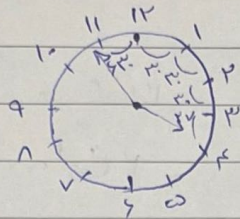


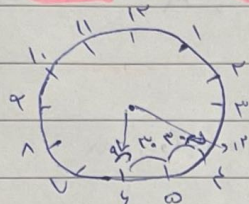
الف) ۳:۵۴'



$$۳۰ + ۳۰ + ۳۰ + ۳۰ + ۲۷ + ۶ = ۱۵۳^\circ \quad (1)$$

ب) $|\omega, \omega_{min} - ۳۰h| \rightarrow |\omega, \omega(۵۴) - ۳۰(۳)| = |۲۵۷| \quad ۳۶۰ - ۲۵۷ = ۱۰۳^\circ$

الف)



$$۹ + ۳۰ + ۳۰ + ۱۲ = ۸۱^\circ$$

$$۶:۱۸' \quad (۲)$$

ب) $|\omega, \omega_{min} - ۳۰h| = |\omega, \omega(۱۸) - ۳۰(۶)| = |-۸۱| = ۸۱^\circ$

الف) $S = \frac{\alpha}{r} R^2 \rightarrow \frac{\pi}{12} \times \frac{r}{4} = \frac{3\pi}{4}$

ب) $|\alpha R| = \frac{\pi}{6} \times \frac{r}{4} = \frac{\pi}{4} \quad (۳)$

$$P = \frac{\pi}{r} + ۶ = \frac{\pi + 12}{r}$$

الف) $S = \frac{1}{r} \times \omega \times \Lambda \times \frac{\sqrt{3}}{r} = ۱۰\sqrt{3}$

(۴)

ب) $B = \sqrt{\Lambda^2 + \omega^2 - r(\omega)(\Lambda)\frac{1}{r}} = V \quad P = V + \omega + \Lambda = ۲$

$B + (-۱۵^\circ) \rightarrow A = ۳۰^\circ$

$$\frac{1\omega}{\sin ۳۰} = \frac{1\omega\sqrt{2}}{\sin B} \rightarrow \frac{۳۰}{\sin B} = \frac{1\omega\sqrt{2}}{\sin B}$$

(۵)

$\sin B = \frac{\sqrt{2}}{2} \rightarrow B = ۴۵^\circ \quad C = ۱۵۰ - ۴۵ = ۱۰۵^\circ$

$$\frac{-\tan(\alpha) + ۳\tan(\alpha)}{-\tan(\alpha) - \tan(\alpha)} = \frac{۲\tan(\alpha)}{-۲\tan(\alpha)} = -1$$

(۶)

$$\frac{\pi}{12} = ۱۵^\circ$$

(۷)

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

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

$$A = \frac{۲\tan\left(\frac{\pi}{12} - ۱۵\right) + \tan\left(\frac{\pi}{12} + ۱۵\right)}{۲\tan(\pi - ۱۵) - \tan\left(\frac{3\pi}{4} - ۱۵\right)}$$

$$\frac{۲\cot(۱۵) - \cot(۱۵)}{-۲\tan(۱۵) - \cot(۱۵)} = \frac{\frac{1}{\alpha}}{\alpha} = \frac{1}{\alpha^2 + 1}$$

$$\frac{(\sin \alpha + \cos \alpha)^r + (\sin \alpha - \cos \alpha)^r}{\frac{\sin^r \alpha - \cos^r \alpha}{1 - \cos^r \alpha}} = \frac{\overbrace{\sin^r \alpha + \cos^r \alpha}^1 + \overbrace{r \sin^{r-1} \alpha \cos \alpha - \sin^r \alpha \cos^r \alpha}^1}{1 - r \cos^r \alpha} \quad (1)$$

$$(1 + \tan^r \alpha = r \rightarrow \tan^r \alpha = \omega) \quad \frac{r}{1 - r \cos^r \alpha} = r \rightarrow r = r - r \cos^r \alpha$$

$$-r \cos^r \alpha = -1 \quad \cos^r \alpha = \frac{1}{r}$$

$$\frac{\sin^r \alpha - r \cos^r \alpha + 1}{\sin^r \alpha + r \cos^r \alpha - 1} = r \xrightarrow{\div \cos^r} \frac{\tan^r \alpha - r + \frac{1}{\cos^r \alpha}}{\tan^r \alpha + r - \frac{1}{\cos^r \alpha}} \xrightarrow{1 + \tan^r \alpha} \quad (9)$$

$$\frac{r \tan^r \alpha - 1}{1} = r \quad r \tan^r \alpha - 1 = r$$

$$r \tan^r \alpha = \omega \quad \tan^r \alpha = \frac{\omega}{r} = r/2$$

$$\text{أ) } \cos(r/2) \rightarrow \cos^r \alpha = \frac{1 + \cos r/2}{r} \rightarrow \cos^r = \frac{1 + \frac{\sqrt{r}}{r}}{r} = \frac{r + \sqrt{r}}{r} \quad (10)$$

$$\text{ب) } \sin(r/2) \rightarrow \sin^r \alpha = \frac{1 - \cos r/2}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r}$$

$$\sin(r/2) = \pm \sqrt{\frac{r + \sqrt{r}}{r}}$$

