\sqrt{2})^2 = 56 \cdot 2 = 112 \rightarrow \sqrt{112} = 4\sqrt{7}$$

$$\Rightarrow \hat{B} = \boxed{45^\circ}$$

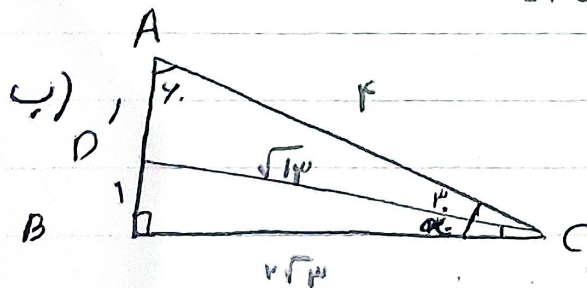
الف)



$$BD \rightarrow \sin 45^\circ \times \frac{AD}{AB} \rightarrow \frac{1}{2} \times 5 \cdot \sqrt{2} \times \frac{1}{5\sqrt{2}} = 0.5 \quad (2)$$

$$BC \rightarrow 10\sqrt{2} \times \sin 45^\circ = 10 \times 1 = 10$$

$$10 - 0.5 = 9.5 = \boxed{2}$$

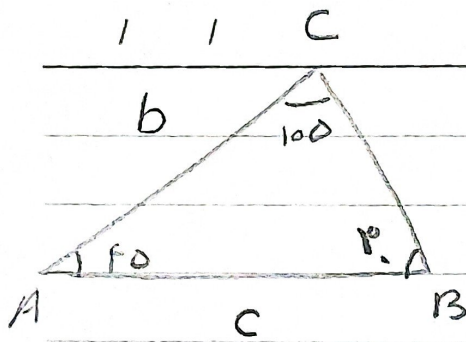


$$BC = \sin 45^\circ \times AC \rightarrow$$

$$\frac{\sqrt{2}}{2} \times 3 = 1.5\sqrt{2}$$

$$DC = \sqrt{1 + 1} = \sqrt{2}$$

$$\sin C = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$$



$$\frac{\sin C}{c} = \frac{\sin A}{a} = \frac{\sin B}{b} \quad (1)$$

$$\frac{\sin(180 - r)}{c} = \frac{\sin r}{b}$$

$$\sin(180 - r) \Rightarrow \sin 180 \times \cos r - \sin r \times \cos 180$$

$$S. \Rightarrow \frac{\sqrt{r}}{r} \times \frac{\sqrt{r}}{r} - \frac{1}{r} \times \frac{\sqrt{r}}{r} \Rightarrow \frac{\sqrt{r} + \sqrt{r}}{r}$$

$$\frac{\frac{\sqrt{r} + \sqrt{r}}{r}}{c} = \frac{\frac{1}{r}}{b} \Rightarrow \frac{c}{b} = \frac{\frac{\sqrt{r} - \sqrt{r}}{r}}{\frac{1}{r}} = \frac{r(\sqrt{r} + \sqrt{r})}{r}$$

$$\boxed{\frac{\sqrt{r} + \sqrt{r}}{r}}$$

$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{r} \sin B \times r \times r}{\frac{1}{r} \sin B \times r \times r} = \boxed{\frac{r}{r}} \quad (2)$$

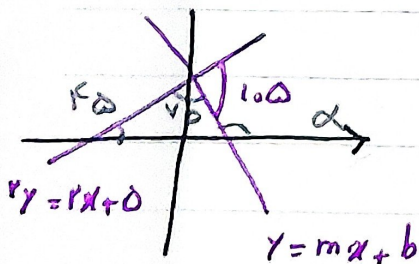
$$\text{C)} \delta = \sin 18^\circ \times r \times r \Rightarrow \frac{\sqrt{r}}{r} \times r \times r = 4\sqrt{r} \quad (3)$$

$$\text{B)} \delta = \frac{1}{r} \times \sin 18^\circ \times r \times r \Rightarrow \frac{\sqrt{r}}{r} \times \frac{1}{r} \times r \times r = 12\sqrt{r}$$

$$x \rightarrow \tan \theta = \frac{dy}{dx} = \frac{r - r}{r + 1} = \frac{1}{r} = \tan \theta \quad (4)$$

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

$$x \rightarrow \tan(\pi - \theta) = -\tan \theta \Rightarrow \tan \theta = -\frac{1}{r} \rightarrow \cos \theta = \frac{\sqrt{r}}{r+1}$$



$$r y = r x + 0 \rightarrow y = x + \frac{0}{r} \quad (5)$$

$$\tan \theta = 1 \rightarrow \theta = 45^\circ$$

$$\theta = 180^\circ \cup 0^\circ$$

$$\alpha = 45 + 45 = 90^\circ \quad \tan \theta = 1$$

• dot note

$$mb \rightarrow \frac{0}{r} x - \sqrt{r} = \boxed{\frac{-\sqrt{r}}{r}} \quad \tan \theta = \frac{\sqrt{r}}{r} = \frac{1}{\sqrt{r}}$$

$$\begin{aligned} f(x) &= \cos\left(\pi + x\right) + \sin\left(\frac{1}{4}\pi - x\right) - \tan\left(\frac{1}{4}\pi + x\right) \quad (9) \\ &= -\cos(x) + \cos(\pi) - (-\cot(x)) = \cot(x) \end{aligned}$$

$$\Rightarrow \cot\left(\frac{10\pi}{4}\right) \Rightarrow \frac{-\frac{\sqrt{2}}{2}}{1} = -\frac{\sqrt{2}}{2}$$

$$\frac{\sin\left(\frac{14\pi}{4} + x\right) + \cos\left(\frac{10\pi}{4} - x\right)}{\cos\left(\frac{1}{4}\pi + x\right) - \sin\left(\frac{1}{4}\pi - x\right)} \Rightarrow$$

$$\begin{aligned} \frac{\cos(x) - \sin(x)}{-\cos(x) + \sin(x)} &= -1 \\ &= -\cos(x) + \sin(x) \end{aligned}$$