Solve $\log_4 \dfrac{\cos x}{3} + \log_4 \cos x = -1$, $for -\pi < x < \pi$

$$\log_4 \frac{\cos x}{3} + \log_4 \cos x = -1$$

$\log a + \log b = \log a\,b$

$$\log_4 \frac{\cos x \times \cos x}{3} = -1$$

$$\log_4 \frac{\cos^2 x}{3} = -1$$

$x = \log_a b \iff a^x = b$

$$\frac{\cos^2 x}{3} = 4^{-1}$$

$$\frac{\cos^2 x}{3} = \frac{1}{4}$$

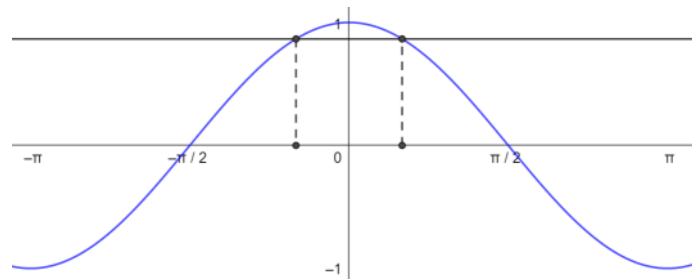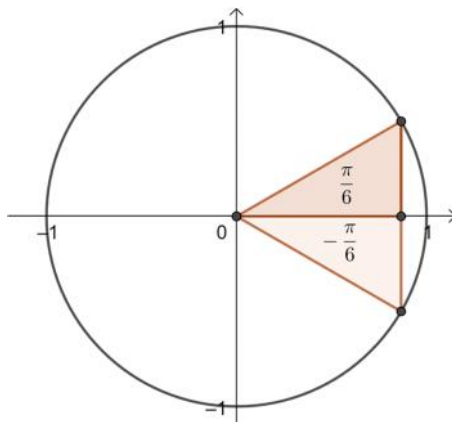$$\cos^2 x = \frac{3}{4}$$

$$\cos x = \pm \sqrt{\frac{3}{4}}$$

Only positive root as

$$\log_4 \frac{-\dfrac{\sqrt{3}}{2}}{3} + \log_4 -\frac{\sqrt{3}}{2} = \text{non real}$$

Solve $\cos x = \dfrac{\sqrt{3}}{2}$, $-\pi < x < \pi$

$$x = -\frac{\pi}{6}, \frac{\pi}{6}$$