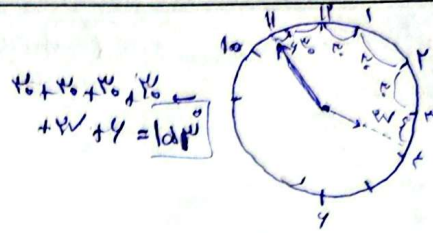


(الف)

$$|\omega, \omega m - \omega_0 h|$$

$$\left| \frac{\omega, \omega(2)}{24V} - \frac{\omega_0(3)}{90} \right| = \left| \frac{\omega_0 V}{2} \frac{\omega_0 V}{90} \right|$$

$$3\omega_0 - 2\omega V = 1\omega V$$

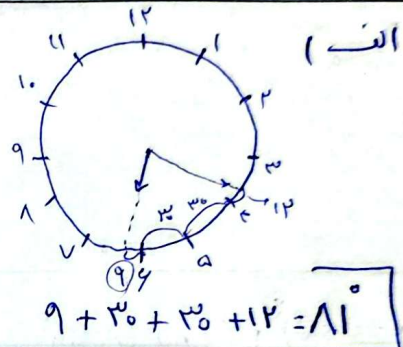


(الف)

$$|\omega, \omega m - \omega_0 h|$$

$$\left| \frac{\omega, \omega(11)}{99} - \frac{\omega_0(4)}{110} \right| = |-11|$$

$$= 11^\circ$$



(الف)

$$S = \frac{\alpha}{r} R^2 = \frac{\pi}{4} \times \frac{\pi}{4} = \frac{\pi^2}{4}$$

$$\frac{1}{4} \times R = \frac{\pi}{4} \times \pi = \frac{\pi}{4} \Rightarrow p = \frac{\pi}{4} + \frac{\pi}{4} = \frac{\pi + \pi}{4}$$

(الف)

$$S = \frac{1}{4} \times \omega \times \frac{\pi}{4} \times \frac{\pi}{4} = 10\sqrt{3}$$

$$BC = \sqrt{1^2 + 5^2 - 2(1)(5)(\frac{1}{2})} = \sqrt{21}$$

(ب)

$$p = V + \omega + \lambda = 20$$

$$\hat{B} + \hat{C} = \omega_0 \rightarrow \hat{A} = \omega_0$$

$$\frac{1\omega}{\sin \omega_0} = \frac{1\omega \sqrt{2}}{\sin \hat{B}} \rightarrow \omega_0 = \frac{\omega \sqrt{2}}{\sin \hat{B}} \rightarrow \frac{\sqrt{2}}{2} \rightarrow \hat{B} = 45^\circ = \frac{\pi}{4}$$

$$1\omega_0 - 4\omega = 1\omega \rightarrow \hat{C} = \frac{\sqrt{2}\pi}{12}$$

$$\frac{-\tan(\alpha) + \sqrt{\tan(\alpha)}}{-\tan(\alpha) - \tan(\alpha)} = \frac{\sqrt{\tan(\alpha)}}{-\sqrt{\tan(\alpha)}} = -1$$

$$\frac{\pi}{12} = 15^\circ \Rightarrow A = \frac{\sqrt{\tan(\frac{\pi}{12} - 15^\circ)} + \tan(\frac{\pi}{12} + 15^\circ)}{\sqrt{\tan(\pi - 15^\circ)} - \tan(\frac{\pi}{12} - 15^\circ)} = \frac{\sqrt{\cot(15^\circ)} - \cot(15^\circ)}{-\sqrt{\tan(15^\circ)} - \cot(15^\circ)}$$

$$\tan \frac{\pi}{12} = \alpha$$

$$\cot \frac{\pi}{12} = \frac{1}{\alpha}$$

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

$$\frac{(\sin \alpha + \cos \alpha)^2 + (\sin \alpha - \cos \alpha)^2}{\sin^2 \alpha - \cos^2 \alpha} = \frac{1}{\sin^2 \alpha + \cos^2 \alpha + \cancel{2 \sin \alpha \cos \alpha} + \sin^2 \alpha + \cos^2 \alpha - \cancel{2 \sin \alpha \cos \alpha}}$$

$$= \frac{2}{1 - \cos^2 \alpha}$$

$$1 + \tan^2 \alpha = 2 \rightarrow \tan^2 \alpha = 1$$

$$\rightarrow \frac{2}{1 - \cos^2 \alpha} = 2 \rightarrow 1 - \cos^2 \alpha = 1 \rightarrow \cos^2 \alpha = 0 \rightarrow \cos \alpha = 0$$

$$\frac{\sin^2 x - \cos^2 x + 1}{\sin^2 x + \cos^2 x - 1} = \frac{1 - \cos^2 x}{1 - \cos^2 x} = 1$$

$$\rightarrow \frac{1 - \cos^2 x}{1 - \cos^2 x} = 1$$

$$\rightarrow \sqrt{\tan^2 x - 1} = \sqrt{\tan^2 x} = \tan x = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\cos^2 \alpha = \frac{1 + \cos 2\alpha}{2} \rightarrow \cos^2 \alpha = \frac{1 + \frac{\sqrt{3}}{2}}{2} = \frac{2 + \sqrt{3}}{4} = \cos^2(15^\circ)$$

$$\sin^2 \alpha = \frac{1 - \cos 2\alpha}{2} = \frac{1 - \frac{\sqrt{3}}{2}}{2} = \frac{2 - \sqrt{3}}{4} = \sin^2(15^\circ)$$

$$\sin 45^\circ = \frac{\sqrt{2}}{2}$$

$$\cos \beta = \sin \alpha \rightarrow \beta + \alpha = 90^\circ$$