Hyperbola - Class XI

Past Year JEE Questions

Questions

Quetion: 01

A hyperbola has its centre at the origin, passes through the point (4, 2) and has transverse axis of length 4 along the x-axis. Then the eccentricity of the hyperbola is :

A. $\frac{3}{2}$

B. $\sqrt{3}$

C. 2

D. $\frac{2}{\sqrt{3}}$

Solutions

Solution: 01

Explanation

Let the equation of hyperbola

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$$

Given 2a = 4

$\Rightarrow a = 2$

It passes through (4, 2)

$\therefore \frac{16}{4} - \frac{4}{b^2} = 1$

$\Rightarrow b^2 = \frac{4}{3}$

$e = \sqrt{1 + \frac{b^2}{a^2}} = \sqrt{1 + \frac{4/3}{4}}$

$= \sqrt{1 + \frac{1}{3}} = \frac{2}{\sqrt{3}}$