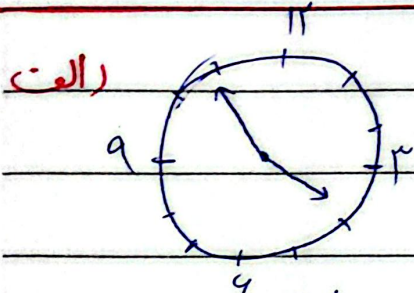


هم (حتر) نصیب

بنام پروردگار نور و علم

۲۰

زکا رفتی



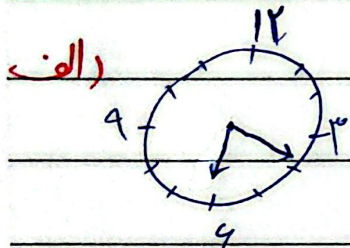
$$(5 \times 30^\circ) + 6^\circ \times 9^\circ = 153^\circ$$

-۱

ب

$$5, \Delta m - 30h \Rightarrow \pi = \frac{5 \times 30^\circ + 6^\circ \times 9^\circ}{19^\circ} = 20V$$

$$30^\circ \times 20V = 153^\circ$$



$$\frac{2 \times 30^\circ}{9^\circ} + \frac{2 \times 6^\circ}{12^\circ} + \frac{1 \times 9^\circ}{2} = 11^\circ$$

-۲

ب

$$\pi = |5, \Delta m_{min} - 30h| \Rightarrow \pi = \frac{5 \times 30^\circ + 6^\circ \times 9^\circ}{99^\circ} = 11^\circ$$

الف

$$S = \frac{1}{2} \times R^2 \Rightarrow \frac{12}{2} \times (3^\circ)^2 = 9 \times \frac{\pi}{4} = \frac{3\pi}{4}$$

-۳

ب

$$P = 3 + 3 + 12 \times \frac{\pi}{4} = 9 \times \frac{\pi}{4}$$

الف

$$S = \frac{1}{2} \times AC \times AB \times \sin \hat{A} = \frac{1}{2} \times 10 \times 10 \times \frac{\sqrt{3}}{2} = 10\sqrt{3}$$

-۴

ب

$$BC = \sqrt{(11^\circ)^2 + (9^\circ)^2 - 2 \times 11^\circ \times 9^\circ \times \cos 5^\circ} = V$$

$$P = 10 + 11 + V = 20$$

$$\hat{A} = 110^\circ - 10^\circ = 3^\circ$$

$$\frac{BC}{\sin 3^\circ} = \frac{BA}{\sin \hat{B}} \Rightarrow \frac{10}{\sin 3^\circ} = \frac{10\sqrt{3}}{\sin \hat{B}}$$

-۵

$$\sin \hat{B} = \frac{\sqrt{3}}{2} \Rightarrow \hat{B} = 60^\circ \quad \left. \begin{array}{l} C = 110^\circ - (3^\circ + 60^\circ) = 47^\circ \\ B = 60^\circ = \frac{\pi}{3} \\ C = 47^\circ = \frac{47\pi}{180} \end{array} \right\}$$

زکا رفتی

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

-9

$$\tan \frac{\pi}{r} = a \quad \frac{\pi}{r} = \frac{D}{180} \Rightarrow D = \frac{180}{r} = 18^\circ, \quad \tan(\pi - 18^\circ) + \tan(\pi + 18^\circ) = -1$$

$$\frac{r \cot 18^\circ - \cot 18^\circ}{-r \tan 18^\circ - \cot 18^\circ} = \frac{r - 1}{-r - 1} = -1$$

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

$$r \sin^2 \pi - r \cos^2 \pi = r \sin^2 \pi + \cos^2 \pi \rightarrow \sin^2 \pi = \cos^2 \pi \quad (\tan^2 \pi = 1)$$

$$\frac{\sin^2 \pi - r \cos^2 \pi + 1}{\sin^2 \pi + r \cos^2 \pi - 1} = r \rightarrow \frac{\tan^2 \pi - r + 1 + \tan^2 \pi}{\tan^2 \pi + r - 1 - \tan^2 \pi} = r$$

-9

$$r \tan^2 \pi - 1 = r \rightarrow \tan^2 \pi = \frac{1}{r} \Rightarrow \tan \pi = \frac{1}{\sqrt{r}}$$

$$\text{الف) } \cos^2 \frac{\pi}{r} = \frac{1 + \cos^2 \pi}{2} = \frac{1 + \frac{1}{r}}{2} \rightarrow \cos^2 \frac{\pi}{r} = \frac{r + 1}{2r}$$

-10

$$\text{ب) } \sin^2 \frac{\pi}{r} = \frac{1 - \cos^2 \pi}{2} = \frac{1 - \frac{1}{r}}{2} \rightarrow \sin^2 \frac{\pi}{r} = \frac{r - 1}{2r}$$