

Mathematics

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(Chapter 2)(Inverse Trigonometric Functions)

(Class XII)

(Exemplar Problems)

Objective Type Questions

Fill in the blank in the following:

Question 38:

The principal value of $\cos^{-1}\left(-\frac{1}{2}\right)$ is _____.

Answer 38:

Given that: $\cos^{-1}\left(-\frac{1}{2}\right)$

Now, we have

$$\cos^{-1}\left(-\frac{1}{2}\right)$$

$$= \cos^{-1}\left(-\cos\frac{\pi}{3}\right)$$

$$= \cos^{-1}\left[\cos\left(\pi - \frac{\pi}{3}\right)\right]$$

$$= \cos^{-1}\left(\cos\frac{2\pi}{3}\right)$$

$$= \frac{2\pi}{3}$$



$$[\because \cos^{-1}(\cos x) = x \text{ if } x \in [0, \pi]]$$

Hence, the principal value of $\cos^{-1}\left(-\frac{1}{2}\right)$ is $\frac{2\pi}{3}$.

