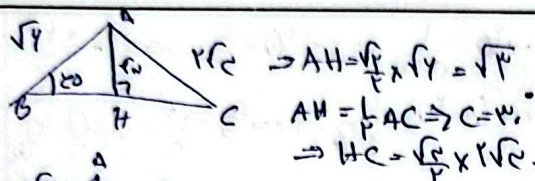
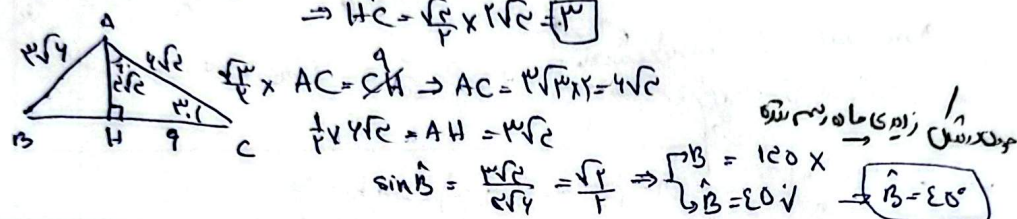


الف) $\left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) \left(\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2}\right) = \frac{2}{2} - \frac{2}{2} = -\frac{1}{2}$

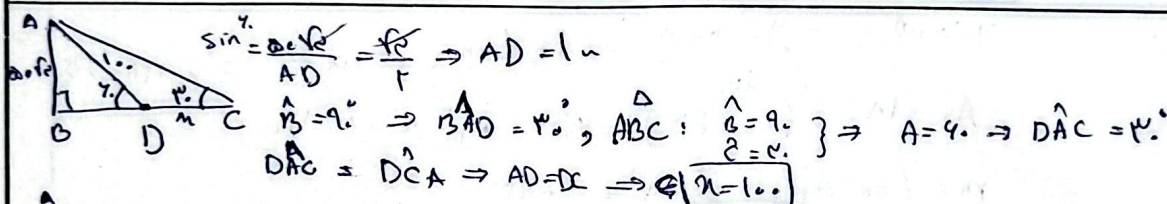
ب) $\frac{1 + \frac{\sin^2 \alpha}{\cos^2 \alpha}}{\epsilon \cos^2 \alpha + \frac{1}{\cos^2 \alpha}} = \frac{1 + \frac{1}{\cos^2 \alpha}}{\epsilon \cos^2 \alpha + \frac{1}{\cos^2 \alpha}} = \frac{1+1}{\epsilon+1} = \frac{2}{\epsilon+1} = \frac{1}{\epsilon}$



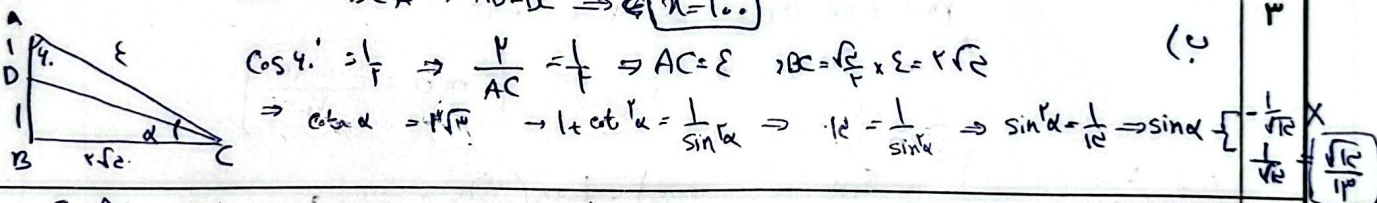
الف)



ب)

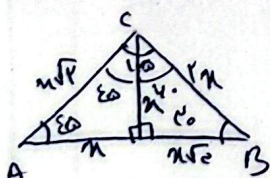


الف)



ب)

$S_{ABC} = \frac{1}{2} \times AC \times BC \times \sin 100^\circ = \frac{1}{2} \times BC \times AB \times \sin 40^\circ = \frac{1}{2} \times AC \times AB \times \sin 80^\circ$



$AB = n(1+\sqrt{2})$
 $AC = n\sqrt{2} \Rightarrow \frac{AB}{AC} = \frac{n(1+\sqrt{2})}{n\sqrt{2}} = \frac{\sqrt{2}+1}{2}$

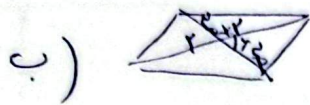
الف)

$\frac{S_{ABE}}{S_{ADC}} = \frac{\frac{1}{2} \times AB \times \epsilon \times \sin \hat{B}_\epsilon}{\frac{1}{2} \times AC \times \eta \times \sin \hat{B}_\epsilon} = \frac{\epsilon}{\eta}$

$\hat{B}_\epsilon = \hat{B}_\eta \Rightarrow \sin \hat{B}_\epsilon = \sin \hat{B}_\eta$

ب)

$$\text{الف) } \frac{S}{\text{مساحة المثلث}} = \frac{1}{2} \times \frac{1}{2} \times 8 \times \sin 45^\circ = \frac{1}{2} \times 8 \times \frac{\sqrt{2}}{2} = \boxed{4\sqrt{2}}$$



$$\text{ب) } \frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{2}}{2} \times \sin 45^\circ + \frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{2}}{2} \times \sin 45^\circ \xrightarrow{\sin 45^\circ = \frac{\sqrt{2}}{2}} \frac{1}{2} \times 4 \times 4 \times \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = 4 \times \sin 45^\circ = 4 \times \frac{\sqrt{2}}{2} = \boxed{4\sqrt{2}}$$

$$g = at + b \quad \text{نقطة على الخط المستقيم}$$

$$a = \frac{\Delta y}{\Delta x} = \tan \theta \Rightarrow \tan \theta = \frac{1}{2} = \frac{1}{2}$$

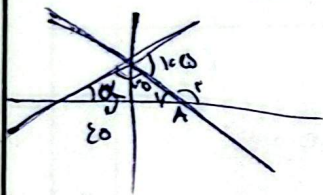
$$\text{نقطة على الخط المستقيم} \quad \cos \theta = \frac{2}{\sqrt{5}}$$

$$\theta < 90^\circ \Rightarrow \alpha = \theta \Rightarrow \tan \theta = \frac{1}{2} \rightarrow \tan^2 \theta = \frac{1}{4} \Rightarrow \frac{1}{\cos^2 \theta} = \frac{1}{4} \Rightarrow \cos^2 \theta = \frac{1}{4} \Rightarrow \cos \theta = \pm \frac{1}{2}$$

$$\text{نقطة على الخط المستقيم} \Rightarrow \alpha = 180^\circ - \theta \Rightarrow \tan \theta = -\tan \alpha \Rightarrow \tan^2 \theta = \frac{1}{4} \Rightarrow \frac{1}{\cos^2 \theta} = \frac{1}{4} \Rightarrow \cos^2 \theta = \frac{1}{4} \Rightarrow \cos \theta = \pm \frac{1}{2}$$

$$\Rightarrow \cos \theta = \pm \frac{1}{2} \quad (\text{نقطة على الخط المستقيم} \Rightarrow \theta \text{ حاد} \Rightarrow \cos \theta = \frac{1}{2}) \quad \cos \theta = \frac{1}{2} \leftarrow \text{نقطة على الخط المستقيم}$$

$$\text{نقطة على الخط المستقيم} = b = \text{نقطة على الخط المستقيم} \Rightarrow y = \frac{a}{b} \Rightarrow y = \frac{0}{1} \Rightarrow (0, \frac{0}{1}) \Rightarrow b = \frac{0}{1}$$



$$y = \frac{a}{b} \Rightarrow y = \frac{0}{1} \Rightarrow 1 = \tan \alpha \Rightarrow \alpha = 45^\circ \text{ or } 135^\circ$$

$$A_1 = 180^\circ - (45^\circ + 45^\circ) = 90^\circ \Rightarrow A_2 = 180^\circ - 90^\circ = 90^\circ$$

$$m = \tan A_2 = \tan 45^\circ = 1$$

$$m = 1 \quad b = \frac{0}{1} \Rightarrow \boxed{mb = \frac{0 \cdot 1}{1}}$$

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

$$\cos(\frac{\pi}{4}) - \cos(\frac{\pi}{4}) - \tan(\frac{\pi}{4}) = -\cos(\frac{\pi}{4}) = -\frac{\cos 10^\circ}{\sin 10^\circ} =$$

$$\frac{+\frac{\sqrt{2}}{2}}{1} = \boxed{\sqrt{2}}$$

$$\cos(x) - \sin(x)$$

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

$$\sin(\frac{\pi}{4} + x) + \cos(\frac{\pi}{4} - x)$$

$$\cos(\pi + x) - \sin(\pi - x)$$