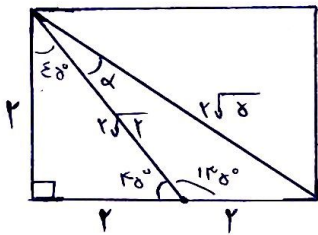


$$S = \frac{1}{r} ab \sin \alpha \Rightarrow r, \delta = \frac{1}{r} \sqrt{r} \times 7 \times \sin \alpha \rightarrow \sin \alpha = \frac{\sqrt{r}}{r}$$

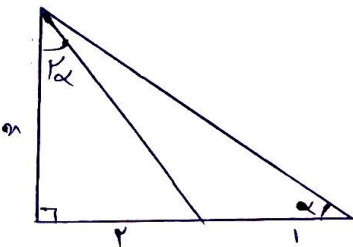
$$\rightarrow \begin{cases} \alpha = 9^\circ \\ \alpha = 12^\circ \end{cases} \rightarrow \frac{12^\circ}{4^\circ} = (r) \checkmark$$



$$\frac{r\sqrt{8}}{\sin 12^\circ} = \frac{r}{\sin \alpha} \rightarrow \frac{r\sqrt{8}}{\frac{\sqrt{r}}{r}} = \frac{r}{\sin \alpha} \rightarrow \sin \alpha = \frac{1}{\sqrt{10}}$$

$$\rightarrow 1 + \cot^2 = \frac{1}{\sin^2} \rightarrow 1 + \cot^2 = 10 \rightarrow \cot^2 = 9$$

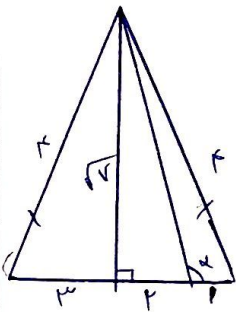
$$\rightarrow \cot \alpha = 3 \checkmark$$



$$\tan 2\alpha = \frac{r}{n} \quad \tan \alpha = \frac{n}{r}$$

$$\rightarrow \tan 2\alpha = \frac{r \tan \alpha}{1 - \tan^2 \alpha} \rightarrow \frac{r}{n} = \frac{\frac{rn}{r}}{1 - \frac{n^2}{r^2}} \rightarrow \frac{r^2}{n} = r - \frac{r n^2}{r}$$

$$\rightarrow 4n^2 = r - r n^2 \rightarrow r n^2 = \frac{r}{4} \rightarrow n = \sqrt{\frac{r}{4}} = \sqrt{\frac{9}{8}} = \frac{3}{2} \rightarrow \cot \alpha = \frac{3}{2} (r) \checkmark$$



$$\tan (180^\circ - \alpha) = -\tan \alpha = \frac{\sqrt{r}}{r} \rightarrow \tan \alpha = \frac{-\sqrt{r}}{r} \checkmark$$

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

$$\rightarrow \tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{1}{r} \checkmark$$

$$\frac{\sin^2 \alpha + r \cos^2 \alpha}{1 + \cos^2 \alpha} - \frac{\cos^2 \alpha + \varepsilon \sin^2 \alpha}{1 + \sin^2 \alpha} = \frac{(\sin^2 \alpha) + \varepsilon \cos^2 \alpha}{1 + \cos^2 \alpha} - \frac{(\cos^2 \alpha) + \varepsilon \sin^2 \alpha}{1 + \sin^2 \alpha}$$

$$= \frac{(1 - \cos^2 \alpha) + \varepsilon \cos^2 \alpha}{1 + \cos^2 \alpha} - \frac{(1 - \sin^2 \alpha) + \varepsilon \sin^2 \alpha}{1 + \sin^2 \alpha} = \frac{\cos^2 \alpha + r \cos^2 \alpha + 1}{1 + \cos^2 \alpha} - \frac{\sin^2 \alpha + r \sin^2 \alpha + 1}{1 + \sin^2 \alpha}$$

$$= (1 + \cos^2 \alpha) - (1 + \sin^2 \alpha) = \cos^2 \alpha - \sin^2 \alpha = \cos 2\alpha \checkmark$$

$$\tan \alpha = \frac{\varepsilon}{r} \rightarrow \begin{array}{c} \delta \\ \alpha \\ r \end{array} \varepsilon \left\{ \begin{array}{l} \sin \alpha = \frac{-\varepsilon}{\delta} \\ \cos \alpha = \frac{-r}{\delta} \end{array} \right. \cot \alpha = \frac{r}{\varepsilon}$$

$$\rightarrow \sin\left(\frac{9\pi}{r} + \alpha\right) \cos\left(\frac{v\pi}{r} - \alpha\right) - \tan\left(\alpha - \frac{r\pi}{r}\right) = (\cos \alpha)(-\sin \alpha) - (-\cot \alpha)$$

$$= \left(\frac{-r}{\delta}\right) \left(\frac{\varepsilon}{\delta}\right) + \frac{r}{\varepsilon} = \frac{-r\varepsilon}{r\delta} + \frac{r}{\varepsilon} = \frac{v\delta - \varepsilon r}{100} = \frac{r v}{100} \checkmark$$

$$r \cos \varepsilon n + \sqrt{r} \sin n - \sqrt{r} \cos n \Rightarrow x = \frac{\pi}{11} \rightarrow r \cos \frac{\pi}{11} + \sqrt{r} \sin n - \sqrt{r} \cos n$$

$$= \frac{r}{r} + \sqrt{r \sin^2 n + r \cos^2 n} - r \sin n \cos n = \frac{r}{r} - \sqrt{r - r \sin 2n} = \frac{r}{r} - \sqrt{r - r \sin \frac{\pi}{11}}$$

$$= \frac{r}{r} - \sqrt{r-1} = \frac{1}{r} \checkmark$$

$$\sqrt{r \sin n} - \sqrt{r \cos n} < 0 \Rightarrow$$

$$\tan\left(\frac{\alpha}{r}\right) = \frac{1}{\varepsilon} \rightarrow \tan \alpha = \frac{r \tan\left(\frac{\alpha}{r}\right)}{1 - \tan^2\left(\frac{\alpha}{r}\right)} = \frac{\frac{1}{r}}{\frac{18}{14}} = \frac{1}{18} \rightarrow \begin{array}{c} 14 \\ \alpha \\ 18 \end{array}$$

$$\rightarrow \sin \alpha = \frac{14}{18}, \cos \alpha = \frac{18}{18}$$

$$\frac{\tan \alpha - \sin \alpha}{\sin \alpha - \cos \alpha} = \frac{\frac{14}{18} - \frac{14}{18}}{\frac{14}{18} - \frac{18}{18}} = \frac{14}{10 \times 14} = -\frac{14}{1.8} \checkmark$$

$$\bullet \left\langle \frac{\cot \alpha}{\sin \alpha} \rightarrow \left\langle \frac{\cos n}{\sin n} \rightarrow \cos n \right\rangle \quad r \sin \alpha \left\langle r \sin \alpha \cos \alpha \rightarrow r \sin \alpha (\cos \alpha - 1) \right\rangle$$

$$\xrightarrow{\cos \alpha - 1 < 0} \sin \alpha < 0 \rightarrow \begin{cases} \cos \alpha > 0 \\ \sin \alpha < 0 \end{cases} \rightarrow \text{IV quadrant}$$