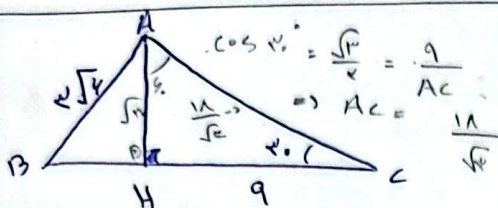


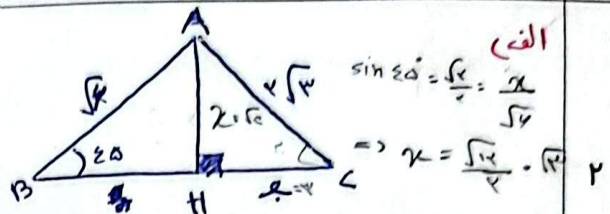
نام و نام خانوادگی پاسخنامه تشریحی تکلیف شماره ... کلاس ...

الف) $(\sin 140^\circ + \sin 40^\circ)(\cos 310^\circ - \cos 130^\circ) = \left(\frac{\sqrt{3}}{2} + (-\frac{1}{2})\right)\left(\frac{\sqrt{3}}{2} - (-\frac{1}{2})\right)$
 $= \left(\frac{\sqrt{3}}{2} - \frac{1}{2}\right)\left(\frac{\sqrt{3}}{2} + \frac{1}{2}\right) = \frac{3}{4} - \frac{1}{4} = \frac{2}{4} = \frac{1}{2}$

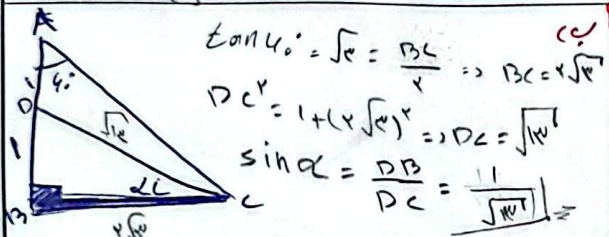
ب) $\frac{1 + 2 \tan^2 15^\circ}{2 \cos^2 45^\circ + 2 \cos^2 15^\circ} = \frac{1 + 2 \times (\frac{\sqrt{3}}{2})^2}{2 \times (\frac{\sqrt{3}}{2})^2 + 2 \times (\frac{\sqrt{3}}{2})^2} = \frac{4}{4} = 1$



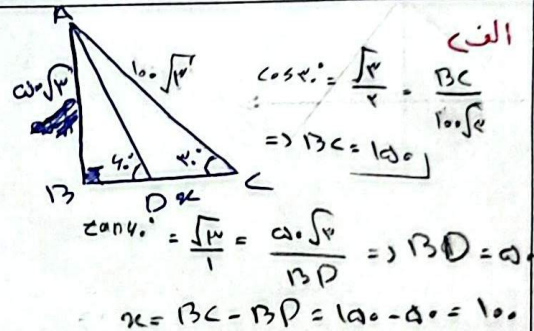
$(\frac{10}{\sqrt{2}})^2 = AH^2 + 10^2 \Rightarrow AH = \sqrt{10} = \sqrt{2} \times 5$
 $\sin B = \frac{5\sqrt{2}}{10\sqrt{2}} = \frac{1}{2} \Rightarrow B = 30^\circ$



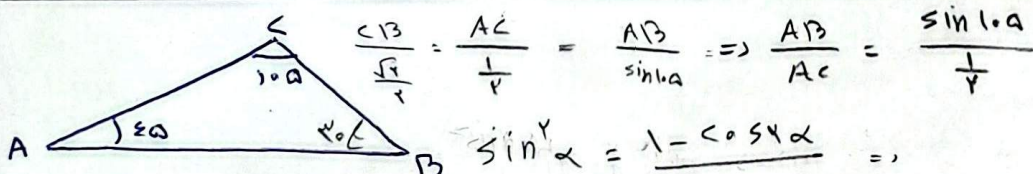
$(2\sqrt{2})^2 = HC^2 + (\sqrt{3})^2 \Rightarrow HC = 1$



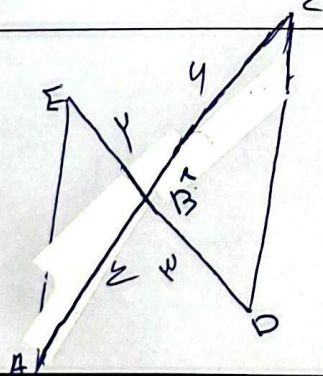
$\tan 45^\circ = \frac{BC}{AB} = \frac{BC}{1} \Rightarrow BC = 1$
 $DC^2 = 1 + (1\sqrt{2})^2 \Rightarrow DC = \sqrt{2}$
 $\sin \alpha = \frac{DB}{DC} = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$



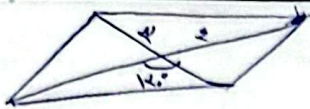
$\cos 45^\circ = \frac{BC}{AC} = \frac{BC}{10\sqrt{2}} \Rightarrow BC = 10$
 $\tan 45^\circ = \frac{AB}{BC} = \frac{10\sqrt{2}}{10} \Rightarrow AB = 10$
 $\alpha = BC - BD = 10 - 0 = 10$



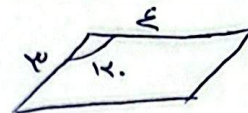
$\sin^2 \alpha = \frac{1 - \cos 40^\circ}{2} = \frac{1 - \cos 40^\circ}{2} = \frac{1 + \frac{\sqrt{3}}{2}}{2} \Rightarrow \frac{AB}{AC} = 1 + \frac{\sqrt{3}}{2}$



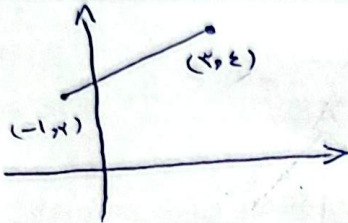
$\frac{S_{ABE}}{S_{BCD}} = \frac{\frac{1}{2} \times 4 \times 4 \times \sin 60^\circ}{\frac{1}{2} \times 4 \times 4 \times \sin 60^\circ} = \frac{1}{1}$



$$S = \frac{1}{2} \times 4 \times 4 \times \sin 120^\circ = 4 \times \frac{\sqrt{3}}{2} = 2\sqrt{3}$$



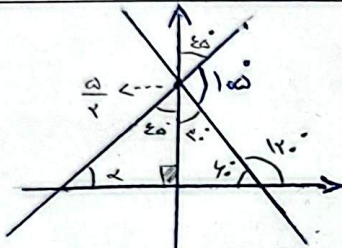
$$S = 4 \times 4 \times \sin 120^\circ = 4 \times 4 \times \frac{\sqrt{3}}{2} = 8\sqrt{3}$$



$$\alpha = \frac{\Delta y}{\Delta x} = \frac{2-4}{-1-2} = \frac{2}{3}$$

$$\alpha = \tan \theta = \frac{1}{\sqrt{3}}$$

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



$$y = x + a \Rightarrow a = 1$$

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

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

$$b = \frac{a}{\alpha}$$

$$\Rightarrow m \cdot b = 1 \times \frac{1}{1} = 1$$

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

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

$$= \cos \frac{\pi}{2} + \sin 0 - \tan \frac{\pi}{2} = 0 + 0 - \text{undefined} = \sqrt{3}$$

$$\frac{\sin\left(\frac{13\pi}{4} + x\right) + \cos\left(\frac{13\pi}{4} - x\right)}{\cos\left(\frac{5\pi}{4} + x\right) - \sin\left(\frac{5\pi}{4} - x\right)} = \frac{+\cos x - \sin x}{-\cos x + \sin x}$$

$$= \frac{-(\sin x - \cos x)}{\sin x - \cos x} = -1$$