

# 4-4.2-6

EE24BTECH11030 - J.KEDARANANDA

## Question:

Find the direction and normal vectors of the following line:

$$3x + 2 = 0$$

## Solution:

Description	Given value
Line	$3x + 2 = 0$

TABLE 0

For the line of form  $Ax+By+C=0$

Vector	Symbol	Formula
normal	n	$\begin{pmatrix} A \\ B \end{pmatrix}$
direction	d	$\begin{pmatrix} B \\ -A \end{pmatrix}$

TABLE 0

$$A = 3 \quad (0.1)$$

$$B = 0 \quad (0.2)$$

$$\Rightarrow n = \begin{pmatrix} 3 \\ 0 \end{pmatrix} = \begin{pmatrix} 1 \\ 0 \end{pmatrix} \quad (0.3)$$

$$d^T . n = 0 \quad (0.4)$$

$$3a = 0 \quad (0.5)$$

$$\Rightarrow d = \begin{pmatrix} 0 \\ -3 \end{pmatrix} = \begin{pmatrix} 0 \\ -1 \end{pmatrix} \quad (0.6)$$

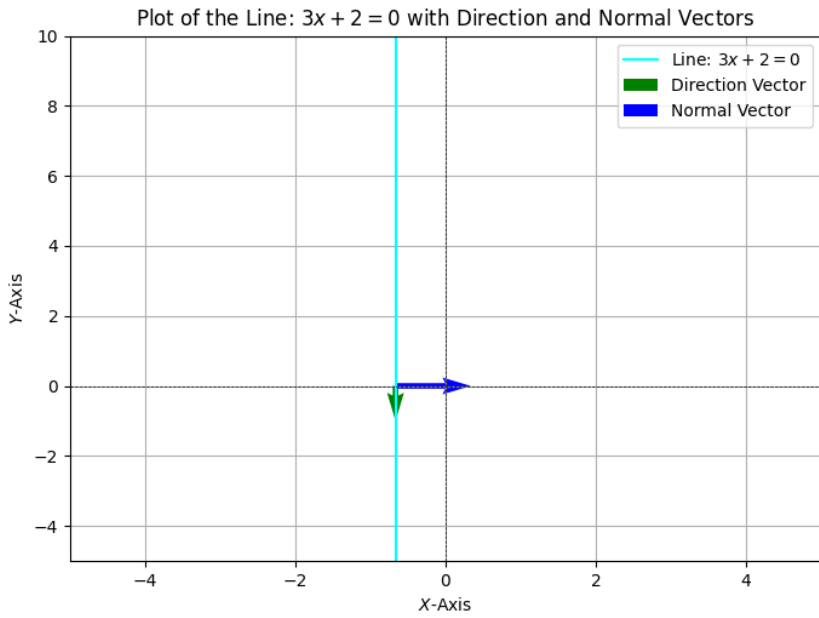


Fig. 0.1