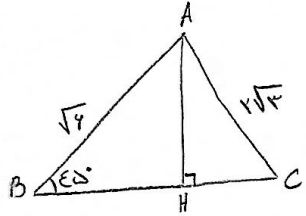


$$\text{الف) } (\sin 135^\circ + \sin 225^\circ)(\cos 315^\circ - \cos 135^\circ) = \left(\frac{\sqrt{2}}{2} + -\frac{\sqrt{2}}{2}\right)\left(-\frac{\sqrt{2}}{2} - (-\frac{\sqrt{2}}{2})\right) = \frac{-5 + 2\sqrt{2}}{2}$$

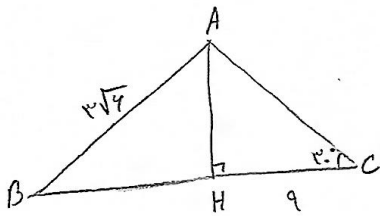
$$\text{ب) } \frac{1 + 3 \tan^2 11^\circ}{5 \cos^2 22^\circ + 2 \cos^2 22^\circ} = \frac{1 + 3 \left(\frac{\sqrt{2}}{2}\right)^2}{5 \times \left(\frac{\sqrt{2}}{2}\right)^2 + 2 \times \left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{2+1} = \frac{1}{2}$$



$$\sin 45^\circ = \frac{\sqrt{2}}{2} = \frac{AH}{AB} = \frac{\sqrt{2}}{\sqrt{4}}$$

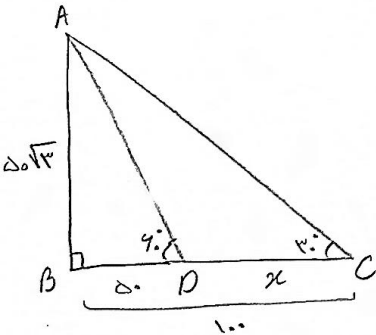
$$\frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} \rightarrow \frac{\sqrt{2}}{\sin 45^\circ} = \frac{\sqrt{2}}{\frac{1}{2}} \Rightarrow \sin 2^\circ \Rightarrow \hat{C} = 2^\circ$$

$$\cos 2^\circ = \frac{\sqrt{3}}{2} = \frac{CH}{AC} = \frac{\sqrt{3}}{2\sqrt{3}} \quad \text{جواب}$$



$$\cos 2^\circ = \frac{\sqrt{3}}{2} = \frac{CH}{AC} = \frac{4}{4\sqrt{3}}$$

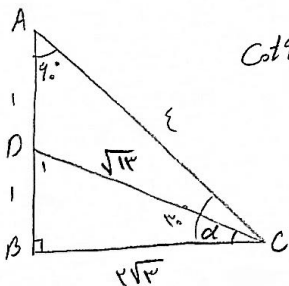
$$\frac{c}{\sin \hat{C}} = \frac{b}{\sin \hat{B}} \rightarrow \frac{4}{\sin 2^\circ} = \frac{3\sqrt{4}}{\frac{1}{2}} \Rightarrow \sin 45^\circ \Rightarrow \hat{B} = 45^\circ$$



$$\tan 40^\circ = \frac{\sqrt{3}}{1} = \frac{AB}{BD} = \frac{5\sqrt{3}}{5}$$

$$\tan 2^\circ = \frac{\sqrt{3}}{2} = \frac{AB}{BC} = \frac{5\sqrt{3}}{10}$$

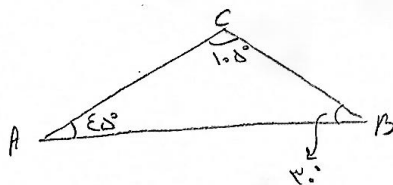
$$x = BC - BD \Rightarrow 10 - 5 = 5$$



$$\cot 40^\circ = \frac{1}{\sqrt{3}} = \frac{AB}{BC} = \frac{1}{2\sqrt{3}}$$

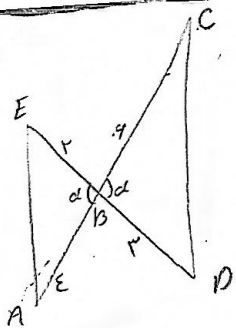
$$DC = \sqrt{1^2 + (2\sqrt{3})^2} = \sqrt{13}$$

$$\frac{DC}{\sin \hat{B}} = \frac{DB}{\sin \hat{C}} \rightarrow \frac{\sqrt{13}}{1} = \frac{1}{\frac{1}{\sqrt{13}}}$$

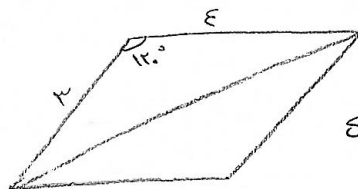


$$\frac{AB}{\sin \hat{C}} = \frac{AC}{\sin \hat{B}} \rightarrow \frac{AB}{AC} = \frac{\sin 105^\circ}{\sin 45^\circ} = \frac{\frac{\sqrt{4} + \sqrt{2}}{2}}{\frac{1}{2}} = \frac{\sqrt{4} + \sqrt{2}}{1}$$

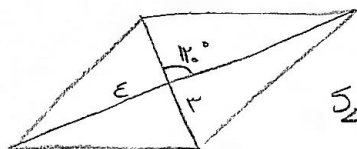
$$\sin(40^\circ + 2^\circ) = \sin 40^\circ \cos 2^\circ + \sin 2^\circ \cos 40^\circ = \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{2}}{2} \times \frac{1}{2}\right)$$



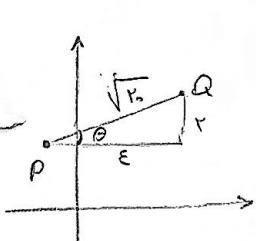
$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times r \times r \times \sin \alpha}{\frac{1}{2} \times r \times r \times \sin \alpha} = \frac{1}{1} = \frac{E}{9}$$



$$S_D = r \times r \times \sin 120^\circ = \frac{\sqrt{3}}{2} r^2$$



$$S_D = r \times r \times \sin 120^\circ = \frac{\sqrt{3}}{2} r^2$$



$$P = (-1, 2)$$

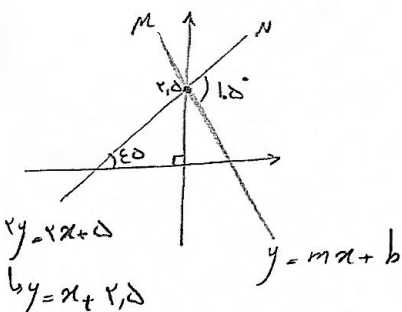
$$Q = (3, 4)$$

$$\cos \theta = \frac{r}{r} = \frac{E}{\sqrt{20}} = \frac{2}{\sqrt{5}}$$

$$m \text{ of } \rightarrow \tan \theta = 1 = \tan \alpha \rightarrow \alpha = 45^\circ$$

$$180 - (105 + 45) = 30^\circ \rightarrow \text{زاویه } 120^\circ \text{ می سازد} \rightarrow \text{خط } N \text{ با عمود بر } \alpha \text{ عمود است}$$

$$\left. \begin{array}{l} m = \tan 120^\circ = -\sqrt{3} \\ b = 2, 4 \end{array} \right\} mb = -\sqrt{3} \times 2, 4 = \frac{-5\sqrt{3}}{2}$$



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

$$f\left(\frac{\Delta\pi}{4}\right) = \cos\left(\pi + \frac{\Delta\pi}{4}\right) + \sin\left(\frac{\pi}{4} + \frac{\Delta\pi}{4}\right) - \tan\left(\frac{\pi}{4} + \frac{\Delta\pi}{4}\right) \rightarrow \frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right) - \sqrt{2} = -\sqrt{2}$$

$$\frac{\sin\left(\frac{1\sqrt{\pi}}{4} + x\right) + \cos\left(\frac{1\Delta\pi}{4} - x\right)}{\cos(2\pi + x) - \sin(4\pi - x)} = \frac{\cos x - \sin x}{-\cos x - (-\sin x)} = -1$$