

Ques5.

The value of expression $\tan\left(\frac{\sin^{-1} x + \cos^{-1} x}{2}\right)$, when $x = \frac{\sqrt{3}}{2}$ is _____.

(Sec 2.3 Q45)

Sol. 1

$$\begin{aligned}\tan\left(\frac{\sin^{-1} x + \cos^{-1} x}{2}\right) &= \tan\left(\frac{\pi/2}{2}\right) \quad \left(\because \sin^{-1} x + \cos^{-1} x = \frac{\pi}{2}\right) \\ &= \tan\frac{\pi}{4} = 1\end{aligned}$$

Note: The answer is independent of x for all $|x| \leq 1$.