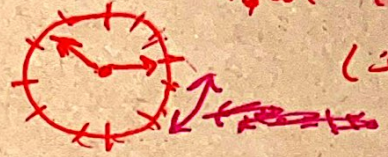


(1) ω ω



(الف)

(ب)

$$\Theta = |\omega \times h - \omega / a \times m| \rightarrow |90 - 194.4| = 104.4$$

(2)

(الف)

$$\boxed{11^\circ} = |\omega \times h - \omega / a \times h|$$

(ب)

(3)

$$|AB| = aR = \frac{\pi}{4} \times \omega = \frac{\pi}{4} = 2 \quad (ب)$$

$$\omega \times \omega \times 90 = \boxed{194.4}$$

$$S_{AOB} = \frac{a}{r} R^2 = \frac{\pi}{4} = \frac{\pi}{4} \times 9 \quad (الف)$$

$$\boxed{\frac{\pi \times 9}{4}}$$

$$S_{ABC} = \boxed{10\sqrt{2}} = \frac{1}{2} \times \frac{\sqrt{2}}{1} \leftarrow \frac{1}{2} \times \omega \times \omega \times \sin 90 \quad (الف) \quad (4)$$

(ب)

$$BC = \sqrt{E9} \approx BC = \sqrt{44 + 2\omega \times (\omega \times \frac{1}{2})} \leftarrow C = \sqrt{a^2 + b^2 - 2ab \cos \alpha}$$

$$\boxed{\sqrt{2}}$$

$$A = \omega \quad \leftarrow \quad BC = 1\omega, A = 1\omega\sqrt{2}, B + C = 100^\circ \quad (5)$$

$$B = \omega \quad \sin B = \frac{\sqrt{2}}{2} = \frac{1\omega}{\frac{1}{2}} = \frac{1\omega\sqrt{2}}{\sin B} = \frac{\omega}{\sin A} = \frac{\omega}{\sin 90} = \frac{C}{\sin C}$$

$$\boxed{\frac{\pi}{4}} = B$$

$$C = 100 - 80 = 20 = \frac{\sqrt{2}}{1.2} = C$$

$$\begin{aligned}\tan(\pi - \alpha) &= -\tan \alpha \\ \tan(\pi + \alpha) &= +\tan \alpha \\ \tan(2\pi - \alpha) &= -\tan \alpha \\ \tan(2\pi + \alpha) &= +\tan \alpha\end{aligned}$$

$$\frac{\frac{+\tan \alpha}{-\tan \alpha} \cdot \frac{+\tan \alpha}{-\tan \alpha}}{\frac{-\tan \alpha}{-\tan \alpha}} = \frac{1}{1} = 1$$

(6)

$$\rho = \frac{r \tan \nu \omega + \tan 10^\circ}{r \tan 10^\circ - \tan \nu \omega}$$

$$\tan \frac{\pi}{12} = \frac{1}{\sqrt{3}} = \frac{1}{1.732} \approx 0.577$$

$$\nu \omega \approx 90^\circ$$

$$\tan \nu \omega = \cot 10^\circ = \frac{1}{\tan 10^\circ} = \frac{1}{0.176} \approx 5.67$$

$$\tan 10^\circ = \tan(90^\circ - 80^\circ) = -\cot 80^\circ = -\frac{1}{\tan 80^\circ} = -\frac{1}{5.67} \approx -0.176$$

$$\begin{aligned}\tan 14^\circ &= \tan(10^\circ + 4^\circ) = -\tan 10^\circ = -0.176 \\ \tan 80^\circ &= \tan(10^\circ + 70^\circ) = \tan 10^\circ = 0.176\end{aligned}$$

$$\frac{r(\frac{1}{a}) - \frac{1}{a}}{r(-\frac{1}{a}) - \frac{1}{a}} = \frac{\frac{1}{a}(r-1)}{\frac{1}{a}(-r-1)} = \frac{1}{-(r+1)}$$

$$\tan \nu = \frac{\sin \nu}{\cos \nu} = \frac{(\sin \nu - \cos \nu)}{(\sin \nu + \cos \nu)}$$

(8)

$$\tan \nu = ? \rightarrow \tan \nu = \frac{\sin \nu}{\cos \nu}$$

$$\sin \nu = r + \cos \nu \rightarrow \frac{r + \cos \nu}{\cos \nu}$$

$$\begin{aligned}\cos \nu &= \frac{\sin \nu - 1}{r} = f \\ \sin \nu &= r + \cos \nu \rightarrow \sin \nu = r + \frac{\sin \nu - 1}{r}\end{aligned}$$

(9)

$$\begin{aligned}\frac{1}{r} &= \frac{1}{r} - \frac{1}{r} \\ \frac{r(\frac{1}{r}) - 1}{\frac{1}{r}} &= \cos \nu \\ \cos \nu &= \frac{1 - r}{r}\end{aligned}$$

$$\tan \nu = \frac{\sin \nu}{\cos \nu} = \frac{\frac{1}{r}}{\frac{1-r}{r}} = \frac{1}{1-r}$$

$$\begin{aligned}\cos(45^\circ/\omega) &\rightarrow \cos^2 \alpha = \frac{1 + \cos 2\alpha}{2} \rightarrow \cos(45^\circ/\omega) = \sqrt{\frac{1 + \cos 2\alpha}{2}} \\ \sin(45^\circ/\omega) &\rightarrow \sin^2 \alpha = \frac{1 - \cos 2\alpha}{2} \rightarrow \sin(45^\circ/\omega) = \sqrt{\frac{1 - \cos 2\alpha}{2}}\end{aligned}$$

(10)