4.4.19

AI25BTECH11023 - Pratik R

Question

Assertion (A): Point P(0,2) is point of intersection of Y-axis with the line $3x + 2y = 4$.
Reason (R): The distance of point $P(0, 2)$ from X-axis is 2 units.

Solution

The given equation can be expressed as

$$\begin{pmatrix} 3 & 2 \end{pmatrix} x = 4 \tag{0.1}$$

where $n^\top = \begin{pmatrix} 3 & 2 \end{pmatrix}$ and $c = 4$.

Putting $P(0, 2)$ ***in the equation of line***

$$n^\top P = 4 = c \tag{0.2}$$

Since $(0, 2)$ lies on y-axis, Assertion is correct.

Distance of (x, y) ***from x-axis is*** $|y|$

Hence Reason is also correct but it is not a valid reason for assertion.

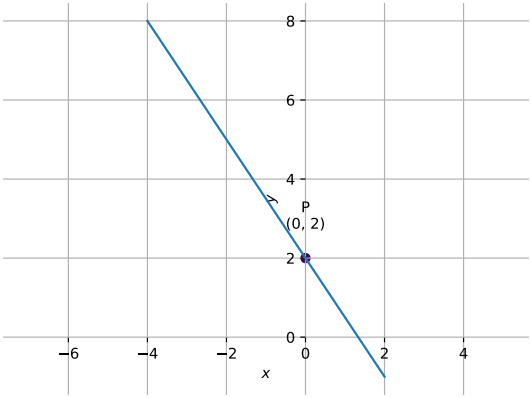

Fig. 0.1: Plot of line $3x + 2y = 4$