

# 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
$A$	$(-3, 0)$
$B$	$(0, 2)$
$\mathbf{n}$	$(a, b)$

As equation of line is given by

$$\mathbf{n}^\top \mathbf{x} = 1 \quad (1)$$

So, for A

$$\begin{pmatrix} a \\ b \end{pmatrix}^\top \begin{pmatrix} -3 \\ 0 \end{pmatrix} = 1 \quad (2)$$

for B

$$\begin{pmatrix} a \\ b \end{pmatrix}^\top \begin{pmatrix} 0 \\ 2 \end{pmatrix} = 1 \quad (3)$$

$$(4)$$

From 2 and 3

In augmented matrix form

$$\left[ \begin{array}{cc|c} -3 & 0 & 1 \\ 0 & 2 & 1 \end{array} \right] \quad (5)$$

Divide Row 1 by -3

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

Divide Row 2 by 2

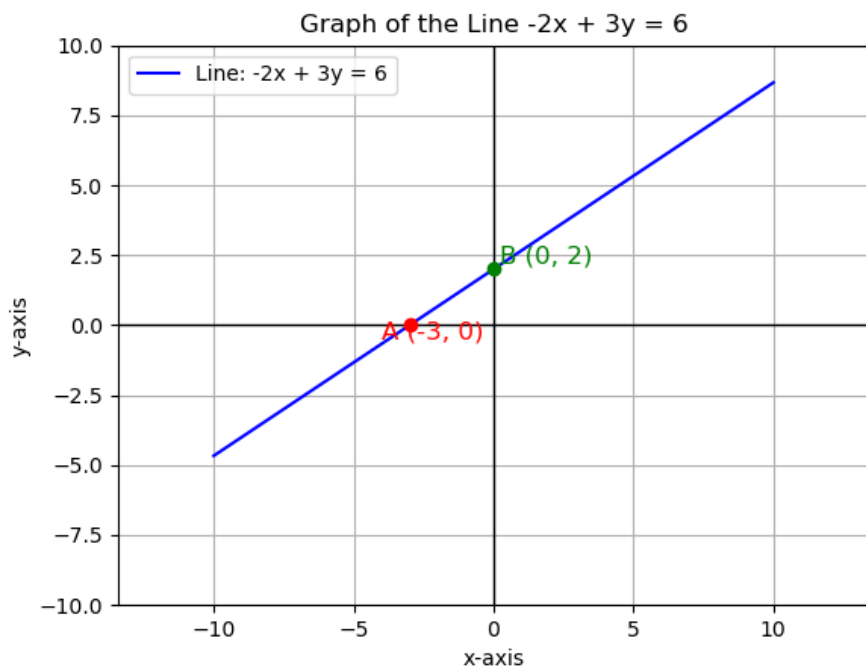
$$\left[ \begin{array}{cc|c} -1 & 0 & \frac{-1}{3} \\ 0 & 1 & \frac{1}{2} \end{array} \right] \quad (7)$$

$$a = \frac{-1}{3} \text{ and } b = \frac{1}{2} \quad (8)$$

So equation of line is

$$\begin{pmatrix} -\frac{1}{3} \\ \frac{1}{2} \end{pmatrix}^T \begin{pmatrix} x \\ y \end{pmatrix} = 1 \quad (9)$$

$$-2x + 3y = 6 \quad (10)$$



(11)