

Ques2.

If $3 \tan^{-1} x + \cot^{-1} x = \pi$, then x equals

(a) 0

(b) 1

(c) -1

(d) $\frac{1}{2}$

(Sec 2.3 Q22)

Sol.

(b) We have $3 \tan^{-1} x + \cot^{-1} x = \pi$

$$\Rightarrow 2 \tan^{-1} x + (\tan^{-1} x + \cot^{-1} x) = \pi$$

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

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

$$\Rightarrow \tan^{-1} x = \frac{\pi}{4}$$

$$\Rightarrow x = 1$$