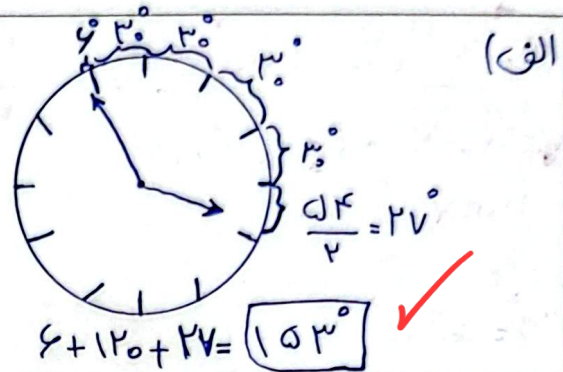


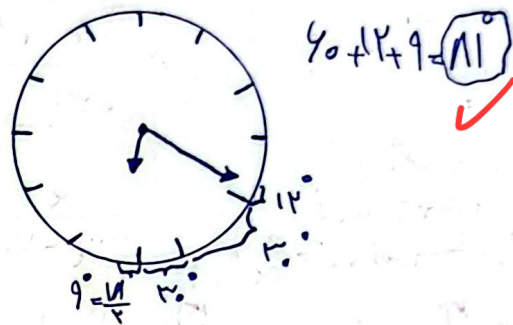
$$|5,4m - 30h| = \left| \left(\frac{55}{10} \times 4 \right) - (30 \times 3) \right| = 153^\circ$$

(۲)



$$|11 \times 0,4 - (30 \times 2)| = 11^\circ$$

(۲)



$$P_{ADO} = \widehat{AB} + \widehat{AO} + \widehat{BO} \Rightarrow$$

$$|AB| = \alpha r = \frac{\pi}{2} \times r = \frac{\pi}{2} \Rightarrow$$

$$P_{ABO} = \frac{\pi}{2} + r + r = 4 + \frac{\pi}{2}$$

(ب)

$$S_{ABO} = \frac{\alpha r^2}{2} \Rightarrow$$

$$S_{ABO} = \frac{\frac{\pi}{2} \times (r^2)}{2} = \frac{\pi r^2}{4}$$

(۲)

(الف)

۳

$$P_{ABC} = AC + AB + BC \Rightarrow$$

$$AC = 1$$

$$AB = a$$

$$BC = \sqrt{(1)^2 + (a)^2 - 1 \times a \times \cos 40^\circ} = \sqrt{49} = 7$$

$$P_{ABC} = 1 + 1 + 7 = 20$$

(ب)

$$S_{ABC} = AB \times AC \times \sin A \times \frac{1}{2} \Rightarrow$$

$$S_{ABC} = 1 \times 1 \times \frac{1}{2} \times \sqrt{3} = \frac{\sqrt{3}}{2}$$

(۲)

۴

$$\hat{A} = 180 - (\hat{B} + \hat{C}) = 30^\circ \xrightarrow[\text{سینوس ها}]{\text{طبق قضیه}} \frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{1}{\frac{1}{2}} = \frac{1 \times \sqrt{3}}{\sin B} \Rightarrow$$

$$\sin B = \frac{\sqrt{3}}{2} \Rightarrow \hat{B} = 60^\circ \Rightarrow \hat{C} = 104^\circ$$

$$\hat{B} = \frac{\pi}{3}$$

$$\hat{C} = \frac{\pi}{12}$$

(۲)

۵

$$\frac{\cancel{\tan(\pi-\alpha)} + \cancel{r}\tan(\pi+\alpha)}{\cancel{\tan(\pi-\alpha)} - \cancel{\tan(\pi+\alpha)}} = \frac{\cancel{r}\tan\alpha}{-\cancel{r}\tan\alpha} = \boxed{-1} \quad \checkmark \quad \textcircled{r}$$

$$\left. \begin{aligned} \tan d^\circ &= \cot l^\circ \\ \tan l^\circ &= -\cot d^\circ \\ \tan l^\circ &= -\tan d^\circ \\ \tan r^\circ &= \cot l^\circ \\ \frac{r}{r} = 1^\circ &\rightarrow \tan d^\circ = \frac{r}{r} \\ &\rightarrow \cot l^\circ = \frac{1}{r} \end{aligned} \right\} \Rightarrow \frac{\cot l^\circ - \cot l^\circ}{-r \tan d^\circ - \cot l^\circ} = \frac{\cot l^\circ}{-r \tan d^\circ - \cot l^\circ} = \frac{1}{-r \tan d^\circ - \cot l^\circ} = \frac{1}{-\frac{1}{r} - r} = \frac{1}{-\frac{1+r^2}{r}} = \boxed{-\frac{r}{r^2+1}} \quad \checkmark \quad \textcircled{r}$$

$$\frac{\cancel{\sin^r u} + \cancel{\cos^r u} + \cancel{\sin^r u} \cos^r u + \cancel{\sin^r u} \cos^r u - \cancel{\sin^r u} \cos^r u}{\sin^r u - \cos^r u} = \frac{r}{\sin^r u - (1 - \sin^r u)} = r \Rightarrow$$

$$\frac{r}{r \sin^r u - 1} = r \Rightarrow r = r \sin^r u - r \Rightarrow \sin^r u = \frac{1}{r} \Rightarrow \sin u = \frac{1}{\sqrt{r}} \quad \checkmark \quad \textcircled{r}$$

$$\sin^r u + \cos^r u = 1 \Rightarrow \cos^r u = \frac{1}{r} \Rightarrow \tan^r u = \frac{\sin^r u}{\cos^r u} = \frac{\frac{1}{r}}{\frac{1}{r}} = \frac{1}{1} = 1 \quad \checkmark \quad \textcircled{1}$$

$$\frac{\sin^r u - r(1 - \sin^r u) + 1}{\sin^r u + r(1 - \sin^r u) - 1} = \frac{\sin^r u - r + 1 + r \sin^r u}{\sin^r u + r - r \sin^r u - 1} = \frac{r \sin^r u - 1}{- \sin^r u + 1} = r \Rightarrow$$

$$r \sin^r u - 1 = r \sin^r u + r - r \sin^r u - 1 \Rightarrow r \sin^r u = 1 \Rightarrow \sin^r u = \frac{1}{r} \Rightarrow \sin u = \frac{1}{\sqrt{r}} \quad \checkmark \quad \textcircled{r}$$

$$\cos^r u = \frac{r}{r} = 1 \Rightarrow \cos u = \frac{1}{\sqrt{r}} \quad \checkmark \quad \textcircled{r}$$

$$\tan^r u = \frac{\sin^r u}{\cos^r u} = \frac{\frac{1}{r}}{\frac{1}{r}} = \frac{1}{1} = 1 \quad \checkmark \quad \textcircled{1}$$

$$\sin^r(\phi, d) = \frac{1 - \cos(\phi, d)}{r} = \frac{1 - (-\frac{\sqrt{r}}{r})}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r} \Rightarrow \sin(\phi, d) = \frac{\sqrt{r+1}}{r} \quad \checkmark \quad \textcircled{r}$$

$$\cos^r(\phi, d) = \frac{1 + \cos(\phi, d)}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r} \Rightarrow \cos(\phi, d) = \frac{\sqrt{r+1}}{r} \quad \checkmark \quad \textcircled{r}$$