4.3.50

EE25BTECH11060 - V.Namaswi

Question

Find the equation of the lines which makes intercepts -3 and 2 on the x and y axes respectively.

Solution

Given that line passes through points $(-3,0)$ and $(0,2)$

Let

Vector	*coordinate*
A	$(-3,0)$
B	$(0,2)$

As equation of line is given by

$$\mathbf{n}^{\top}\mathbf{x} = 1 \tag{1}$$

So, for **A**

$$\mathbf{n}^{\top}\begin{pmatrix}-3\\0\end{pmatrix} = 1 \tag{2}$$

for **B**

$$\mathbf{n}^{\top}\begin{pmatrix}0\\2\end{pmatrix} = 1 \tag{3}$$

$$\tag{4}$$

From 2 and 3

$$\begin{pmatrix}-3 & 0\\0 & 2\end{pmatrix}\mathbf{n} = \begin{pmatrix}1\\1\end{pmatrix} \tag{5}$$

In augmented matrix form

$$\left[\begin{array}{cc|c}-3 & 0 & 1\\0 & 2 & 1\end{array}\right] \tag{6}$$

Divide Row 1 by 3

$$\left[\begin{array}{cc|c}-1 & 0 & \frac{1}{3}\\0 & 2 & 1\end{array}\right] \tag{7}$$

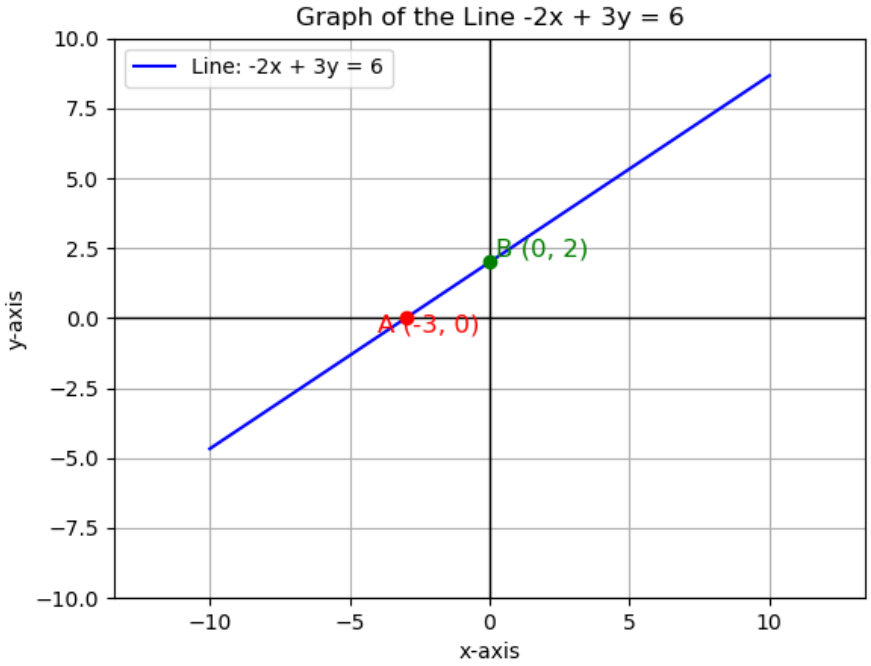
Divide Row 2 by 2

$$\left[\begin{array}{cc|c} -1 & 0 & \frac{1}{3} \\ 0 & 1 & \frac{1}{2} \end{array}\right] \tag{8}$$

$$\mathbf{n} = \begin{pmatrix} \frac{-1}{3} \\ \frac{1}{2} \end{pmatrix} \tag{9}$$

So From 1 equation of line is

$$\begin{pmatrix} \frac{-1}{3} & \frac{1}{2} \end{pmatrix}^{\top} \mathbf{x} = 1 \tag{10}$$



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