Hyperbola - Class XI

Related Questions with Solutions

Questions

Quetion: 01

For the hyperbola $\dfrac{x^2}{\cos^2 \alpha} - \dfrac{y^2}{\sin^2 \alpha} = 1$, which of the following remains constant when α varies?

A. abscissae of vertices

B. abscissae of foci

C. eccentricity

D. directrix

Solutions

Solution: 01

$\because \quad b^2 = a^2 \left(e^2 - 1\right) \Rightarrow \sin^2 \alpha = \cos^2 \alpha \left(e^2 - 1\right)$

$\Rightarrow \quad \tan^2 \alpha + 1 = e^2 \Rightarrow e^2 = \sec^2 \alpha$

Vertices $\equiv \left(\pm \cos \alpha, 0\right)$

Coordinate of focii are $\left(\pm ae, 0\right) \equiv \left(\pm 1, 0\right)$

$\Rightarrow$ if α varies then the abscissa of foci remain constant.

Correct Options

Answer:01

Correct Options: B