

Conic Section: Parabola - Class XI

Related Questions with Solutions

Questions

Question: 01

The focus of a parabola is $S(-1, 1)$ and the equation of the directrix is $4x + 3y - 24 = 0$. Then which is incorrect

A. Equation of its axis is $3x - 4y + 7 = 0$

B. coordinates of its vertex are $\left(1, \frac{5}{2}\right)$

C. Equation of the tangent at vertex is $4x + 3y - 6 = 0$

D. Length of latus rectum is 10

Solutions

Solution: 01

Axis is perpendicular to directrix and passes through focus. So, the equation of the axis is

$$y - 1 = \frac{3}{4}(x + 1) \Rightarrow 3x - 4y + 7 = 0$$

Axis and directrix intersect at the point $Z[3,4]$. Vertex A is the mid-point of ZS. So, the

coordinates of the vertex are $\left(\frac{3-1}{2}, \frac{4+1}{2}\right)$ or $\left(1, \frac{5}{2}\right)$

Clearly the tangent at vertex is

$$y - \frac{5}{2} = -\frac{4}{3}(x - 1) \Rightarrow 8x + 6y - 23 = 0$$

Distance between the focus and the directrix = $\frac{|-4 + 3 - 24|}{5} = 5$

\therefore Length of latus rectum = $2 \times 5 = 10$.

Correct Options

Answer:01

Correct Options: C