

Problem 3.

Maximum value of $\sin^{-1}x + \cos^{-1}x + \tan^{-1}x$ is :

- (a) π (b) $\pi/2$ (c) $3\pi/4$ (d) 2π .

Solution: for definition of $\sin^{-1}x$ & $\cos^{-1}x$, we need $|x| \leq 1$.
and for all x such that $|x| \leq 1$; $\sin^{-1}x + \cos^{-1}x = \pi/2$

Also, $-1 \leq x \leq 1$.

$$\Rightarrow -\pi/4 \leq \tan^{-1}x \leq \pi/4.$$

So, maximum value = $\pi/2 + \pi/4 = \boxed{3\pi/4}$.

Note: Be careful of the domains in such questions.