

۱۹، ۲۵ آذرین (۳) *

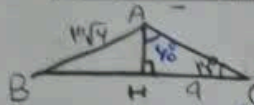
Subject: "مربعات و مثلثات" "موضوع: B" "موضوع: A"

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

$$(ب) \frac{1 + (p \times (\frac{\sqrt{p}}{p})^2)}{(p \times (\frac{\sqrt{p}}{p})^2) + (p \times (\frac{\sqrt{p}}{p})^2)} = \frac{1+1}{p+1} = \frac{p}{p} = \frac{1}{p}$$

(سؤال ۱)

AH = $\frac{\sqrt{p}}{p} \times \sqrt{p} = \sqrt{p}$ (الف) (سؤال ۲) $\Rightarrow$ (ب) $\Rightarrow (AC)^2 = (AH)^2 + (HC)^2 \Rightarrow 1p = p + (HC)^2 \Rightarrow (HC)^2 = p \Rightarrow HC = \sqrt{p}$

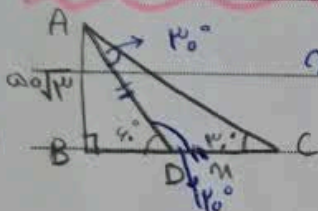


$\Rightarrow AC \times \frac{\sqrt{p}}{p} = 9 \Rightarrow AC = 9\sqrt{p}$

$\Rightarrow \frac{c}{\sin B} = \frac{b}{\sin C} \Rightarrow \frac{9\sqrt{p}}{\frac{1}{p}} = \frac{4\sqrt{p}}{\sin B} \Rightarrow 4\sqrt{p} = 4\sqrt{p} \sin B$

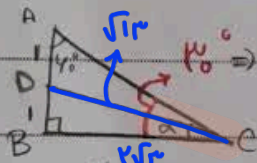
$\sin B = \frac{1}{p} = \frac{\sqrt{p}}{p} \Rightarrow B = 45^\circ$

(الف)



$AD = DC = 100$ (سؤال ۳) $\Rightarrow$ (ب) $\Rightarrow AD = 100 \Rightarrow DC = 100$

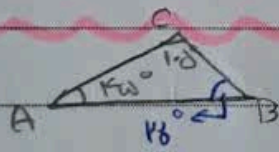
$AD = DC = 100 \Rightarrow \sqrt{3} AD = 100\sqrt{3} \Rightarrow AD = 100$



$\sin \alpha = \frac{1}{\sqrt{3}}$

$(AC)^2 - (AB)^2 = (BC)^2 \Rightarrow 14 - 4 = 10 \Rightarrow BC = \sqrt{10} \Rightarrow (DC)^2 = (BD)^2 + (BC)^2$

$(DC)^2 = 1 + 4 \Rightarrow DC = \sqrt{5} \Rightarrow \frac{DC}{\sin B} = \frac{BD}{\sin \alpha} \Rightarrow \frac{\sqrt{5}}{\frac{1}{\sqrt{3}}} = \frac{1}{\sin \alpha} \Rightarrow \sin \alpha = \frac{\sqrt{3}}{\sqrt{5}}$



$AC = b, AB = c, CB = a$

$\frac{a}{\sin 60^\circ} = \frac{b}{\sin 40^\circ} = \frac{c}{\sin 80^\circ} \Rightarrow pb = \frac{c}{\sin 40^\circ} \Rightarrow pb \times \sin 40^\circ = c$

$\frac{AB}{AC} = \frac{c}{b} = \frac{pb \times \sin 40^\circ}{b} = p \times \sin 40^\circ \Rightarrow \sin 40^\circ = \frac{1 - \cos 100^\circ}{p}$

$1 + \frac{\sqrt{p}}{p} = \frac{p + \sqrt{p}}{p} \Rightarrow \sin 100^\circ = \frac{\sqrt{p + \sqrt{p}}}{p}$

$\Rightarrow p \times \sin 100^\circ = \sqrt{p + \sqrt{p}}$

$S_{ABE} = \frac{1}{2} \times p \times p \times \sin B = p \sin B$

$S_{BCD} = \frac{1}{2} \times p \times p \times \sin B = 9 \sin B$

$\Rightarrow \frac{S_{ABE}}{S_{BCD}} = \frac{p \sin B}{9 \sin B} = \frac{p}{9}$

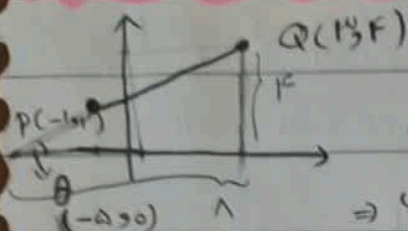
(سؤال ۴)

(سؤال ۵)

Date:

$$S = P \times \frac{1}{P} \times P \times P \times \sin 135^\circ = 1 \times \frac{\sqrt{2}}{2} = 4\sqrt{2} \quad (\text{سؤال 4})$$

$$S = P \times P \times \sin 135^\circ = \frac{1}{P} \times P \times P \times \frac{\sqrt{2}}{2} = 3\sqrt{2}$$

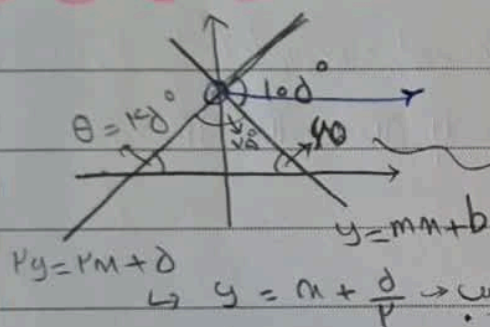


$$a = \tan \theta = \frac{\text{opposite}}{\text{adjacent}} = \frac{3 - 0}{1 - (-1)} = \frac{3}{2} \quad (\text{سؤال 5})$$

$$y = \frac{1}{P}x + b \quad \begin{matrix} x=1, y=3 \\ x=0, y=0 \end{matrix} \quad \begin{matrix} 3 = \frac{1}{P} + b \\ 0 = \frac{1}{P} + b \end{matrix} \Rightarrow b = \frac{3}{P}$$

$$\Rightarrow y = \frac{1}{P}x + \frac{3}{P} \Rightarrow 0 = \frac{1}{P}x + \frac{3}{P} \Rightarrow x = -3 \Rightarrow \theta(-3, 0)$$

$$r = \sqrt{(1)^2 + (3)^2} = \sqrt{10} = P\sqrt{2} \Rightarrow \cos \theta = \frac{1}{P\sqrt{2}} \Rightarrow \cos \theta = \frac{1}{P\sqrt{2}} = \frac{1}{\sqrt{2}}$$



$$\left. \begin{matrix} y = b \\ y = \frac{a}{P} \end{matrix} \right\} \Rightarrow b = \frac{a}{P}$$

$$(\text{سؤال 6}) \quad 11\sqrt{2}$$

$$\tan 45^\circ = m = \sqrt{2}$$

$$mb = \frac{\sqrt{2}}{P} = \frac{a}{P}\sqrt{2}$$

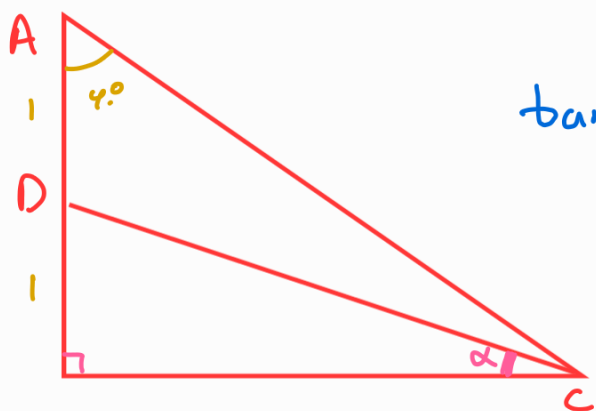
$$f(x) = -\cos x + \cos x + \cot x = \cot x$$

$$f\left(\frac{\omega}{4}\pi\right) = \cot \frac{\omega\pi}{4} = \cot 135^\circ = -\sqrt{2} \quad (\text{سؤال 9})$$

$$\sin\left(12\pi + \frac{\pi}{2} + x\right) + \cos\left(4\pi + \frac{3\pi}{4} - x\right)$$

$$\cos(x + \pi + \frac{\pi}{2}) - \sin(4\pi - x)$$

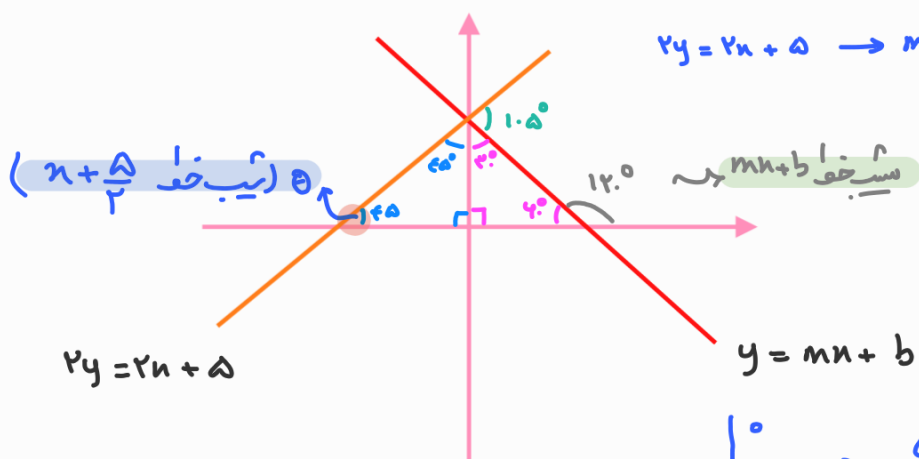
$$\begin{matrix} \cos x - \sin x \\ -\cos x + \sin x \end{matrix} = -1 \quad (\text{سؤال 10})$$



$$\tan 4^\circ = \frac{BC}{AB} \rightarrow BC = 2\sqrt{3}$$

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

$$\sin \alpha = \frac{1}{\sqrt{13}}$$



$$y = mx + b \rightarrow m = 1 \rightarrow \tan \theta = 1 \rightarrow \theta = 45^\circ$$

(صيق سطر صاف است)

$$y = mx + b \rightarrow m = \tan 14^\circ = -\sqrt{3}$$

$$\frac{5}{r} \rightarrow \frac{5}{r} = -\sqrt{3}(\cdot) + b \rightarrow b = \frac{5}{r}$$

$$mb = -\sqrt{3} \times \frac{5}{r} = -\frac{5\sqrt{3}}{r}$$