

Conic Section: Parabola - Class XI

Related Questions with Solutions

Questions

Question: 01

Let P be the point (1, 0) and Q a point on the locus $y^2 = 8x$. The locus of the midpoint of PQ is

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

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

C. $x^2 - 4y + 2 = 0$

D. $x^2 + 4y + 2 = 0$

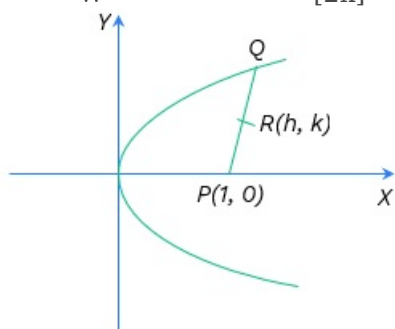
Solutions

Solution: 01

Let $R[h, k]$ be the midpoint of PQ. Therefore, Q is $[2h - 1, 2k]$

Since Q lie on $y^2 = 8x$

$\therefore [2k]^2 = 8[2h - 1]$



Hence, locus of $Q[h, k]$ is

$$y^2 = 2[2x - 1]$$

or $y^2 = 4x - 2$

$\Rightarrow y^2 - 4x + 2 = 0$

Correct Options

Answer:01

Correct Options: B