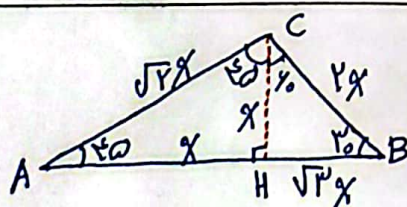
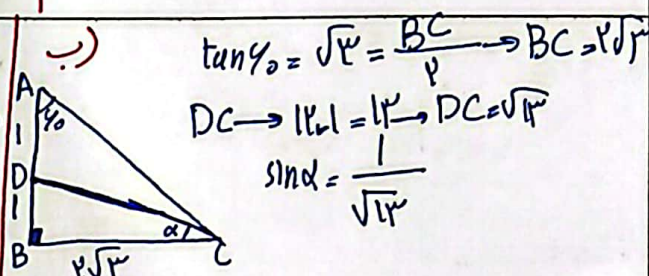
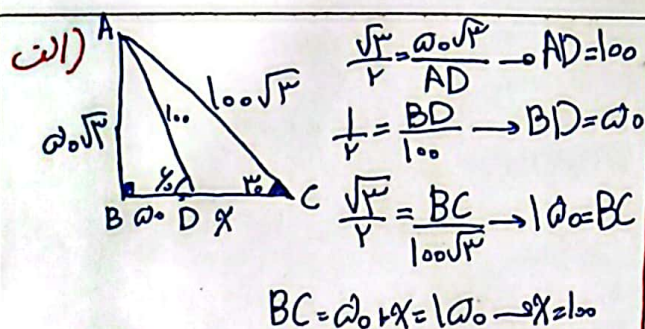
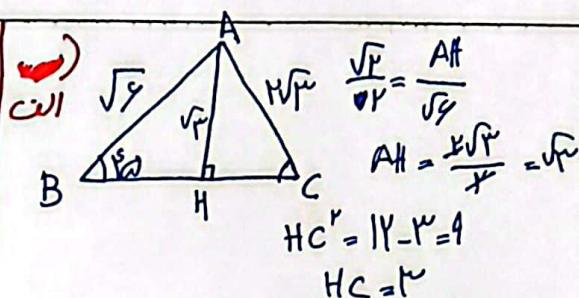
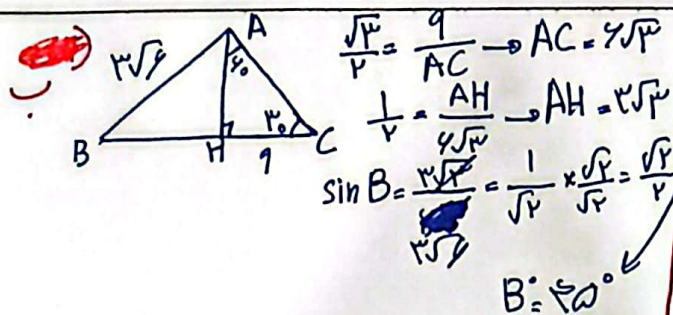
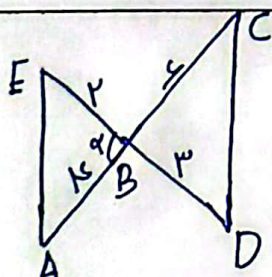


الف) $\left(\frac{\sqrt{2}}{2} - \frac{\sqrt{3}}{2}\right) \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{3}}{2}\right) = \frac{\sqrt{2}}{2} - \frac{3}{2} = \frac{\sqrt{2}-3}{2}$

ب) $\frac{1 + \frac{1}{3} \times 3}{\frac{3}{3} \times 3 + \frac{1}{3} \times 2} = \frac{2}{5} = \frac{1}{2.5}$



$AH = x \rightarrow CH = x \rightarrow AC^2 = x^2 + x^2 = 2x^2 \rightarrow AC = x\sqrt{2}$
 $\frac{1}{x} = \frac{x}{CB} \rightarrow CB = x \rightarrow HB^2 = x^2 - x^2 = 0 \rightarrow HB = 0$
 $\frac{AB}{AC} = \frac{x}{x\sqrt{2}} = \frac{1}{\sqrt{2}}$



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

$$\text{جواب } \left(\frac{1}{\sqrt{3}} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{\sqrt{3}}\right) = \frac{2}{\sqrt{3}}$$

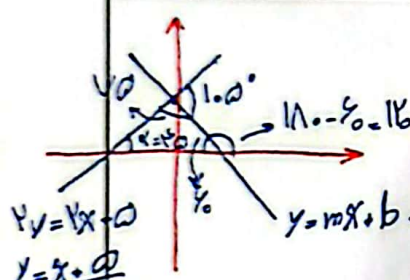
$$\text{ب) } \frac{1}{\sqrt{3}} + \frac{1}{\sqrt{3}} = \frac{2}{\sqrt{3}}$$

6

$$m = \frac{2-1}{-1-2} = \frac{-1}{-3} = \frac{1}{3} = \tan \theta \rightarrow \tan^{-1} \frac{1}{3} = \frac{1}{\cos \theta} \rightarrow \frac{1}{3} = \frac{1}{\cos \theta}$$

$$\cos \theta = \frac{3}{1} \rightarrow \cos \theta = \frac{1}{\sqrt{10}}$$

7



$110 - (50 + 10) = 10$

$110 - 50 = 110$

$y = mx + b \rightarrow m = \tan 110 = -\sqrt{3} \rightarrow \text{نقطه مشترک} \rightarrow y = \frac{a}{r} \rightarrow (0, \frac{a}{r})$

$y = \sqrt{3}x + b \rightarrow \frac{a}{r} = 0 + b \rightarrow b = \frac{a}{r}$

$m b = \frac{a}{r} \times \sqrt{3} = \frac{a\sqrt{3}}{r}$

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

8

$$f(x) = -\cos x + \cos x + (\cot x) \rightarrow f(x) = \cot x$$

$$f(120^\circ) = \cot 120^\circ = \frac{-\frac{\sqrt{3}}{2}}{\frac{1}{2}} = -\sqrt{3}$$

9

$$\frac{\sin(\frac{\pi}{2} + x) \cdot \cos(\frac{\pi}{2} - x)}{\cos(\frac{\pi}{2} + x) - \sin(\frac{\pi}{2} - x)} = \frac{\cos(x) + (-\sin x)}{-\cos x - \sin x} = \frac{\cos x - \sin x}{\sin x - \cos x} = -1$$

10