

Trigonometry Functions - Class XI

Past Year JEE Questions

Questions

Question: 01

The number of solutions of $\sin 3x = \cos 2x$, in the interval $(\frac{\pi}{2}, \pi)$ is :

- A. 1
- B. 2
- C. 3
- D. 4

Solutions

Solution: 01

Explanation

$$\sin 3x = \cos 2x$$

$$\Rightarrow 3 \sin x - 4 \sin^3 x = 1 - 2 \sin^2 x$$

$$\Rightarrow 4 \sin^3 x - 2 \sin^2 x - 3 \sin x + 1 = 0$$

$$\Rightarrow \sin x = 1, \frac{-2+2\sqrt{5}}{8}$$

$$\text{In the interval } (\frac{\pi}{2}, \pi), \sin x = \frac{-2+2\sqrt{5}}{8}$$

So, there is only one solution.