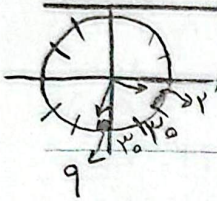


$$\frac{\omega'}{\omega} = \frac{r_0}{r}$$

$$10 + 10 + 10 = 30 \quad (الف)$$

$$30 - 10 = 20 \quad r_0 = 10$$

$$(\omega, \omega \times 10) - (10 \times 10) = 10 \times 10 \quad (ب)$$



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$$S = \frac{\pi}{4} \times R^2 = \frac{\pi}{4} \times 10^2 = \frac{9\pi}{4} = \frac{3\pi}{4} \quad (الف)$$

$$AB = \frac{\pi}{4} \times R = \frac{\pi}{4} \times 10 = \frac{\pi}{4} \quad P = \frac{4 + \pi}{4} \quad (ب)$$

$$S_{\Delta} = \frac{1}{2} ab \sin \alpha = \frac{1}{2} \times 10 \times 10 \times \sin 30^\circ = 10 \times \frac{\sqrt{3}}{2} = 5\sqrt{3} \quad (الف)$$

$$BC = \sqrt{\omega^2 + 10^2 - 2 \times \omega \times 10 \times \frac{1}{2}} = \sqrt{100 + 100 - 100} = \sqrt{100} = 10 \quad (ب)$$

$$10 + 10 + 10 = 30 \quad (ب)$$

$$\hat{B} + \hat{C} = 180^\circ \rightarrow \hat{A} = 30^\circ \quad \frac{10}{\sin 30^\circ} = \frac{10\sqrt{2}}{\sin B} \quad (د)$$

$$\frac{10\sqrt{2} \times \frac{1}{2}}{10} = \frac{\sqrt{2}}{2} \rightarrow \sin B = \frac{\sqrt{2}}{2} \rightarrow B = 45^\circ / B = 135^\circ$$

$$180^\circ - 30^\circ - 45^\circ = 105^\circ \rightarrow B = 45^\circ = \frac{\pi}{4} \quad (ب)$$

$$C = 10\omega = 10 \times \frac{\pi}{110} = \frac{V\pi}{11} \quad (الف)$$

$$\tan(\pi - \alpha) = -\tan \alpha$$

$$\tan(r\pi - \alpha) = -\tan \alpha$$

-4

$$r \tan(\pi + \alpha) = r \tan \alpha$$

$$\tan(r\pi + \alpha) = \tan \alpha$$

$$\frac{-\tan \alpha + r \tan \alpha}{-\tan \alpha - \tan \alpha} = \frac{r \tan \alpha}{-r \tan \alpha} = \boxed{-1} \checkmark$$

$$\frac{\pi}{r} \times \frac{110}{\pi} = 10^\circ$$

$$Vd = 90 - 10 \rightarrow \tan Vd^\circ = \frac{1}{\tan 10^\circ} = \frac{1}{a}$$

-V

$$\tan 10^\circ = \tan(90 + 10) = -\cot 10^\circ = -\frac{1}{a}$$

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

$$\tan 14^\circ = \tan(110 - 10) = -\tan 10^\circ = -\frac{1}{a}$$

$$r\left(-\frac{1}{a}\right) - \frac{1}{a} = -ra - \frac{1}{a} = \frac{-ra-1}{a}$$

$$\tan r d^\circ = \tan(110 + Vd) = \tan Vd^\circ = \frac{1}{a}$$

$$\frac{\frac{1}{a}}{\frac{-ra-1}{a}} = \frac{1}{-ra-1} = \boxed{-\frac{1}{ra+1}} \checkmark$$

$$\frac{A}{B} + \frac{B}{A} = \frac{A^2 + B^2}{AB}$$

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

1

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

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

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

$$\sin^2 x = \tan^2 x \cos^2 x$$

$$\tan^2 x \cos^2 x - \cos^2 x = \frac{r}{r}$$

$$\cos^2 x (\tan^2 x - 1) = \frac{r}{r}$$

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

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

$$\frac{1}{1 + \tan^2 x} (\tan^2 x - 1) = \frac{\tan^2 x - 1}{\tan^2 x + 1} = \frac{r}{r}$$

$$r \tan^2 x - r = r \tan^2 x + r \quad \boxed{\tan^2 x = 1} \checkmark$$

$$\sin^2 \alpha = 1 - \cos^2 \alpha$$

-9

$$(1 - \cos^2 \alpha) - 2\cos^2 \alpha + 1 = 2 - 3\cos^2 \alpha$$

$$\frac{2 - 3\cos^2 \alpha}{\cos^2 \alpha} = 4$$

$$(1 - \cos^2 \alpha) + 2\cos^2 \alpha - 1 = \cos^2 \alpha$$

$$2\cos^2 \alpha = 2 - 3\cos^2 \alpha$$

$$\cos^2 \alpha = \frac{2}{5}$$

$$\tan^2 \alpha = \frac{1 - \frac{2}{5}}{\frac{2}{5}} = \frac{\frac{3}{5}}{\frac{2}{5}} = \frac{3}{2} = 1.5$$

$$\cos \frac{\alpha}{2} = \sqrt{\frac{1 + \cos \alpha}{2}} = \sqrt{\frac{1 + \frac{2}{5}}{2}} = \sqrt{\frac{\frac{7}{5}}{2}} = \sqrt{\frac{7}{10}} \quad (10 - \text{النقطة})$$

$$= \sqrt{\frac{7 + \sqrt{7}}{10}}$$

$$\sin(90^\circ - 2\alpha) = \cos 2\alpha$$

$$= \sqrt{\frac{7 + \sqrt{7}}{10}}$$