

Example 36 If $\sin^{-1} x + \sin^{-1} y = \frac{\pi}{2}$, then value of $\cos^{-1} x + \cos^{-1} y$ is

(A) $\frac{\pi}{2}$

(B) π

(C) 0

(D) $\frac{2\pi}{3}$

Solution (A) is the correct answer. Given that $\sin^{-1} x + \sin^{-1} y = \frac{\pi}{2}$.

Therefore,
$$\left(\frac{\pi}{2} - \cos^{-1} x\right) + \left(\frac{\pi}{2} - \cos^{-1} y\right) = \frac{\pi}{2}$$

$$\Rightarrow \cos^{-1} x + \cos^{-1} y = \frac{\pi}{2}$$