Ques1.

If $\tan^{-1} x + \tan^{-1} y = \dfrac{4\pi}{5}$, then $\cot^{-1} x + \cot^{-1} y$ equals

(a) $\dfrac{\pi}{5}$ (b) $\dfrac{2\pi}{5}$ (c) $\dfrac{3\pi}{5}$ (d) π

Sol.

(a) We have, $\tan^{-1} x + \tan^{-1} y = \dfrac{4\pi}{5}$

$\Rightarrow \qquad \dfrac{\pi}{2} - \cot^{-1} x + \dfrac{\pi}{2} - \cot^{-1} y = \dfrac{4\pi}{5}$

$\Rightarrow \qquad \pi - (\cot^{-1} x + \cot^{-1} y) = \dfrac{4\pi}{5} \qquad \left(\because \tan^{-1} x + \cot^{-1} x = \dfrac{\pi}{2} \right)$

$\Rightarrow \qquad \cot^{-1} x + \cot^{-1} y = \pi - \dfrac{4\pi}{5}$

$\Rightarrow \qquad \cot^{-1} x + \cot^{-1} y = \dfrac{\pi}{5}$