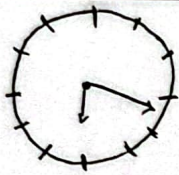


$$\left. \begin{aligned} 4 \times 30 &= 120 \\ 5 \times 4 &= 20 \\ \frac{5 \times 4}{2} &= 2V \rightarrow 30 - 2V = 10 \end{aligned} \right\} \begin{aligned} 120 + 30 + 3 &= 153^\circ \end{aligned} \quad \text{(الف)}$$

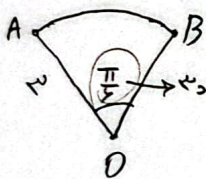
$$\begin{aligned} |150m - 30h| &= |150 \times 5 - 30 \times 4| = 24V - 90 = 20V \\ 30 - 20V &= 153^\circ \end{aligned} \quad \text{(ب)}$$



$$\left. \begin{aligned} 2 \times 30 &= 60 \\ \frac{11}{2} &= 4 \rightarrow 30 - 4 = 21 \end{aligned} \right\} \begin{aligned} 60 + 21 &= 11^\circ \end{aligned} \quad \text{(الف)}$$

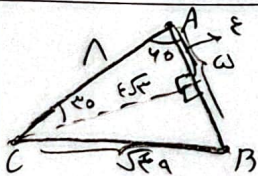
$$\Rightarrow |150m - 30h| \quad \text{(ب)}$$

$$\hookrightarrow |150 \times 11 - 30 \times 4| = |49 - 110| = 11^\circ$$



$$\begin{aligned} S &= \frac{\alpha}{r} R^2 = \frac{30}{2} \times 9 = 135 \quad \text{(الف)} \\ &\hookrightarrow \frac{\pi}{2} \times 3^2 = \frac{\pi}{2} \times 9 = \frac{9\pi}{2} \end{aligned}$$

$$\begin{aligned} \widehat{AB} &= \alpha R \rightarrow \frac{\pi}{2} \times 3 = \frac{\pi}{2} \quad \text{(ب)} \\ &\hookrightarrow 30 \times 3 = 90 \end{aligned} \quad \begin{aligned} P &= 3 + 3 + \frac{\pi}{2} = 4 + \frac{\pi}{2} \\ &\hookrightarrow 40 + 4 = 94 \end{aligned}$$

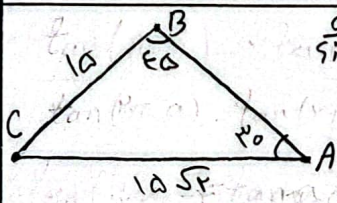


$$S = \frac{1}{2} \times AC \times AB \times \sin \theta \rightarrow 10\sqrt{3} \quad \text{(الف)}$$

$$30^\circ \text{ زاویه } \rightarrow \frac{1}{2} \times 1 = \frac{1}{2}$$

$$45^\circ \text{ زاویه } \rightarrow \frac{\sqrt{3}}{2} \times 1 = \frac{\sqrt{3}}{2}$$

$$P = 1 + 4 + \sqrt{3} = 13 + \sqrt{3}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{10}{\sin 30} = \frac{10\sqrt{2}}{\sin B}$$

$$\frac{10}{\frac{1}{2}} = \frac{10\sqrt{2}}{\sin B} \rightarrow \sin B = \frac{10\sqrt{2}}{20} = \frac{\sqrt{2}}{2} \rightarrow B = 45^\circ$$

$$\hat{C} = 180 - (45 + 30) = 105$$

$$\tan(-a) = -\tan(a)$$

$$\frac{\tan(\pi-a) + \tan(\pi+a)}{\tan(\pi-a) - \tan(\pi+a)} \Rightarrow \frac{+\tan a}{-\tan a} = -1$$

$$\frac{\tan(\pi-a) - \tan(\pi+a)}{-\tan(a) - \tan(a)}$$

$$\tan(\pi-a) \rightarrow -\tan a$$

$$\tan(\pi-a) \rightarrow \tan(-a) \rightarrow -\tan a$$

$$\tan \frac{\pi}{4} = \tan 45^\circ = a \quad \tan 45^\circ = \cot 45^\circ = \frac{1}{\tan 45^\circ} = \frac{1}{a}$$

$$\tan 135^\circ = \tan(90^\circ + 45^\circ) = -\cot 45^\circ = -\frac{1}{a}$$

$$\tan 135^\circ = \tan(180^\circ - 45^\circ) = -\tan 45^\circ = -a$$

$$\tan 45^\circ = \tan(180^\circ + 45^\circ) = \tan 45^\circ = \frac{1}{a}$$

$$\frac{r \times (\frac{1}{a}) + (-\frac{1}{a})}{r(-a) - \frac{1}{a}} = \frac{\frac{r}{a} - \frac{1}{a}}{-ra - \frac{1}{a}} = \frac{\frac{r-1}{a}}{\frac{-ra^2-1}{a}} = \frac{r-1}{-ra^2-1}$$

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

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

$$\sin^2 x + \cos^2 x = 1$$

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

$$\tan x = \sin x$$

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

$$2 - 2\cos^2 x = 2\cos^2 x \Rightarrow 2 = 4\cos^2 x \Rightarrow \cos^2 x = \frac{1}{2}$$

$$\sin^2 x = 1 - \frac{1}{2} = \frac{1}{2} \Rightarrow \tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{1}{2}}{\frac{1}{2}} = 1$$

$$\cos^2 x = \frac{1 + \cos 2x}{2} \Rightarrow \cos^2 45^\circ = \frac{1 + \cos 90^\circ}{2}$$

$$\cos^2 45^\circ = \frac{1 + \frac{\sqrt{2}}{2}}{2} = \frac{2 + \sqrt{2}}{4} \Rightarrow \cos 45^\circ = \sqrt{\frac{2 + \sqrt{2}}{4}} = \frac{\sqrt{2 + \sqrt{2}}}{2}$$

$$\sin 45^\circ = \cos(90^\circ - 45^\circ) = \cos 45^\circ = \frac{\sqrt{2 + \sqrt{2}}}{2}$$