

للاس: دقتان دهه A

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الف) $27^\circ = (x) \text{ rad}$ $\frac{27}{180} = \frac{\text{rad}}{\pi}$ $\text{rad} = \frac{27\pi}{180} = 0,15\pi$ - (1)

ب) $125^\circ = (x) \text{ rad}$ $125 \times \frac{\pi}{180} = \frac{125}{180} \pi$

ج) $\frac{5\pi}{12} \text{ rad} = (x)^\circ$ $\frac{5\pi}{12} \times \frac{180}{\pi} = 75^\circ$

د) $\frac{4\pi}{9} \text{ rad} = (x)^\circ$ $\frac{4\pi}{9} \times \frac{180}{\pi} = 80^\circ$

نور، $10a$ ، $\frac{9\pi}{180} \times \frac{180}{\pi} = 9^\circ$ نور، $\frac{125a}{9} \times \frac{180}{180} = 12,5a$ نور،

$10a + 9^\circ a + 12,5a = 180^\circ$

$a(10 + 9 + 12,5) = 180^\circ \rightarrow a = 5^\circ$

الف) $\cos 40^\circ \cos 30^\circ - \sin 40^\circ \sin 30^\circ = \tan 40^\circ + \cot 40^\circ$ - (2)

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

ب) $\frac{\tan 30^\circ + \tan 40^\circ + \tan 50^\circ}{\cot 30^\circ - \cot 40^\circ} = \frac{\frac{1}{\sqrt{3}} + 1 + \sqrt{3}}{\sqrt{3} - \frac{1}{\sqrt{3}}} = \frac{1+\sqrt{3}}{2} = \frac{1+\sqrt{3}}{2} = \frac{1+\sqrt{3}}{2}$

$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin \theta / \tan \theta = ?$ - (3)

$-\frac{1}{2} \times \frac{1}{2} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} = -\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \frac{1}{2} = \sin \theta \rightarrow \sin \theta = \frac{1}{2}$

$\cos \theta = 1 - \sin \theta = 1 - \frac{1}{2} = \frac{1}{2}$ $\tan \theta = \frac{\sin \theta}{\cos \theta} = 1$

$$\frac{r \tan 40^\circ (1 - \tan^2 40^\circ)}{(1 - \cot^2 40^\circ)^2} = \frac{r \times \frac{\sqrt{3}}{4} (1 - \frac{3}{4})}{(1 - \frac{3}{4})^2} = \frac{\frac{r\sqrt{3}}{4} \times \frac{1}{4}}{\frac{1}{4}} = \frac{r\sqrt{3}}{4} \quad (3)$$

$$\rightarrow \frac{r \times \frac{1}{4} \times \frac{\sqrt{3}}{4}}{\frac{1}{4} \times \frac{1}{4}} = \sqrt{3} = \tan \theta = \tan 40^\circ$$

$$\boxed{40^\circ \times \frac{\pi}{180} = \frac{\pi}{9}}$$

$$\tan \theta = \omega$$

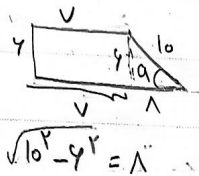
$$\frac{w \sin \theta - \cos \theta}{\sin \theta - r \cos \theta} = \frac{w \times \frac{\omega}{\sqrt{14}} - \frac{1}{\sqrt{14}}}{\frac{\omega}{\sqrt{14}} - r \times \frac{1}{\sqrt{14}}} = \frac{\frac{14}{\sqrt{14}}}{\frac{1}{\sqrt{14}}} = \sqrt{14} \quad (4)$$

$$1 + \tan \theta = \frac{1}{\cos^2 \theta} \rightarrow 1 + \omega = \frac{1}{\cos^2 \theta} \rightarrow \cos^2 \theta = \frac{1}{1 + \omega} \quad \cos^2 \theta = \pm \frac{1}{1 + \omega}$$

$$\sin^2 \theta = 1 - \cos^2 \theta = 1 - \frac{1}{1 + \omega} = \frac{\omega}{1 + \omega} \quad \sin \theta = \pm \frac{\omega}{\sqrt{1 + \omega}}$$

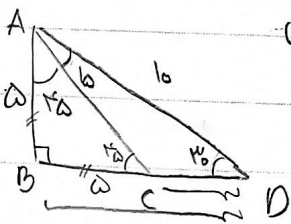
$$\sin \alpha = \frac{y}{10}$$

مساحت مثلث



$$\text{مساحت مثلث} = \frac{1}{2} \times x \times y = \frac{1}{2} \times \sqrt{10^2 - y^2} \times y = \frac{1}{2} \times y \times \sqrt{100 - y^2}$$

$$\sqrt{10^2 - y^2} = x$$

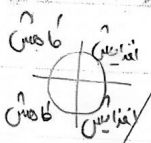


$$\text{دکتر DC} = ?$$

$$\rightarrow DC = \omega \sqrt{3} - \omega = \omega (\sqrt{3} - 1)$$

$$\frac{\sqrt{3}}{4} \times 10 = \omega \sqrt{3}$$

9. الف) با استفاده از فرمول $\sin \theta$ و $\cos \theta$: نامی رسم



ب) با استفاده از فرمول $\sin \theta$ و $\cos \theta$: نامی رسم

کسینوس

$$\tan \alpha = \frac{1}{\mu} \quad \text{نامی رسم} \quad \begin{matrix} \cos - \\ \sin - \end{matrix}$$

$$1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} = 1 + \frac{1}{9} = \frac{10}{9} \rightarrow \cos^2 \alpha = \frac{9}{10}$$

$$\cos^2 \alpha + \sin^2 \alpha = 1 \rightarrow \sin^2 \alpha = 1 - \frac{9}{10} = \frac{1}{10} \rightarrow \sin \alpha = -\frac{1}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = -\frac{\sqrt{10}}{10}$$