

Mathematics

(www.tiwariacademy.in)

(Chapter 2)(Inverse Trigonometric Functions)

(Class XII)

(Exemplar Problems)

Objective Type Questions

Choose the correct answers from the given four options in the following (MCQ):

Question 30:

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

(A) $\frac{\pi}{5}$

(B) $\frac{2\pi}{5}$

(C) $\frac{3\pi}{5}$

(D) π

Answer 30:

(A) $\frac{\pi}{5}$

Solution:

Given that: $\tan^{-1}x + \tan^{-1}y = \frac{4\pi}{5}$



Now, we have $\tan^{-1}x + \tan^{-1}y = \frac{4\pi}{5}$

$$\Rightarrow \left(\frac{\pi}{2} - \cot^{-1}x\right) + \left(\frac{\pi}{2} - \cot^{-1}y\right) = \frac{4\pi}{5} \quad \left[\because \tan^{-1}x + \cot^{-1}x = \frac{\pi}{2}\right]$$

$$\Rightarrow \pi - \cot^{-1}x - \cot^{-1}y = \frac{4\pi}{5}$$

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

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

Hence, the option (A) is correct.

