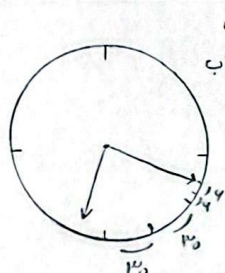


۳: ۱۳۰
۱۳۰ × ۴ = ۱۱۰ + ۴ + ۲۷ = ۱۴۱
۱۳۰ ÷ ۲ = ۶۵ → جابجایی عقربه ساعت به سمت

ب) $|\omega \omega m - 130 H| = \frac{\omega \omega \times F - 130 \times 3}{297 - 90} = 20 V \rightarrow 130 - 20 V = 110$



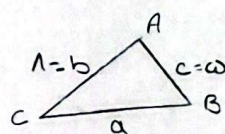
۴: ۱۱
۱۳۰ × ۲ = ۴۰ + ۱۱ + ۹ = ۸۱
۱۱ ÷ ۲ = ۵.۵ → جابجایی عقربه ساعت به سمت

ب) $|\omega \omega m - 130 H| = \frac{130 \times 11 - 130 \times 4}{99 - 180} = 11$

الف) → مساحت: $\frac{\alpha R^2}{2} = \frac{\frac{\pi}{4} \times 1^2 \times 3}{2} = \frac{9\pi}{8} = \frac{9 \times 3.14}{8} = \frac{28.26}{8} = 3.53$ $\alpha = \frac{\pi}{4}$ $R = 3 \leftarrow$ رادیوس

ب) → محیط = $\alpha R + 2R = \frac{\pi}{4} \times 3 + 2 \times 3 = \frac{3\pi}{4} + 6$

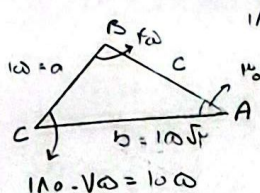
ب) → $S = \frac{1}{2} \times \omega \times A \times \sin 45 = 10\sqrt{2}$



$a = \sqrt{b^2 + c^2 - 2bc \cos A}$

$a = \sqrt{4^2 + 1^2 - 2 \times 4 \times 1 \times \frac{1}{2}} = \sqrt{13} = 3.61$

$a + b + c = 3.61 + 4 + 1 = 8.61$



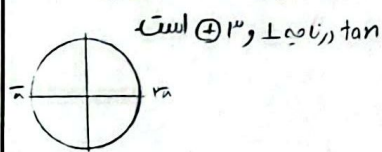
$130 - 100 = 30$

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \rightarrow \frac{10}{\frac{1}{2}} = \frac{10\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{10\sqrt{2}}{20} = \frac{\sqrt{2}}{2} \rightarrow B = 45$

$\hat{B} \rightarrow F\omega = \frac{\pi}{F}$

$\hat{C} \rightarrow 10\omega \Rightarrow \frac{10\omega}{130} = \frac{R}{\pi} \rightarrow 10\omega\pi = 130R \rightarrow R = \frac{10\omega\pi}{130} = \frac{\omega\pi}{13}$

$$\frac{\tan(\bar{n}-\alpha) + r \tan(\bar{n}+\alpha)}{\tan(r\bar{n}-\alpha) - \tan(r\bar{n}+\alpha)} = \frac{-\tan\alpha + r \tan\alpha}{-\tan\alpha - \tan\alpha} = \frac{r \tan\alpha}{-r \tan\alpha} = -1$$



6

$$\frac{r \tan 90^\circ + \tan 10^\circ}{r \tan 14^\circ - \tan 10^\circ} = \frac{r \tan(90-10) + \tan(90+10)}{r \tan(110-10) - \tan 10^\circ} = \frac{\frac{r}{a} - \frac{1}{a}}{-\frac{r}{a} - \frac{1}{a}} = \frac{\frac{r}{a} - \frac{1}{a}}{-\frac{r}{a} - \frac{1}{a}} = \frac{1}{-1} = -1$$

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

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

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

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

7

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

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

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

$$\frac{r}{\sin^2 x - \cos^2 x} = \frac{r^2}{1} \Rightarrow \frac{r}{\sin^2 x - 1} = \frac{r^2}{1} \Rightarrow 4 \sin^2 x - 1 = r \Rightarrow 4 \sin^2 x = r + 1 \Rightarrow \sin^2 x = \frac{r+1}{4}, \cos^2 x = \frac{4}{4} - \frac{r+1}{4} = \frac{3-r}{4}$$

$$\tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{r+1}{4}}{\frac{3-r}{4}} = \frac{r+1}{3-r} = \left[\frac{r+1}{3-r} \right]$$

8

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

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

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

$$r \sin^2 x - 1 = -r \sin^2 x + r$$

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

$$\tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{r+1}{2}}{\frac{1-r}{2}} = \frac{r+1}{1-r} = \left[\frac{r+1}{1-r} \right]$$

9

$$\omega) \cos(r\mu, \omega)$$

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

$$\cos^2 r\mu, \omega = \frac{1 + \cos 2r\mu, \omega}{2}$$

$$\cos^2 r\mu, \omega = \frac{1 + \frac{r}{\sqrt{r}}}{2} = \frac{1 + \sqrt{r}}{2}$$

$$\cos^2 r\mu, \omega = \frac{1 + \sqrt{r}}{2}$$

$$\omega) \sin(r\mu, \omega)$$

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

$$\sin^2 r\mu, \omega = \frac{1 - \cos 2r\mu, \omega}{2} = \frac{1 - \frac{r}{\sqrt{r}}}{2} = \frac{1 - \sqrt{r}}{2} = \frac{1 - \sqrt{r}}{2}$$

$$\sin^2 r\mu, \omega = \frac{1 - \sqrt{r}}{2}$$

10