

تکلیف ۱۶

دور در خان

۲۰

کسر رمضان

الف) $2V^{\circ} = (x) \text{ rad} \Rightarrow \frac{2V}{110} = \frac{x}{\pi} \Rightarrow x = \frac{2\pi V}{110}$ ب) $12\omega^{\circ} = (x) \text{ rad} \Rightarrow \frac{12\omega}{110} = \frac{x}{\pi} \Rightarrow x = \frac{12\pi\omega}{110}$

ج) $\frac{\omega\pi}{12} \text{ rad} = (x)^{\circ} \Rightarrow \frac{\omega\pi}{12} = \frac{x}{110} \Rightarrow x = \frac{110\omega\pi}{12}$ د) $\frac{12\pi}{9} \text{ rad} = (x)^{\circ} \Rightarrow \frac{12\pi}{9} = \frac{x}{110} \Rightarrow x = 110^{\circ}$

$\frac{4\pi}{11} = \frac{3m^{\circ}}{110} \Rightarrow m = \frac{4\omega a^{\circ}}{2}$ $\frac{12\omega a}{9} = \frac{n^{\circ}}{110} \Rightarrow n = \frac{2\omega a}{2}$

$10a + \frac{4\omega a}{2} + \frac{2\omega a}{2} = 110 \Rightarrow 90a = 110 \Rightarrow a = 1$

الف) $\cos 40^{\circ} \cos 30^{\circ} - \sin 40^{\circ} \sin 30^{\circ} - \tan 40^{\circ} + 2 \cot 40^{\circ} = \frac{1}{2} \times \frac{\sqrt{3}}{2} - \frac{\sqrt{3}}{2} \times \frac{1}{2} - 1 + 2 = 1$

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

$-\sin 30^{\circ} \cos 40^{\circ} + \cos 30^{\circ} \sin 40^{\circ} = -\frac{1}{2} \times \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} \times \frac{1}{2} = -\frac{1}{4} + \frac{1}{4} = 0 = \sin 40^{\circ}$

$\Rightarrow \tan 40^{\circ} = 1$

$\frac{2 \tan 30^{\circ} (1 + \tan 40^{\circ})}{(1 - \cot 40^{\circ})^2} = \frac{\frac{2}{\sqrt{3}} (1 - \frac{1}{\sqrt{3}})}{(1 - \frac{1}{\sqrt{3}})^2} = \frac{\frac{2}{\sqrt{3}}}{1 - \frac{1}{\sqrt{3}}} = \frac{2}{\sqrt{3}} = \sqrt{3} = \tan 60^{\circ}$

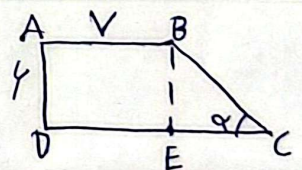
$\frac{40^{\circ}}{110} = \frac{x}{\pi} \Rightarrow x = \frac{40\pi}{110} = \frac{4\pi}{11}$

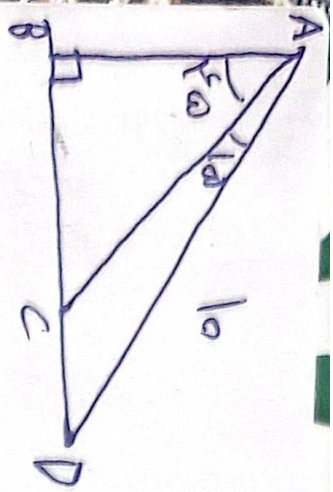
$\frac{2 \sin \theta - \cos \theta \times \frac{1}{\cos \theta}}{\sin \theta - 2 \cos \theta \times \frac{1}{\cos \theta}} = \frac{2 \tan \theta - 1}{\tan \theta - 2} = \frac{10 - 1}{10 - 2} = \frac{9}{8}$

$\sin \alpha = \frac{4}{10} \Rightarrow \frac{BE}{BC} = \frac{4}{10} \Rightarrow \frac{4}{BC} = \frac{4}{10} \Rightarrow BC = 10$

$BC^2 = BE^2 + EC^2 \Rightarrow 100 = 16 + EC^2 \Rightarrow EC = 8$

$BE = 4, EC = 8, BC = 10$





$$A = 40^\circ \Rightarrow \angle D = 100^\circ$$

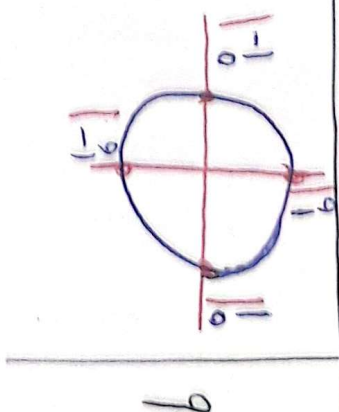
$$AB = BC \quad \left. \begin{array}{l} AB = BC \\ \angle D = 100^\circ \end{array} \right\} \Rightarrow \angle C = 50^\circ$$

$$AD^2 = AB^2 + BD^2, \quad 100 = 100 + BD^2 \Rightarrow BD = 0 \quad \checkmark$$

$$DC = BD - BC = 0 - 10 = -10$$

✓

الف = ناصه سوم
 ب = ناصه دوم



$$\left. \begin{array}{l} \tan x = \frac{1}{10} \\ \cot x = \frac{1}{\tan x} \end{array} \right\} \Rightarrow \cot x = 10$$

$$\cot^2 x + 1 = \frac{1}{\sin^2 x} \Rightarrow 10 + 1 = \frac{1}{\sin^2 x}$$

$$\Rightarrow \sin^2 x = \frac{1}{11} \Rightarrow \sin x = \frac{-1}{\sqrt{11}} = -\frac{\sqrt{11}}{11}$$

b