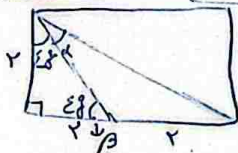


از هر دو طرف بر \cos ضرب می‌کنیم: $\cos \alpha = \frac{r}{\mu} \Rightarrow \alpha = \arccos \frac{r}{\mu}$

$$S = \sqrt{r} \times \frac{1}{r} \times \sin \alpha = \frac{1}{\sqrt{r}} \Rightarrow \sin \alpha = \frac{\sqrt{r}}{r} \Rightarrow \alpha = \frac{\pi}{4}, \frac{3\pi}{4} \quad (1)$$

$$\frac{\alpha_{\max}}{\alpha_{\min}} = \sqrt{r} \quad (5)$$



$$\cot \beta = \frac{r}{r} = 1 \Rightarrow \beta = 45^\circ \quad \cot(45^\circ + \alpha) = \frac{\cot \alpha \cot 45^\circ - 1}{\cot \alpha + \cot 45^\circ} \quad (2)$$

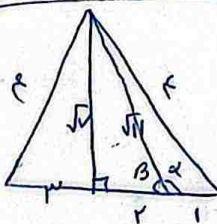
$$\frac{1}{r} = \frac{\cot \alpha - 1}{\cot \alpha + 1} \Rightarrow r(\cot \alpha - 1) = \cot \alpha + 1$$

$$\cot \alpha = r \quad (5)$$

$$\tan \alpha = \frac{r}{r} = 1, \tan \alpha = \frac{r}{r} \Rightarrow \tan \alpha = \frac{r \tan \alpha}{1 - \tan^2 \alpha} \quad (3)$$

$$\frac{r}{r} = \frac{r \tan \alpha}{1 - \tan^2 \alpha} \Rightarrow r = \frac{r \tan^2 \alpha}{1 - \tan^2 \alpha} \Rightarrow r(1 - \tan^2 \alpha) = r \tan^2 \alpha \Rightarrow 1 - \tan^2 \alpha = \tan^2 \alpha \Rightarrow \tan^2 \alpha = \frac{1}{2} \Rightarrow \tan \alpha = \frac{1}{\sqrt{2}} \quad (5)$$

$$\tan \alpha = \frac{1}{\sqrt{2}} \Rightarrow \cot \alpha = \sqrt{2} \quad (5)$$



$$\alpha + \beta = 180^\circ \Rightarrow \tan \alpha = -\tan \beta \quad (4)$$

$$\tan \beta = \frac{\sqrt{2}}{r} \Rightarrow \tan \alpha = -\frac{\sqrt{2}}{r} \quad (5)$$

$$\sin^2 \alpha + \sin^2 \alpha + \cos^2 \alpha = \frac{r}{\mu} \Rightarrow 2\sin^2 \alpha + \cos^2 \alpha = \frac{r}{\mu} \Rightarrow 2\sin^2 \alpha + 1 - \sin^2 \alpha = \frac{r}{\mu} \Rightarrow \sin^2 \alpha = \frac{r}{\mu} - 1 \Rightarrow \sin \alpha = \sqrt{\frac{r}{\mu} - 1} \quad (5)$$

$$\cot^2 \alpha = r - 1 = r \Rightarrow \tan^2 \alpha = \frac{1}{r} \quad (5)$$

$$\frac{\sin^r + {}^r \cos^r \alpha}{1 + \cos^r \alpha} = \frac{(1 - \cos^r \alpha) + {}^r \cos^r \alpha}{1 + \cos^r \alpha} = \frac{\cos^r + {}^r \cos^r + 1}{1 + \cos^r \alpha} \quad (4)$$

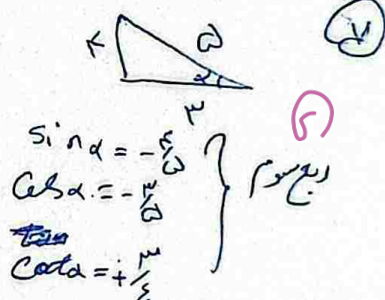
$$= 1 + \cos^r \alpha \left/ \frac{\cos^r \alpha + {}^r \sin^r \alpha}{1 + \sin^r \alpha} = \frac{(1 - \sin^r \alpha) + {}^r \sin^r \alpha}{1 + \sin^r \alpha} \right.$$

$$\frac{\sin^r + {}^r \sin^r + 1}{1 + \sin^r \alpha} = 1 + \sin^r \alpha \quad (5)$$

$$\Rightarrow 1 + \cos^r \alpha - 1 - \sin^r \alpha = \cos^r \alpha - \sin^r \alpha = \cos^r \alpha$$

$$(\cos \alpha)(-\sin \alpha) + \cos \alpha =$$

$$\left(-\frac{10}{100}\right)\left(-\frac{1}{10}\right) + \frac{10}{100} = \frac{-\varepsilon + 10}{100} = \frac{10}{100}$$

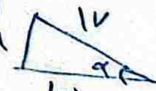


$${}^r \cos \frac{\pi}{r} + \sqrt{r} \sin \frac{\pi}{r} - \sqrt{r} \cos \frac{\pi}{r} = \frac{r}{r} + \sqrt{r} \left(\sin \frac{\pi}{r} - \cos \frac{\pi}{r} \right) \quad (1)$$

$$\frac{r}{r} = 1 = \frac{1}{1}$$

$$\sqrt{r} \frac{1}{r} = \sqrt{r} \sin \left(\frac{\pi}{r} + \frac{\pi}{8} \right)$$

$$\tan \alpha = \frac{r \tan \frac{\alpha}{r}}{1 + \tan \frac{\alpha}{r}} = \frac{r \frac{1}{r}}{1 + \frac{1}{r}} = \frac{1}{10} = \tan \alpha \quad (4)$$



$$\sin \alpha = \frac{1}{10}$$

$$\cos \alpha = \frac{10}{10}$$

$$\frac{\frac{1}{10} - \frac{1}{10}}{\frac{1}{10} - \frac{10}{10}} = -\frac{10}{100}$$

$$r \sin \alpha < r \sin \alpha \cos \alpha \Rightarrow r \sin \alpha (1 - \cos \alpha) < 0 \quad (10)$$

$$\frac{\cos \alpha}{\sin \alpha} \Rightarrow \frac{\cos \alpha}{\sin \alpha} > 0 \Rightarrow \cos \alpha > 0$$

رابطه