Hyperbola - Class XI

Related Questions with Solutions

Questions

Quetion: 01

The combined equation of the asymptotes of the hyperbola $2x^2 + 5xy + 2y^2 + 4x + 5y = 0$

A. $2x^2 + 5xy + 2y^2 + 4x + 5y + 2 = 0$

B. $2x^2 + 5xy + 2y^2 + 4x + 5y - 2 = 0$

C. $2x^2 + 5xy + 2y^2 = 0$

D. None of these

Solutions

Solution: 01

Let the equation of asymptotes be

$$2x^2 + 5xy + 2y^2 + 4x + 5y + \lambda = 0 \quad \text{...[i]}$$

This equation represents a pair of straight lines.

Therefore, $abc + 2fgh - af^2 - bg^2 - ch^2 = 0$.

We have

$$4\lambda + 25 - \frac{25}{2} - 8 - \lambda\frac{25}{4} = 0$$

$$\Rightarrow \quad -\frac{9\lambda}{4} + \frac{9}{2} = 0$$

$$\Rightarrow \quad \lambda = 2$$

Putting the value of λ in [i], we get

$2x^2 + 5xy + 2y^2 + 4x + 5y + 2 = 0$

This is the equation of the asymptotes.

Correct Options

Answer:01

Correct Options: A