

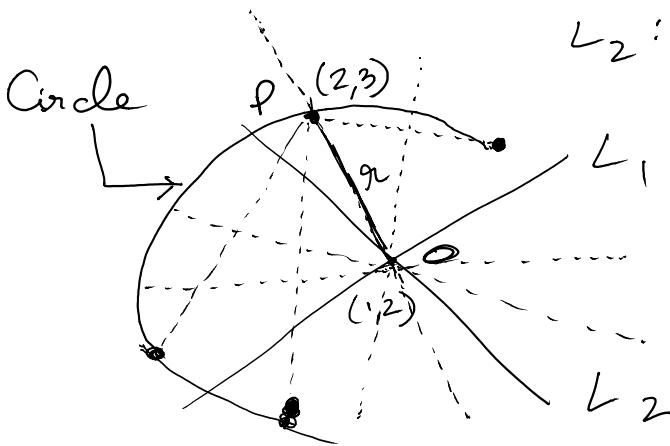
Locus of the image of the point $(2, 3)$ in the line $(2x - 3y + 4) + k(x - 2y + 3) = 0$, $k \in \mathbb{R}$, is a :

- ✓ (1) circle of radius $\sqrt{2}$.
- (2) circle of radius $\sqrt{3}$.
- (3) straight line parallel to x-axis.
- (4) straight line parallel to y-axis.

Family of straight lines passing through the point of intersection of the lines

$$L_1: 2x - 3y + 4 = 0 \quad \& \left. \begin{array}{l} \\ \\ \end{array} \right\}$$

$$L_2: x - 2y + 3 = 0 \quad \left. \begin{array}{l} \\ \\ \end{array} \right\}$$



Point of intersection is $(1, 2)$

For a straight line belonging to the family of straight lines

and passing through $(2, 3)$ will have the image as $(2, 3)$.

\therefore Locus is a circle with center $(1, 2)$ and radius OP i.e. $\sqrt{(2-1)^2 + (3-2)^2} = \sqrt{2}$

\therefore Correct option is (1)