Hyperbola - Class XI

Related Questions with Solutions

Questions

Quetion: 01

The equation $16x^2 - 3y^2 - 32x + 12y - 44 = 0$ represents a hyperbola

A. the length of whose transverse axis is $4\sqrt{3}$

B. the length of whose conjugate axis is 4

C. whose centre is (–1, 2)

D. whose eccentricity is $\sqrt{\frac{19}{3}}$

Solutions

Solution: 01

We have

$$16[x^2 - 2x] - 3[y^2 - 4y] = 44$$

$$\Rightarrow \quad 16[x - 1]^2 - 3[y - 2]^2 = 48$$

$$\Rightarrow \quad \frac{(x-1)^2}{3} - \frac{(y-2)^2}{16} = 1$$

This equation represents a hyperbola with eccentricity

$$e = \sqrt{1 + \frac{16}{3}} = \sqrt{\frac{19}{3}}$$

Correct Options

Answer:01

Correct Options: D