

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

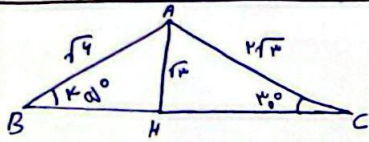
$$\sin 45^\circ = \frac{\sqrt{2}}{2} \quad \sin 135^\circ = -\frac{\sqrt{2}}{2} \quad \cos 45^\circ = \frac{\sqrt{2}}{2} \quad \cos 135^\circ = -\frac{\sqrt{2}}{2}$$

$$ب) = \frac{1+1}{2+1} = \frac{2}{3} = \frac{1}{1.5} \checkmark$$

$$\tan 45^\circ = \frac{1}{1} = \frac{1}{1} \rightarrow \frac{1}{1} \times \frac{1}{1} = \frac{1}{1} \times 1 = 1$$

$$2 \cos^2 45^\circ = \frac{2}{2} \times 2 = 2$$

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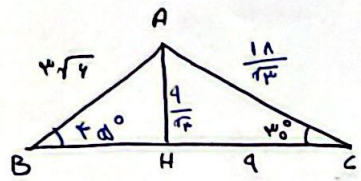
$$\sin 45^\circ = \frac{\sqrt{2}}{2} = \frac{AH}{\sqrt{2}} \Rightarrow AH = 1$$

$$AH = \sqrt{2} \quad AH = 1 \quad AH = \sqrt{2}$$

$$\sin C = \frac{\sqrt{2}}{2\sqrt{2}} = \frac{1}{2} \Rightarrow C = 30^\circ$$

$$\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{HC}{2\sqrt{2}} \Rightarrow HC = 2$$

$$HC = 2 \checkmark$$



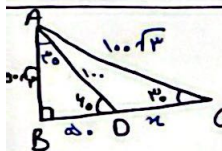
$$\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{q}{AC} = \frac{1}{\sqrt{2}} \Rightarrow AC = \frac{1}{\sqrt{2}}$$

$$\sin 30^\circ = \frac{1}{2} = \frac{AH}{AC} = \frac{1}{2} \Rightarrow AH = \frac{1}{2}$$

$$\Rightarrow AH = \frac{1}{2}$$

$$\sin B = \frac{AH}{AB} = \frac{1/2}{3\sqrt{2}} = \frac{1}{6\sqrt{2}} = \frac{1}{6\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{1}{6\sqrt{2}}$$

$$B = 45^\circ \checkmark$$



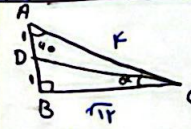
$$\sin 45^\circ = \frac{100\sqrt{2}}{100} = 1 \Rightarrow AD = 100\sqrt{2}$$

$$A = 45^\circ \Rightarrow \sin 45^\circ = \frac{1}{\sqrt{2}} = \frac{BD}{100} \Rightarrow BD = 50$$

$$C = 30^\circ \Rightarrow \sin 30^\circ = \frac{1}{2} = \frac{AD}{AC} \Rightarrow AC = 100\sqrt{2}$$

$$BC^2 = AC^2 - AB^2 \Rightarrow BC^2 = 100000 - 10000 = 90000 \Rightarrow BC = 300$$

$$x = 100 - 50 = 50 \checkmark$$



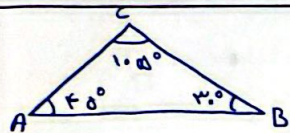
$$\cos 45^\circ = \frac{1}{\sqrt{2}} = \frac{1}{AC} \Rightarrow AC = \sqrt{2}$$

$$AC = \sqrt{2}$$

$$BC^2 = AC^2 - AB^2 = 14^2 - 17^2 = 196 - 289 = -93 \Rightarrow BC = \sqrt{19}$$

$$DC = \sqrt{19+1} = \sqrt{20}$$

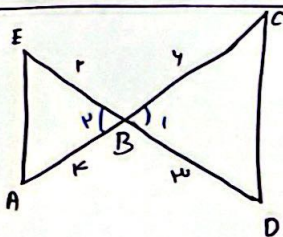
$$\sin \alpha = \frac{1}{\sqrt{19}} \checkmark$$



$$\frac{AB}{\sin 10^\circ} = \frac{AC}{\sin 30^\circ} \Rightarrow \sin 10^\circ = \frac{1}{2} \Rightarrow 10^\circ, 40^\circ, 30^\circ$$

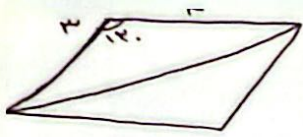
$$\sin 10^\circ = \sin \alpha \cos \beta + \sin \beta \cos \alpha = \left(\frac{\sqrt{2}}{2} \times \frac{1}{2} \right) + \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} \right)$$

$$\frac{AB}{AC} = \frac{\sin 10^\circ}{\sin 30^\circ} = \frac{\sqrt{2} + \sqrt{2}}{2} \times \frac{1}{1} = \frac{\sqrt{2} + \sqrt{2}}{2} \checkmark$$



$$B_1 = B_2 \rightarrow \text{مقابل به رأس}$$

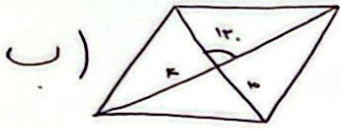
$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \sin B_1 \times 1 \times 1}{\frac{1}{2} \sin B_2 \times 1 \times 1} = \frac{1}{1} = \frac{1}{1} \checkmark$$



$$S = r \left(\frac{1}{r} \sin 140^\circ \times r \times y \right)$$

$$\frac{1}{r} \times \frac{r}{r} \times r \times y = \frac{r}{r} \times r \times y = r \times y = 4 \times \sqrt{y} \quad \checkmark$$

(2)



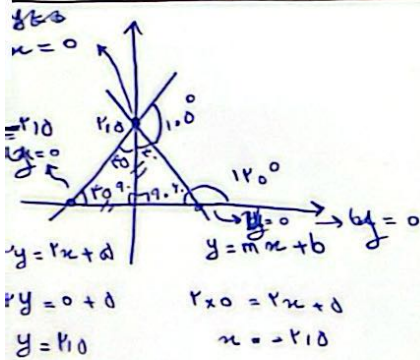
$$S = \frac{1}{y} \times \sin 140^\circ \times r \times y = \sin 140^\circ \times 4 = \frac{\sqrt{y}}{y} \times y = \sqrt{y} \quad \checkmark$$

$$a = \frac{r - y}{y - (-1)} = \frac{r}{r} = \frac{1}{r} \rightarrow \tan \alpha;$$

(2)

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

$$1 + \frac{1}{r} = \frac{1}{\cos^2 \alpha} = \frac{5}{5} = \frac{1}{\cos^2 \alpha} \rightarrow \cos^2 \alpha = \frac{r}{5} \Rightarrow \cos \alpha = \frac{r}{\sqrt{5}} \quad \checkmark$$



$$m = \text{نسبة الجيب} = \tan(140^\circ) = -\sqrt{y}$$

$$y = rx + d \Rightarrow rx + d = 0 + b$$

$$b = rx + d$$

$$mb = -\sqrt{y} \times rx + d \quad \checkmark$$

(2)

$$f\left(\frac{\pi}{4}\right) = \cos\left(\pi + \frac{\pi}{4}\right) + \sin\left(\frac{\pi}{4} - \frac{\pi}{4}\right) - \tan\left(\frac{\pi}{4} + \frac{\pi}{4}\right)$$

$$\cos\left(\pi + \frac{\pi}{4}\right) = \cos\left(\frac{5\pi}{4}\right) \rightarrow \cos \frac{5\pi}{4}$$

$$\sin\left(\frac{\pi}{4} - \frac{\pi}{4}\right) = \sin\left(\frac{\pi}{4} - \frac{\pi}{4}\right) \rightarrow \sin -\frac{\pi}{4}$$

$$\cos \frac{5\pi}{4} \rightarrow r\pi - \frac{\pi}{4} = \frac{\sqrt{y}}{y} \quad \sin -\frac{\pi}{4} = -\frac{\sqrt{y}}{y} \quad \tan \frac{5\pi}{4} \rightarrow \tan\left(\frac{\pi}{4}\right) = \sqrt{y}$$

$$f\left(\frac{\pi}{4}\right) = \frac{\sqrt{y}}{y} + \left(-\frac{\sqrt{y}}{y}\right) - \sqrt{y} = -\sqrt{y} \quad \checkmark$$

(2)

$$\sin\left(\frac{5\pi}{4} + \pi\right) = \sin\left(\frac{\pi}{4} + \pi\right) = \cos \pi \quad \cos\left(\frac{5\pi}{4} - \pi\right) = -\sin \pi$$

(2)

$$\cos \pi - \sin \pi \rightarrow 0$$

$$(\cos 4\pi + \pi) = -\cos \pi$$

$$\cos(4\pi - \pi) = -\sin \pi$$

$$\frac{\cos \pi - \sin \pi}{\sin \pi - \cos \pi} = -1 \quad \checkmark$$

$$\frac{\cos \pi - \sin \pi}{\sin \pi - \cos \pi} = -1$$