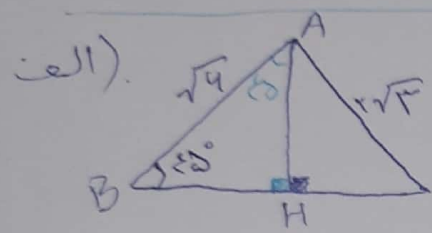


.. (1)

الف). $(\sin 15^\circ + \sin 75^\circ)(\cos 15^\circ - \cos 75^\circ)$

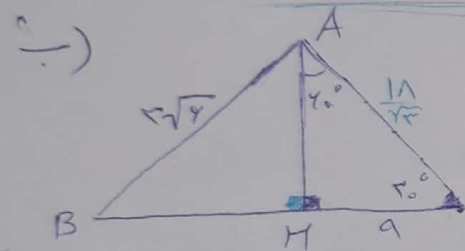
$\left(\frac{\sqrt{2}}{2} + \left(-\frac{\sqrt{2}}{2}\right)\right)\left(\frac{\sqrt{2}}{2} - \left(-\frac{\sqrt{2}}{2}\right)\right) = \left(\frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2}\right)^2 = \frac{2-2}{2} = -\frac{1}{2}$
 (مقدار منفرجه)

ب). $\frac{1 + 2 \tan^2 45^\circ}{2 \cos^2 30^\circ + 2 \cos^2 15^\circ} = \frac{3}{2\left(\frac{3}{4}\right) + 2\left(\frac{1}{4}\right)} = \frac{3}{2+1} = \frac{3}{3} = 1$



$AH = \sin 45^\circ = \frac{\sqrt{2}}{2} = \frac{AH}{\sqrt{4}} \rightarrow AH = \frac{\sqrt{2} \times \sqrt{4}}{2} = \frac{\sqrt{4}}{2} = \frac{2}{2} = 1$
 $= \frac{\sqrt{4}}{2} = \frac{2}{2} = 1$

$AH = BH = \sqrt{2}$ (مقدار منفرجه) $\Rightarrow AC^2 = AH^2 + HC^2$
 $(2\sqrt{3})^2 = (\sqrt{2})^2 + HC^2 \Rightarrow 12 = 2 + HC^2 \Rightarrow HC = 2$



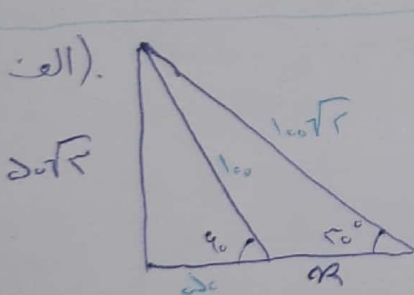
$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{9}{AC} \rightarrow AC = \frac{9}{\sqrt{3}} \sqrt{3}$

$\left(\frac{9}{\sqrt{3}} \sqrt{3}\right)^2 = 9^2 + AH^2 \rightarrow AC = \frac{11}{\sqrt{3}}$

$10 \cdot 1 = 1 + AH^2 \rightarrow AH = 3\sqrt{2} \rightarrow$ مقدار منفرجه

$\hat{A} = 30^\circ$
 $\hat{B} = 60^\circ$

$AHB: (2\sqrt{3})^2 = (3\sqrt{2})^2 + BH^2 = 12 = 18 + BH^2 \rightarrow BH = \sqrt{12} = 2\sqrt{3}$
 $\hat{B} = \hat{A} \rightarrow \frac{9}{\sqrt{3}} = 2\sqrt{3}$



$AB = AD \quad \hat{A}_1 = \hat{C}$

$20\sqrt{5} = \sin 40^\circ \rightarrow \frac{\sqrt{5}}{2} = \frac{20\sqrt{5}}{AD} \rightarrow AD = 100$

.. (15)

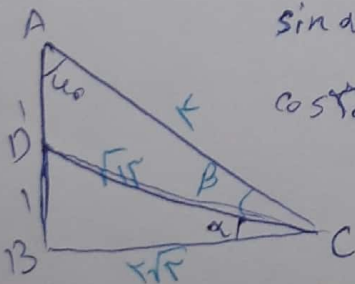
$\rightarrow$ $\sin \alpha = \frac{1}{DC} \quad \sin 30^\circ = \frac{1}{2} \rightarrow \frac{AB}{AC} = \frac{1}{2} \rightarrow AC = 2$

$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{BC}{2} \rightarrow BC = \sqrt{3}$

$\sin \alpha = \frac{1}{\sqrt{15}} \times \frac{\sqrt{15}}{\sqrt{15}}$

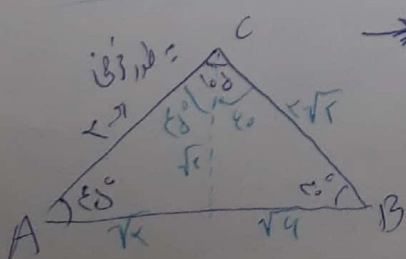
$DC^2 = 1^2 + (\sqrt{3})^2 \rightarrow DC = \sqrt{4} = 2$

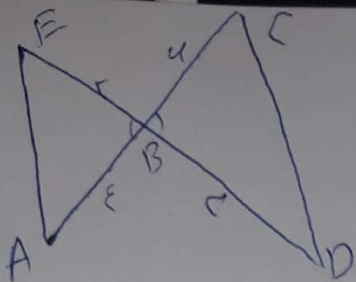
$\rightarrow \sin \alpha = \frac{\sqrt{15}}{15}$



$\frac{AB}{AC} = \frac{\sqrt{3} + \sqrt{9}}{2}$

.. (17)



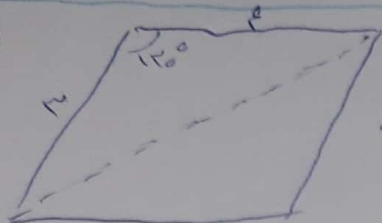


$$\frac{ABE}{BCD} = \frac{\frac{1}{2} \sin \hat{B} \times r \times \epsilon}{\frac{1}{2} \sin \hat{B} \times r \times \epsilon} = \frac{\epsilon}{r}$$

$\hat{B} = \hat{B} \rightarrow$ متساوي

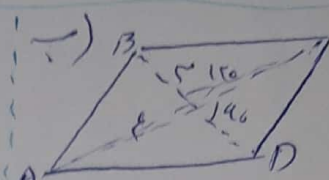
(3)

الف)



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

$$= \frac{\sqrt{3}}{4} r \epsilon = \sqrt{3}$$



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

$$= \sqrt{3}$$

(4)

(5)

$P = (-1, r)$ $Q = (r, \epsilon)$

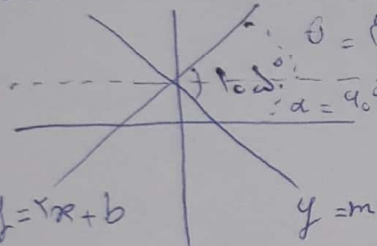
$$\frac{\Delta y}{\Delta x} = \frac{\epsilon - r}{r - (-1)} = \frac{\epsilon - r}{r + 1} = \frac{r}{r} = 1$$

$$\tan \theta = 1$$

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

(6)

mb = ?



$$y = r x + d \rightarrow y = x + d$$

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

$$10d - 1d = 90$$

$$d = \beta \rightarrow \beta = 40^\circ \rightarrow \tan 40^\circ = \sqrt{3}$$

$$y = r x + b$$

$$y = m x + b$$

$$mb = r, d \sqrt{3}$$

$$r, d = \sqrt{3}(0) + b \rightarrow b = r, d$$

$$f(x) = \cos\left(\frac{\pi}{2} + x\right) + \sin\left(\frac{\pi}{2} - x\right) - \tan\left(\frac{\pi}{4} + x\right) = -\cos x + \cos x + (\cot x) = \cot x$$

$$f\left(\frac{\Delta \pi}{4}\right) = ? \rightarrow f(120^\circ) = \cot 120^\circ = -\frac{1}{\sqrt{3}}$$

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

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

(10)