

13. If  $(\tan^{-1} x)^2 + (\cot^{-1} x)^2 = \frac{5\pi^2}{8}$ , then  $x$  equals to :

(a) -1

✓

(b) 1

(c) 0

(d)  $\sqrt{3}$

$$13. \text{ Let } \tan^{-1} x = t \Rightarrow t^2 + \left(\frac{\pi}{2} - t\right)^2 = \frac{5\pi^2}{8}$$

$$\Rightarrow t = \frac{3\pi}{4} \text{ or } \frac{-\pi}{4} \Rightarrow \tan^{-1} x = \frac{-\pi}{4} \Rightarrow x = -1$$