

Ques3.

If $\cos(\tan^{-1} x + \cot^{-1} \sqrt{3}) = 0$, then value of x is _____.

(Sec 2.3 Q40)

Sol.

We have, $\cos(\tan^{-1} x + \cot^{-1} \sqrt{3}) = 0$

$$\Rightarrow \tan^{-1} x + \cot^{-1} \sqrt{3} = \cos^{-1} 0$$

$$\Rightarrow \tan^{-1} x + \cot^{-1} \sqrt{3} = \frac{\pi}{2}$$

$$\Rightarrow \tan^{-1} x = \frac{\pi}{2} - \cot^{-1} \sqrt{3}$$

$$\Rightarrow \tan^{-1} x = \tan^{-1} \sqrt{3} \quad \left(\because \tan^{-1} x + \cot^{-1} x = \frac{\pi}{2} \right)$$

$$\therefore x = \sqrt{3}$$