4-4.2-17

EE24BTECH11051 - Prajwal nara

Question:
Find the direction and the normal vector if $y = x + 2$
Solution:
for $y = mx + c$

Variable	Description	Formula
d	direction vector along the line	$\begin{pmatrix}1\\m\end{pmatrix}$
n	direction vector perpendiular ti the line	$\begin{pmatrix}-m\\1\end{pmatrix}$

TABLE 0

Camparing the equation,

$$y = mx + c \text{ and } y = x + 2 \tag{0.1}$$
$$m = 1 \; and \; c = 2 \tag{0.2}$$

Hence direction vector is,

$$d = \begin{pmatrix}1\\m\end{pmatrix} = \begin{pmatrix}1\\1\end{pmatrix} \tag{0.3}$$

and normal vector is,

$$n = \begin{pmatrix}-m\\1\end{pmatrix} = \begin{pmatrix}-1\\1\end{pmatrix} \tag{0.4}$$

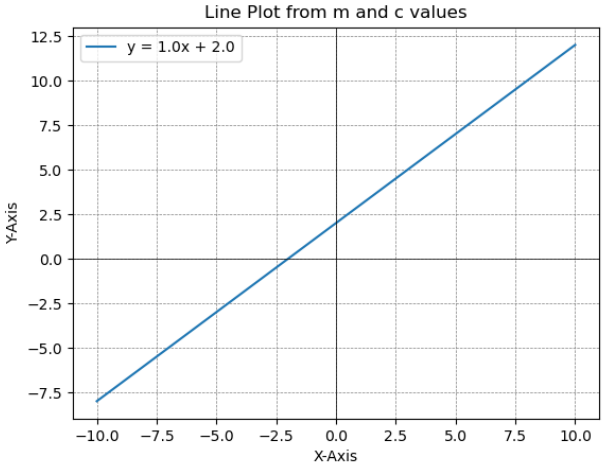
Line Plot from m and c values
y = 1.0x + 2.0
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
Y-Axis
−10.0
−7.5
−5.0
−2.5
0.0
2.5
5.0
7.5
10.0
X-Axis

Fig. 0.1