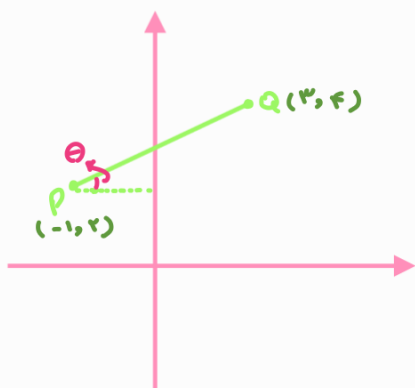




$$m_{PQ} = \frac{f-r}{r-(-1)} = \frac{1}{r} = \tan \theta \rightarrow 1 + \tan^2 \theta = \frac{1}{\cos^2 \theta}$$

$$1 + \frac{1}{r^2} = \frac{1}{\cos^2 \theta} \rightarrow \cos^2 \theta = \frac{r^2}{r^2+1} \xrightarrow{\cos \theta > 0} \cos \theta = \frac{r}{\sqrt{r^2+1}} = \frac{r\sqrt{a}}{a}$$

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$$\underbrace{(\pi + \pi)}_{-C \cdot \sin} + \underbrace{\sin\left(\frac{\pi}{r} - \pi\right)}_{C \sin} - \tan\left(\frac{\pi}{r} + \pi\right) = \cot \pi$$

$$\phi(\pi) = \cot \pi \rightarrow \phi\left(\frac{\omega \pi}{4}\right) = \cot\left(\frac{\omega \pi}{4}\right) = -\sqrt{3}$$