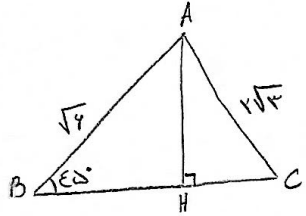


$$\text{الف} \quad (\sin 135^\circ + \sin 30^\circ)(\cos 315^\circ - \cos 150^\circ) = \left(\frac{\sqrt{2}}{2} + -\frac{\sqrt{3}}{2}\right)\left(-\frac{\sqrt{2}}{2} - (-\frac{\sqrt{3}}{2})\right) = \frac{-5 + 2\sqrt{6}}{2}$$

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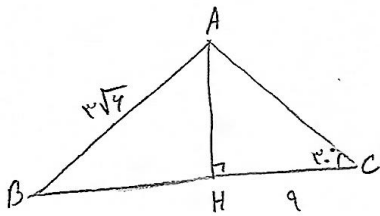
$$\text{ب) } \frac{1 + 3 \tan^2 11^\circ}{8 \cos^2 33^\circ + 2 \cos^2 22^\circ} = \frac{1 + 3 \left(\frac{\sqrt{2}}{2}\right)^2}{8 \times \left(\frac{\sqrt{2}}{2}\right)^2 + 2 \times \left(-\frac{\sqrt{2}}{2}\right)^2} = \frac{1+1}{2+1} = \frac{1}{2}$$



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

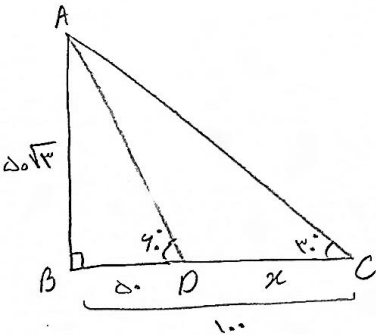
$$\frac{b}{\sin \hat{B}} = \frac{c}{\sin \hat{C}} \rightarrow \frac{\sqrt{3}}{\frac{1}{2}} = \frac{\sqrt{2}}{\frac{1}{2}} \Rightarrow \sin 30^\circ \Rightarrow \hat{C} = 30^\circ$$

$$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{CH}{AC} = \frac{3}{2\sqrt{3}}$$



$$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{CH}{AC} = \frac{4}{4\sqrt{3}}$$

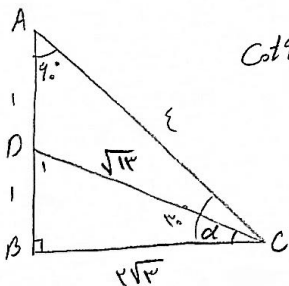
$$\frac{c}{\sin \hat{C}} = \frac{b}{\sin \hat{B}} \rightarrow \frac{4}{\frac{1}{2}} = \frac{3\sqrt{4}}{\frac{1}{2}} \Rightarrow \sin 45^\circ \Rightarrow \hat{B} = 45^\circ$$



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

$$\tan 10^\circ = \frac{\sqrt{3}}{x} = \frac{AB}{BC} = \frac{5\sqrt{3}}{150}$$

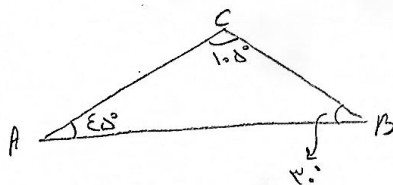
$$x = BC - BD \Rightarrow 150 - 50 = 100$$



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

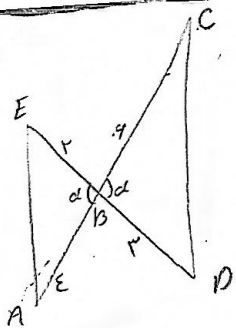
$$DC = \sqrt{1^2 + (2\sqrt{3})^2} = \sqrt{13}$$

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

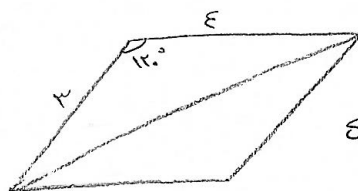


$$\frac{AB}{\sin \hat{C}} = \frac{AC}{\sin \hat{B}} \rightarrow \frac{AB}{AC} = \frac{\sin 105^\circ}{\sin 30^\circ} = \frac{\frac{\sqrt{4} + \sqrt{2}}{2}}{\frac{1}{2}} = \frac{\sqrt{4} + \sqrt{2}}{1}$$

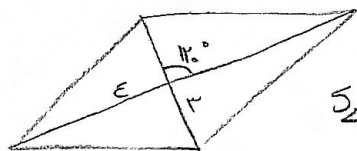
$$\sin(40^\circ + 50^\circ) = \sin 40^\circ \times \cos 50^\circ + \sin 50^\circ \times \cos 40^\circ = \left(\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{2}}{2} \times \frac{1}{2}\right)$$



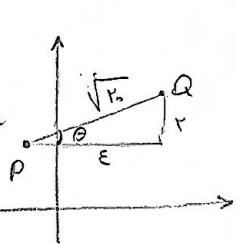
$$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times r \times r \times \sin \alpha}{\frac{1}{2} \times r \times r \times \sin \alpha} = \frac{1}{1} = \frac{E}{9}$$



$$S_D = r \times r \times \sin 120^\circ = 4\sqrt{3}$$



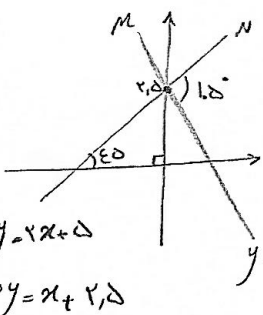
$$S_D = r \times r \times \sin 120^\circ = 4\sqrt{3}$$



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

$$Q = (3, 4)$$

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



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

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

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

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

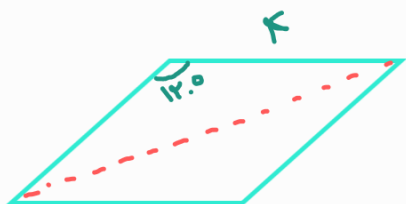
$$f\left(\frac{\Delta\pi}{4}\right) = \cos\left(\pi + \frac{\Delta\pi}{4}\right) + \sin\left(\frac{\pi}{4} + \frac{\Delta\pi}{4}\right) - \tan\left(\frac{\pi}{4} + \frac{\Delta\pi}{4}\right) \rightarrow \frac{\sqrt{3}}{4} + \left(-\frac{\sqrt{3}}{4}\right) - \sqrt{3} = \frac{-\sqrt{3}}{4}$$

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

$$\text{جواب)} (\sin 14^\circ + \sin 31^\circ) (\cos 31^\circ - \cos 14^\circ)$$

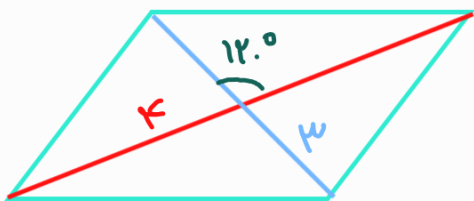
$$\left(\sqrt{\frac{2}{5}} - \sqrt{\frac{3}{5}}\right) \left(\sqrt{\frac{2}{5}} - \left(-\sqrt{\frac{3}{5}}\right)\right) = \left(\sqrt{\frac{2}{5}}\right)^2 - \left(\sqrt{\frac{3}{5}}\right)^2 = \frac{1}{5} - \frac{3}{5} = \boxed{-\frac{1}{5}}$$

$$\hookrightarrow \frac{1 + \tan^2 14^\circ}{\cos^2 31^\circ + \cos^2 14^\circ} = \frac{1 + 3\left(\sqrt{\frac{3}{5}}\right)^2}{\cos^2\left(\sqrt{\frac{3}{5}}\right)^2 + \cos^2\left(-\sqrt{\frac{2}{5}}\right)^2} = \frac{1 + 1}{3 + 1} = \boxed{\frac{1}{2}}$$



$$S = \frac{1}{2} \times 1 \times 3 \times \underbrace{\sin 14^\circ}_{\frac{\sqrt{3}}{2}} \times 2 = 4\sqrt{3}$$

از دایره هم برت نیس سده!



$$S = \frac{1}{2} \times 1 \times 3 \times \underbrace{\sin 14^\circ}_{\frac{\sqrt{3}}{2}} = 3\sqrt{3}$$