

Date:

أ) $\tan(\pi + \frac{\pi}{4}) + \sin(\pi + \frac{\pi}{4}) \cos(\pi + \frac{\pi}{4})$ (سؤال 1) α

$\hookrightarrow -1 + \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = -1 + \frac{1}{2} = -\frac{1}{2}$

ب) $\tan(\pi + \frac{\pi}{4}) \sin(\pi + \frac{\pi}{4}) + \cos(\pi + \frac{\pi}{4}) = -\frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} + \frac{1}{2} = 0$

$\cot \alpha = \frac{\cos \alpha}{\sin \alpha} = k \rightarrow k \sin \alpha = \cos \alpha$ (سؤال 2)

$\frac{k \cos \alpha - \sin \alpha}{\cos \alpha + \sin \alpha} = \frac{k \sin \alpha - \sin \alpha}{k \sin \alpha + \sin \alpha} = \frac{11 \sin \alpha}{11 \sin \alpha} = 1$

$\sin \alpha = k \cos \alpha \rightarrow \cos \alpha, \sin \alpha < 0$

$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow k^2 \cos^2 \alpha + \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = \frac{1}{k^2 + 1} = \frac{1}{10}$

$\cos \alpha = \pm \frac{1}{\sqrt{10}} = \pm \frac{\sqrt{10}}{10} \rightarrow \cos \alpha = -\frac{\sqrt{10}}{10}$

$\cos(\frac{11\pi}{6} + \alpha) = \cos(\pi + \frac{\pi}{6} + \alpha) = \cos(\frac{\pi}{6} + \alpha)$ (سؤال 3) α

$\cos(\alpha + \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta \Rightarrow \cos(\frac{\pi}{6} + \alpha) = \cos \alpha \cos \frac{\pi}{6} + \sin \alpha \sin \frac{\pi}{6}$

$\cos \alpha \times \frac{\sqrt{3}}{2} + \frac{1}{2} \Rightarrow \cos^2 \alpha + \sin^2 \alpha = 1 \Rightarrow \cos^2 \alpha = \frac{1}{10} \Rightarrow \cos \alpha = -\frac{\sqrt{10}}{10}$

$\frac{-\sqrt{10}}{10} \times \frac{\sqrt{3}}{2} + \frac{1}{2} = \frac{1}{2}$ (سؤال 4) α

$\sin(\frac{11\pi}{6} + \alpha) = \sin(\pi + \frac{\pi}{6} + \alpha) = \sin(\frac{\pi}{6} + \alpha)$ (سؤال 5) α

$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha \Rightarrow \sin(\frac{\pi}{6} + \alpha) = \sin \alpha \cos \frac{\pi}{6} + \sin \frac{\pi}{6} \cos \alpha$

$\sin^2 \alpha + \cos^2 \alpha = 1 \Rightarrow \sin^2 \alpha + \sin^2 \alpha + \cos^2 \alpha = \frac{1}{10}$ (سؤال 6) α

$\tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{\frac{1}{10}}{\frac{1}{10}} = 1 \Rightarrow \tan \alpha = \pm 1$ $\hookrightarrow \sin \alpha = \frac{1}{\sqrt{10}} \Rightarrow \cos \alpha = \frac{1}{\sqrt{10}}$



$S = \frac{1}{2} ab \sin \alpha$

$S_{\triangle} = \frac{1}{2} \times 1 \times \sqrt{10} \times \sin \alpha$

$S_{\triangle} = \frac{1}{2} \times \sqrt{10} \times \sin \alpha \Rightarrow \sin \alpha = \frac{\sqrt{10}}{10} \Rightarrow \alpha = 45^\circ$

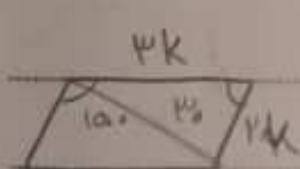
$\tan \alpha = \frac{\sin \alpha}{\cos \alpha} = \frac{1}{1} \Rightarrow \sin \alpha = \cos \alpha$ (سؤال 7) α

$\sin(\frac{\pi}{4} + \alpha) = \sin \alpha \cos \frac{\pi}{4} + \cos \alpha \sin \frac{\pi}{4} \Rightarrow \cos^2 \alpha + \sin^2 \alpha = 1 \Rightarrow k^2 \sin^2 \alpha + \sin^2 \alpha = 1$

$\Rightarrow \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2} + \frac{1}{2} = 1$ (سؤال 8) α

$\cos \alpha = -\frac{\sqrt{2}}{2} \Rightarrow \sin \alpha = \frac{\sqrt{2}}{2}$

Subject:



$$S = \omega K$$

$$\hookrightarrow \frac{1}{k} \times \frac{1}{k} \times PK \times PK \times \sin 100^\circ = \omega K$$

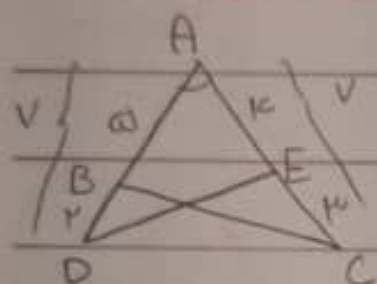
$$PK^2 = \omega K \Rightarrow \sqrt{K^2} = \sqrt{1/\omega}$$

سؤال ٧

مجموع مربعات
في المثلث

$$100\sqrt{2}$$

$$= 100(\sqrt{2} + 4\sqrt{2}) = 500\sqrt{2} \Rightarrow 100 \times 100\sqrt{2} = 4\sqrt{2}, 100 \times 100\sqrt{2} = 9\sqrt{2} \Rightarrow k = 100\sqrt{2}$$



$$S_{ABC} - S_{ADE} = 1/\omega$$

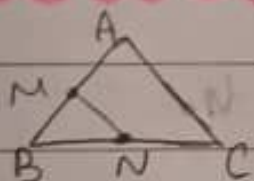
سؤال ٨

$$\frac{1}{k} \times \omega \times \sin A - \frac{1}{k} \times \omega \times k \times \sin A = 1/\omega$$

$$\frac{1}{k} (\omega \sin A - k \sin A) = 1/\omega$$

$$A = 100^\circ \Rightarrow \sin 100^\circ = \sin A = \frac{1}{k} \Rightarrow \sin A = \frac{1/\omega}{1/k} \Rightarrow \tan 100^\circ = \frac{\sqrt{1/\omega}}{1/k}$$

$$\Rightarrow \tan 100^\circ = \frac{\sqrt{1/\omega}}{1/k}$$



$$kBN = \omega NC \Rightarrow \frac{1}{k}BN = NC$$

سؤال ٩

$$S_{ABC} = k S_{BMN}$$

$$\frac{1}{k} AB \times BC \times \sin B = k \times \frac{1}{k} \times BM \times BN \times \sin B$$

$$BC = BN + NC \Rightarrow BC = BN + \frac{1}{k}BN = \frac{\omega}{k}BN \quad AB \times \frac{\omega}{k} = kBM$$

$$AB = AM + BM \Rightarrow \frac{\omega}{k}BM - BM = AM \Rightarrow AM = \frac{kBM}{\omega} \Rightarrow AB = \frac{\omega}{k}BM$$

$$\Rightarrow \frac{BM}{AM} = \frac{BM}{\frac{kBM}{\omega}} = \frac{\omega}{k}$$

$$\frac{1}{\sqrt{\cos \alpha}} - \tan \alpha = \frac{1 + \sin \alpha}{|\cos \alpha|}$$

سؤال ١٠

$$\frac{1}{\sqrt{\cos \alpha}} = \frac{1}{\cos \alpha} \quad \& \quad \frac{-1}{\cos \alpha}$$

$$\frac{1}{\sqrt{\cos \alpha}} - \tan \alpha = \frac{1}{\cos \alpha} \Rightarrow \frac{1}{\cos \alpha} - \frac{\sin \alpha}{\cos \alpha} = \frac{1 - \sin \alpha}{\cos \alpha} \Rightarrow \cos \alpha < 0$$

$$\frac{|\sin \alpha|}{\cos \alpha} \xrightarrow{\sin \alpha < 0} \frac{-\sin \alpha}{\cos \alpha} = \frac{-1}{\cot \alpha} \Rightarrow \sin \alpha, \cos \alpha < 0$$

في ربع ثانی