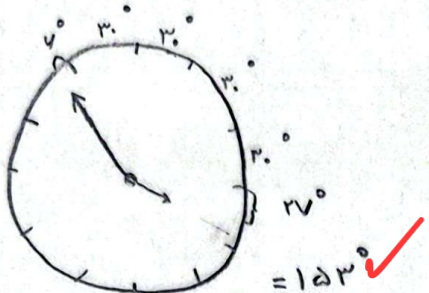
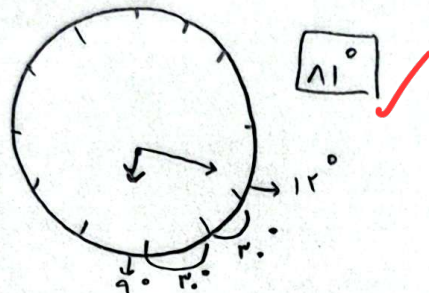


الف) 	ب) $ 5.5 - 3.5 = 2.0^\circ$ $340 - 2.0^\circ = 153^\circ$	۱
الف) 	ب) $ 5.5 - 3.5 = 11^\circ$	۲
الف) $s = \frac{\alpha}{r} R^2 = \frac{9\pi}{12} = \frac{3\pi}{4}$ ب) $P = \alpha R + 2R = 9 + \frac{\pi}{2}$	ب)	۳
الف) $s = \frac{bc \sinh A}{r} = 10\sqrt{3}$ ب) $a = \sqrt{b^2 + c^2 - 2bc \cos A} = \sqrt{49} = 7$ $p = a + b + c = 7 + 11 + 5 = 23$	ب)	۴
ب) $\hat{B} + \hat{C} = 150^\circ \Rightarrow \hat{A} = 30^\circ$ $\frac{a}{\sin A} = \frac{b}{\sin B} \Rightarrow \frac{10}{\frac{1}{2}} = \frac{10\sqrt{3}}{\sin B} \Rightarrow \sin B = \frac{\sqrt{3}}{2} \Rightarrow B = 60^\circ$ چون $\sin 120^\circ = \sin 60^\circ$ $\hat{A} = 30^\circ, \hat{B} = 60^\circ, \hat{C} = 90^\circ$ $C = 100$ $B = \frac{7}{8}, C = \frac{50\pi}{120} = \frac{5\pi}{12} = \frac{75^\circ}{12}$	۱۵۵	۵

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

6

$$\left. \begin{aligned} \tan V\Delta^\circ &= \cot \frac{\pi}{1r} \\ \tan 1\Delta^\circ &= -\cot \frac{\pi}{1r} \\ \tan 14\Delta^\circ &= -\tan \frac{\pi}{1r} \\ \tan r\Delta^\circ &= \cot \frac{\pi}{1r} \end{aligned} \right\} \Rightarrow A = \frac{r \tan V\Delta^\circ + \tan 1\Delta^\circ}{r \tan 14\Delta^\circ - \tan r\Delta^\circ} = \frac{r \cot \frac{\pi}{1r} - \cot \frac{\pi}{1r}}{-r \tan \frac{\pi}{1r} - \cot \frac{\pi}{1r}}$$

$$= \frac{\cot \frac{\pi}{1r}}{-r \tan \frac{\pi}{1r} - \cot \frac{\pi}{1r}} \Rightarrow A = \frac{1}{-ra - \frac{1}{a}} = \frac{1}{-ra^2 - 1} = -\frac{1}{ra^2 + 1} \quad \checkmark$$

7

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

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

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

$$r = 4 \sin^r \pi - r \Rightarrow \sin^r \pi = \frac{4}{r}$$

$$\Rightarrow \cos^r \pi = \frac{1}{4} \Rightarrow \tan^r \pi = 2 \quad \checkmark$$

8

$$\frac{1 - \cos^r \pi}{\sin^r \pi - r \cos^r \pi + 1} = f \Rightarrow \frac{r - r \cos^r \pi}{\cos^r \pi} = f \Rightarrow r \cos^r \pi = r \Rightarrow \cos^r \pi = \frac{r}{r} = 1$$

$$\Rightarrow \sin^r \pi = \frac{4}{r} \Rightarrow \tan^r \pi = \frac{4}{r} \quad \checkmark$$

9

$$\text{ii) } \cos(r\pi, \Delta) = \frac{\sqrt{1 + \cos 2\Delta}}{r} = \sqrt{\frac{1 + \sqrt{r}}{r}} = \sqrt{\frac{r + \sqrt{r}}{r}} = \frac{\sqrt{r + \sqrt{r}}}{r} \quad \checkmark$$

$$\text{—) } \sin(r\pi, \Delta) = \sqrt{\frac{1 - \cos 2\Delta}{r}} = \sqrt{\frac{1 + \sqrt{r}}{r}} = \sqrt{\frac{r + \sqrt{r}}{r}} = \frac{\sqrt{r + \sqrt{r}}}{r} \quad \checkmark$$

$$* \cos^r \alpha = \frac{1 + \cos^r \pi}{r}, \quad \sin^r \alpha = \frac{1 - \cos^r \pi}{r} \quad *$$

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