

$$x=0 \Rightarrow y = \tan\left(\frac{\pi}{4}\right) = 1 \Rightarrow B: (0, 1)$$

$$\tan\left(-2x + \frac{\pi}{4}\right) = 0 \Rightarrow -2x + \frac{\pi}{4} = \frac{\pi}{2} \text{ و } -2x + \frac{\pi}{4} = -\frac{\pi}{2}$$

$$\Rightarrow x = -\frac{\pi}{4} \text{ و } x = \frac{3\pi}{4} \Rightarrow A: \left(-\frac{\pi}{4}, 0\right) \text{ و } \left(\frac{3\pi}{4}, 0\right)$$

نقطه مثلث: $\frac{\pi}{2}$ و ارتفاع: ۱ $\Rightarrow \frac{\frac{\pi}{2} \times 1}{2} = \frac{\pi}{4}$

$$\frac{x}{a} - \frac{y}{b} \sin \alpha - \frac{1}{c} \cos \alpha = \frac{x}{a} - \frac{y}{b} \sin \alpha - \frac{1}{c} + \frac{1}{c} \sin^2 \alpha = 0$$

$$\Rightarrow \frac{1}{c} \sin^2 \alpha - \frac{y}{b} \sin \alpha + \frac{1}{cy} = 0 \quad \Rightarrow \cos \alpha = \frac{1}{a}$$

$$\Rightarrow \sin \alpha = \frac{1}{y} \times \text{ و } \sin \alpha = \frac{y}{1} \checkmark \Rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha}$$

$$\Rightarrow 1 + \tan^2 \alpha = \frac{1}{\frac{1}{a^2}} = a^2$$

$$\log(-\tan \alpha) = \log 3 \Rightarrow \tan \alpha = -3 \Rightarrow 1 + 9 = \frac{1}{\sin^2 \alpha}$$

$$\Rightarrow \sin^2 \alpha = \frac{1}{10} \text{ و } \cos^2 \alpha = \frac{9}{10} \text{ و } \cos \alpha < 0 \text{ و } \sin \alpha > 0$$

$$\Rightarrow \sin \alpha = \frac{\sqrt{10}}{10} \text{ و } \cos \alpha = -\frac{3\sqrt{10}}{10} \Rightarrow \sin \alpha - \cos \alpha = \frac{4\sqrt{10}}{10}$$

$$\sin^2 \alpha + 1 - \sin^2 \alpha = \frac{x}{a} \Rightarrow \sin^2 \alpha - \sin^2 \alpha + \frac{1}{a} = 0$$

$$\Rightarrow \sin^2 \alpha (\sin^2 \alpha - 1) = -\frac{1}{a} \Rightarrow \sin^2 \alpha \cos^2 \alpha = \frac{1}{a}$$

$$\cos^2 \alpha + 1 - \cos^2 \alpha = \frac{1}{a} \Rightarrow \cos^2 \alpha (\cos^2 \alpha - 1) + 1 = \frac{1}{a}$$

$$\frac{\sin^2 \alpha - 1}{\cos^2 \alpha} > 0 \Rightarrow \frac{-\cos^2 \alpha}{\cos^2 \alpha} > 0 \Rightarrow \cos \alpha < 0$$

$$2 - 2\cos^2 \alpha > 0 \Rightarrow 2\sin^2 \alpha + \sin^2 \alpha \cos^2 \alpha < 0$$

$$\Rightarrow \sin^2 \alpha (2 + \cos^2 \alpha) < 0 \Rightarrow \sin^2 \alpha < 0$$

در ربع سوم است

$$\frac{r \cos \alpha + r \sin \alpha}{\sin \alpha \cos \alpha} = 0 \Rightarrow r \cos \alpha = -r \sin \alpha \Rightarrow \tan \alpha = -\frac{r}{r}$$

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

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

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

$$= r \sin \alpha \cos \alpha \Rightarrow$$

$$\frac{\sqrt{r} \cos \alpha}{r \sin \alpha \cos \alpha} = \sqrt{r}$$

$$1 - r \sin^2 \alpha = \cos^2 \alpha \quad , \quad r \cos^2 \alpha - 1 = \sin^2 \alpha - \sin^2 \alpha = \cos^2 \alpha$$

$$\Rightarrow \frac{1 - \tan^2 \alpha}{1 + \tan^2 \alpha} = \cos^2 \alpha \Rightarrow (\cos^2 \alpha) (\cos^2 \alpha) (\cos^2 \alpha) \times \frac{\sin \alpha}{\sin \alpha}$$

$$\Rightarrow \frac{1}{1} \frac{\sin \alpha}{\sin \alpha} = \frac{1}{1} \frac{\cos^2 \alpha}{\sin \alpha} = \frac{1}{1} \cot \alpha$$

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

$$\Rightarrow 1 - \cos^2 \alpha = r - r \cos^2 \alpha - 1 r \cos \alpha \Rightarrow 1 - \cos^2 \alpha - r = -1 r \cos \alpha$$

$$\Rightarrow \cos^2 \alpha - \sin^2 \alpha - 1 - \cos^2 \alpha - r = -\cos^2 \alpha - \sin^2 \alpha - r$$

$$= -\cos^2 \alpha - \sin^2 \alpha - r$$

$$\sin B \sin C = \frac{1}{r} (\cos (B-C) - \cos (B+C)) \quad , \quad \cos \frac{A}{r} = \frac{1 + \cos A}{r}$$

$$\Rightarrow \cos (B-C) - \cos (B+C) = 1 + \cos A \quad , \quad \cos (B+C) = -\cos A$$

$$\Rightarrow \cos (B-C) + \cos A = 1 + \cos A \Rightarrow \cos (B-C) = 1$$

$$\Rightarrow B-C = 0 \Rightarrow C = B \quad , \quad A = \pi - 2B$$