4-4.4.25

EE24BTECH11006 - Arnav Mahishi

Question:The equation of a line through $(2,-4)$ and parallel to X axis is

input	value
h	$\begin{pmatrix}2\\-4\end{pmatrix}$
m	0

TABLE 0: Input Parameters

Soln:

$$\text{General eqn: } n^T x = 0 \tag{0.1}$$

$$n = \begin{pmatrix} m \\ -1 \end{pmatrix} \implies n = \begin{pmatrix} 0 \\ -1 \end{pmatrix} \tag{0.2}$$

$$\implies \begin{pmatrix} 0 & -1 \end{pmatrix} \left(x - \begin{pmatrix} 2 \\ -4 \end{pmatrix} \right) = 0 \tag{0.3}$$

$$\implies \begin{pmatrix} 0 & 1 \end{pmatrix} x = \begin{pmatrix} 0 & 1 \end{pmatrix} \begin{pmatrix} 2 \\ -4 \end{pmatrix} \tag{0.4}$$

$$\therefore \text{ The desired eqn: } \begin{pmatrix} 0 & 1 \end{pmatrix} x = -4 \tag{0.5}$$

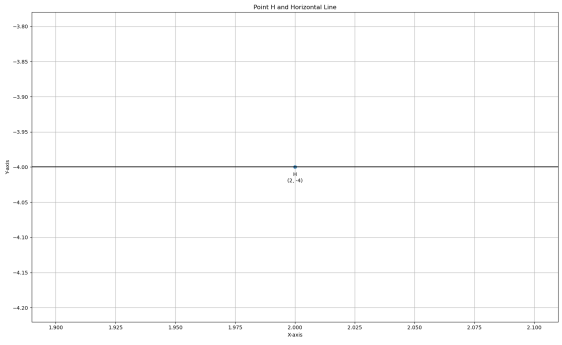

Fig. 0.1: Plot of line