Related Questions with Solutions

Questions

Quetion: 01

If the eccentricity of the ellipse $\dfrac{x^2}{a^2+1} + \dfrac{y^2}{a^2+2} = 1$ is $\dfrac{1}{\sqrt{6}}$ then latus rectum of ellipse is

A. $\dfrac{5}{\sqrt{6}}$

B. $\dfrac{10}{\sqrt{6}}$

C. $\dfrac{8}{\sqrt{6}}$

D. None of these

Solutions

Solution: 01

Here $a^2 + 2 > a^2 + 1$

$\Rightarrow \quad a^2 + 1 = \left(a^2 + 2\right)\left(1 - e^2\right)$

$\Rightarrow \quad a^2 + 1 = \left(a^2 + 2\right)\dfrac{5}{6}$

$\Rightarrow \quad 6a^2 + 6 = 5a^2 + 10$

$\Rightarrow \quad a^2 = 10 - 6 = 4$

$\Rightarrow \quad a = \pm\, 2$

Latus rectum $= \dfrac{2\left(a^2 + 1\right)}{\sqrt{a^2 + 2}} = \dfrac{2 \times 5}{\sqrt{6}} = \dfrac{10}{\sqrt{6}}$

Correct Options

Answer:01

Correct Options: B