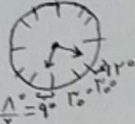


الف)  $\rightarrow 30^\circ + 30^\circ + 30^\circ + 30^\circ + 27^\circ + 6^\circ = 153^\circ$ ✓

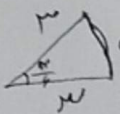
ب) $\alpha = |\omega/\omega_m - r_0 h| = |\omega/\omega \times \Delta F - r_0 \times r| = |29V - 90| = |20V| = 20V^\circ$
 $390 - 20V = 153^\circ$ ✓

الف)  $\rightarrow 30^\circ + 30^\circ + 12^\circ + 9^\circ = 81^\circ$ ✓

ب) $\alpha = |\omega/\omega_m - r_0 h| = |\omega/\omega \times 11 - r_0 \times 9| = |99 - 110| = |-11| = 11^\circ$ ✓

الف) $S = \frac{\alpha}{r} R^2 = \frac{30}{r} \times r^2 = 10 \times 9 = 90$

$\frac{\pi}{6} = 30^\circ$

ب)  $\rightarrow 3 + 3 + 0/\omega \pi = 9 + 0/\omega \pi = \frac{11\pi}{r}$ ✓

مساحت دایره $9 \times \pi = 9\pi$

$\frac{9\pi}{12} = 0/\omega \pi$

الف) $S = \frac{1}{2} ab \sin \alpha = \frac{1}{2} \times \omega \times \sqrt{3} \times \sin 60^\circ = \omega \times \sqrt{3} \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$ ✓
 $\sin 60^\circ = \frac{\sqrt{3}}{2}$

ب) $C = \sqrt{a^2 + b^2 - 2ab \cos \alpha} = \sqrt{\omega^2 + 9 - \omega \times 3 \times \frac{1}{2}} = \sqrt{19 - 4.5} = \sqrt{14.5} = \pm V$

$\cos 60^\circ = \frac{1}{2}$

مساحت $= \omega + 11 + V = 20$

چون طول نمی تواند
منفی باشد $\Rightarrow C = +V$

$a \cos B + b \cos A = c \Rightarrow 10 \times \cos C + 3 \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$

$A^\wedge = 110 - (B^\wedge + C^\wedge) = 10^\circ$

$\frac{BC}{\sin A^\wedge} = \frac{AC}{\sin B^\wedge} \rightarrow \frac{10}{\sin 10^\circ} = \frac{10\sqrt{3}}{\sin B^\wedge} \rightarrow \sin B^\wedge = \frac{\sqrt{3}}{2} \rightarrow B^\wedge = 60^\circ$
 $C^\wedge = 10^\circ$

$\frac{0}{110^\circ} = \frac{Rad}{\pi} \rightarrow B^\wedge = 10 \times \frac{\pi}{110} = \frac{\pi}{11}$
 $C^\wedge = 10 \times \frac{\pi}{110} = \frac{\pi}{11}$

$$\frac{\tan(\pi - \alpha) + r \tan(\pi + \alpha)}{\tan(\pi - \alpha) - \tan(\pi + \alpha)} = \frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} =$$

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

Q

$$\tan \frac{\pi}{r} = a \Rightarrow \tan \omega = a$$

$$\frac{r}{r + \sqrt{r}} + \frac{r}{r - 1}$$

$$\frac{\pi}{r} \times \frac{1}{\pi} = \omega$$

$$\tan \omega = \frac{1}{r}$$

$$\tan \omega = \frac{r}{1 - \frac{1}{r}} = \frac{r}{\frac{r-1}{r}} = \frac{r^2}{r-1}$$

$$A = \frac{r \tan(\frac{\pi}{r} - \omega) + \tan(\frac{\pi}{r} + \omega)}{r \tan(\pi - \omega) - \tan(\frac{\pi}{r} - \omega)} = \frac{r \cot \omega - \cot \omega}{-r \tan \omega - \cot \omega} = \frac{\cot \omega}{-r \tan \omega - \cot \omega} = \frac{\frac{1}{a}}{-ra - \frac{1}{a}} = \frac{-1}{ra^2 + 1}$$

Q

$$\frac{\sin^2 + \cos^2 + r \sin \cos + \sin^2 + \cos^2 - r \sin \cos}{\sin^2 - \cos^2} = \frac{r \sin^2 + r \cos^2}{\sin^2 - \cos^2} = \frac{r(\sin^2 + \cos^2)}{\sin^2 - \cos^2} = r$$

$$\Rightarrow r(\sin^2 + \cos^2) = r \sin^2 - r \cos^2 \Rightarrow r \sin^2 - r \sin^2 = -r \cos^2 - r \cos^2 \Rightarrow -\sin^2 = -2 \cos^2$$

$$\Rightarrow \tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \omega$$

✓

Q

$$\Rightarrow \frac{\sin^2}{\cos^2} = \omega$$

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

$$\Rightarrow r \sin^2 x = 2 \cos^2 x \Rightarrow \frac{\sin^2 x}{\cos^2 x} = \frac{2}{r} = \omega = \tan^2 x$$

✓

Q

$$\cos(r \omega) = \cos \frac{\pi}{r} = \cos^2 \frac{\pi}{2r} - 1 + \cos^2 \frac{\pi}{2r} \Rightarrow \frac{\sqrt{r^2 + r}}{r} = \cos^2 \frac{\pi}{2r}$$

$$\Rightarrow \cos^2 \frac{\pi}{2r} = \frac{\sqrt{r^2 + r}}{r}$$

Q

$$\sin(r \omega) = \sin \frac{\pi}{r} = 1 - \sin^2 \frac{\pi}{2r} - \sin^2 \frac{\pi}{2r} \Rightarrow \frac{\sqrt{r^2 - r}}{r} = -\sin^2 \frac{\pi}{2r}$$

$$\Rightarrow \frac{r - \sqrt{r^2 - r}}{r} = \sin^2 \frac{\pi}{2r}$$

$$\cos(r \omega) = \cos^2 \frac{\pi}{2r} = \frac{1 + \cos \frac{\pi}{r}}{2}$$

$$\cos^2 \frac{\pi}{2r} = \frac{1 + \cos \frac{\pi}{r}}{2} \rightarrow \cos^2 \frac{\pi}{2r} = \frac{1 + \frac{\sqrt{r}}{r}}{2}$$

$$\cos \frac{\pi}{2r} = \sqrt{\frac{r + \sqrt{r}}{2r}} = \frac{\sqrt{r + \sqrt{r}}}{\sqrt{2}}$$

⊕

$$\sin(r \omega) = \sin^2 \frac{\pi}{2r} = \frac{1 - \cos \frac{\pi}{r}}{2}$$

$$\sin^2 \frac{\pi}{2r} = \frac{1 - \cos \frac{\pi}{r}}{2} = \frac{1 - (-\frac{\sqrt{r}}{r})}{2}$$

$$\sin \frac{\pi}{2r} = \sqrt{\frac{r + \sqrt{r}}{2r}} = \frac{\sqrt{r + \sqrt{r}}}{\sqrt{2}}$$

⊕