

Circles - Class XI

Past Year JEE Questions

Questions

Question: 01

The circle $x^2 + y^2 = 4x + 8y + 5$ intersects the line $3x - 4y = m$ at two distinct points if

- A. $-35 < m < 15$
- B. $15 < m < 65$
- C. $35 < m < 85$
- D. $-85 < m < -35$

Solutions

Solution: 01

Explanation

Circle $x^2 + y^2 - 4x - 8y - 5 = 0$

Center = (2, 4), Radius = $\sqrt{4 + 16 + 5} = 5$

If circle is intersecting line $3x - 4y = m$, at two distinct points.

⇒ length of perpendicular from center to the line < radius

$$\Rightarrow \frac{|6 - 16 - m|}{5} < 5 \Rightarrow |10 + m| < 25$$

$$\Rightarrow -25 < m + 10 < 25 \Rightarrow -35 < m < 15$$