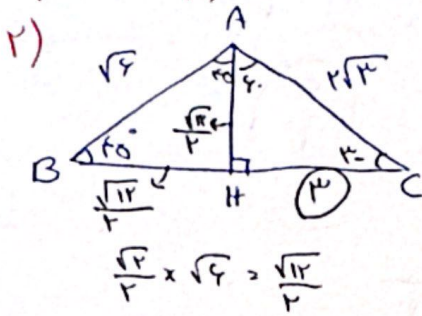


$$1) (\sin 135^\circ + \sin 45^\circ)(\cos 45^\circ - \cos 135^\circ) = \frac{-1}{\sqrt{2}}$$

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

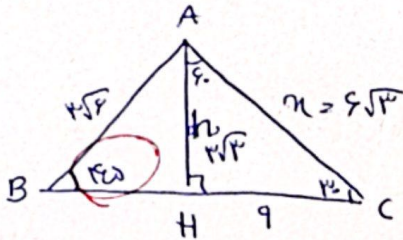
$$2) \frac{1 + 3 \tan^2 45^\circ}{\sqrt{\cos^2 45^\circ + \cos^2 135^\circ}} = \frac{1 + 3 \left(\frac{\sqrt{2}}{2}\right)^2}{\sqrt{\left(\frac{\sqrt{2}}{2}\right)^2 + \left(-\frac{\sqrt{2}}{2}\right)^2}} = \frac{1 + 3 \cdot \frac{2}{4}}{\sqrt{\frac{2}{4} + \frac{2}{4}}} = \frac{1 + \frac{3}{2}}{\sqrt{1}} = \frac{\frac{5}{2}}{1} = \frac{5}{2}$$



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

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

$$\frac{\sqrt{2}}{2} \times \sqrt{2} = 1 \rightarrow HC$$



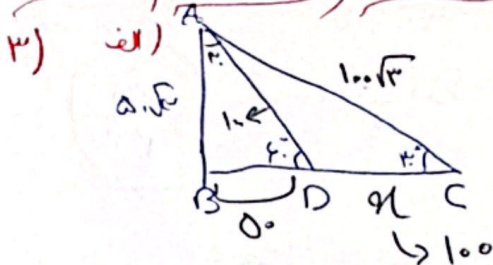
$$h \times \sqrt{2} = 2 \Rightarrow h = \frac{2}{\sqrt{2}} = \sqrt{2}$$

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

$$\alpha = \frac{2}{\frac{\sqrt{2}}{2}} = \frac{2 \times 2}{\sqrt{2}} = \frac{4}{\sqrt{2}} = \frac{4 \times \sqrt{2}}{\sqrt{2} \times \sqrt{2}} = \frac{4\sqrt{2}}{2} = 2\sqrt{2}$$

$$y \times \sqrt{2} = 2\sqrt{2}$$

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



$$\sin 45^\circ = \frac{5 \cdot \sqrt{2}}{AC} = \frac{1}{\sqrt{2}} \Rightarrow AC = 10 \cdot \sqrt{2}$$

$$(5 \cdot \sqrt{2})^2 + BC^2 = (10 \cdot \sqrt{2})^2$$

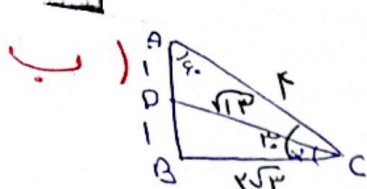
$$50 + BC^2 = 200 \Rightarrow BC^2 = 150 \Rightarrow BC = 10\sqrt{3}$$

$$\sin 45^\circ = \frac{5 \cdot \sqrt{2}}{AD} \Rightarrow \frac{1}{\sqrt{2}} = \frac{5 \cdot \sqrt{2}}{AD} \Rightarrow AD = 50$$

$$\sin 45^\circ = \frac{BD}{10} \Rightarrow \frac{1}{\sqrt{2}} = \frac{BD}{10} \Rightarrow BD = 5\sqrt{2}$$

$$10 - 5\sqrt{2} = 10 - 5\sqrt{2}$$

$$BD = 5\sqrt{2}$$

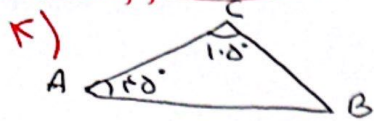


$$r^2 + (r\sqrt{r})^2 = (r\sqrt{r})^2 \rightarrow BDC = r\sqrt{r}$$

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

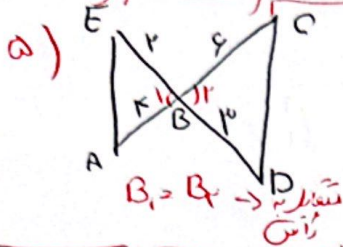
$$\sin 45^\circ = \frac{BC}{r} \Rightarrow \frac{1}{\sqrt{2}} = \frac{BC}{r} \Rightarrow BC = \frac{r}{\sqrt{2}}$$

$$\sin \alpha = \frac{1}{\sqrt{2} \sqrt{r}} = \frac{\sqrt{r}}{r}$$

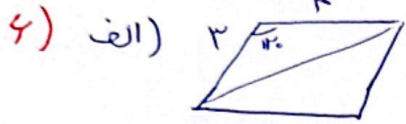


$$\frac{AB}{\sin 10^\circ} = \frac{AC}{\sin 45^\circ} \Rightarrow \frac{AB}{\sin 10^\circ} = \frac{AC}{\frac{1}{\sqrt{2}}} \Rightarrow \frac{AB}{AC} = \frac{\sin 10^\circ}{\frac{1}{\sqrt{2}}} = \sin 10^\circ \cdot \sqrt{2}$$

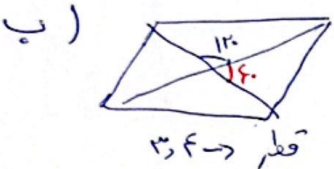
$$\sin(45^\circ) = \sin(45^\circ + 45^\circ) = \sin 45^\circ \cos 45^\circ + \cos 45^\circ \sin 45^\circ = \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} = \frac{2}{2} = 1$$



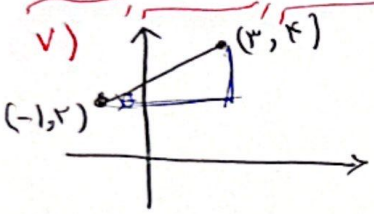
$$\frac{S_{AEB}}{S_{BCD}} = \frac{\frac{1}{2} \cdot r \cdot r \cdot \sin 45^\circ}{\frac{1}{2} \cdot r \cdot r \cdot \sin 45^\circ} = \frac{1}{1} = 1$$



$$r \left(r \cdot r \cdot \frac{1}{r} \cdot \sin 45^\circ \right) = r \sqrt{r}$$

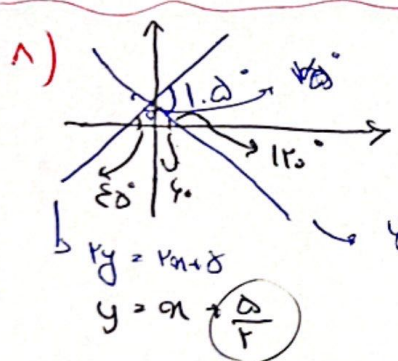


$$\frac{1}{r} \cdot r \cdot r \cdot \sin 45^\circ = r \sqrt{r}$$



$$\frac{r-2}{r-(-1)} = \frac{r}{r} = \frac{1}{1} \Rightarrow \tan \alpha$$

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



$$\cos^2 \alpha = \frac{r}{r} \Rightarrow \cos \alpha = \frac{r}{r} = 1$$

$$m \cdot b = \frac{r}{r} = 1$$

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

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

$$\left(\cos \frac{\Delta \pi}{r}\right) + (-\cos \frac{\Delta \pi}{r}) - (\cos \frac{\Delta \pi}{r}) = -(\cos \frac{\Delta \pi}{r}) = -(-\sqrt{r}) = +\sqrt{r}$$

$$\frac{\sin\left(\frac{\pi}{r} + \frac{\Delta \pi}{r}\right) + \cos\left(\frac{\pi}{r} - \frac{\Delta \pi}{r}\right)}{\cos\left(\frac{\pi}{r} + \frac{\Delta \pi}{r}\right) - \sin\left(\frac{\pi}{r} - \frac{\Delta \pi}{r}\right)} = \frac{\cos x + (-\sin x)}{-\cos x + \sin x} = -1$$