Assignment - 4

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Download all and latex-tikz codes from

svn co https://github.com/Ganeshyadav712/Assignment−4.git

Question taken from

https://github.com/gadepall/ncert/blob/main/linalg/linear_forms/gvv_ncert_linear_forms.pdf− 2.3 a,c

1 Question

Draw the graphs of the following equations

$$a)\begin{pmatrix}1 & 1\end{pmatrix}\mathbf{x} = 4 \tag{1}$$

$$b)\begin{pmatrix}3 & -1\end{pmatrix}\mathbf{x} = 0 \tag{2}$$

2 Solution

$$\begin{pmatrix}1 & 1\end{pmatrix}\mathbf{x} = 4 \tag{3}$$

let x=$\begin{pmatrix}a\\0\end{pmatrix}$ substitute in (3)

$$\begin{pmatrix}1 & 1\end{pmatrix}\begin{pmatrix}a\\0\end{pmatrix}=4$$

$$\mathbf{a} = 4 \tag{4}$$

similarly let x=$\begin{pmatrix}0\\b\end{pmatrix}$substitute in (3)

$$\begin{pmatrix}1 & 1\end{pmatrix}\begin{pmatrix}0\\b\end{pmatrix} = 4 \tag{5}$$

$$b = 4 \tag{6}$$

intercept on X and Y axis for equation 1 can be

$$\text{A}=\begin{pmatrix}4\\0\end{pmatrix},\ \text{B}=\begin{pmatrix}0\\4\end{pmatrix}$$

$$(b)\begin{pmatrix}3 & -1\end{pmatrix}\mathbf{x} = 0 \tag{7}$$

let x=$\begin{pmatrix}a\\0\end{pmatrix}$ substitute in (7)

$$\begin{pmatrix}3 & -1\end{pmatrix}\begin{pmatrix}a\\0\end{pmatrix}=0$$

$$\mathbf{a} = 0 \tag{8}$$

similarly let x=$\begin{pmatrix}0\\b\end{pmatrix}$substitute in (7)

$$\begin{pmatrix}3 & -1\end{pmatrix}\begin{pmatrix}0\\b\end{pmatrix} = 0 \tag{9}$$

$$\mathbf{b} = 0 \tag{10}$$

$$\text{P}=\begin{pmatrix}0\\0\end{pmatrix},$$

for Q point,

let x=$\begin{pmatrix}x\\y\end{pmatrix}$ substitute in (7)

$$\begin{pmatrix}3 & -1\end{pmatrix}\mathbf{x} = 0 \tag{11}$$

$$\begin{pmatrix}3 & -1\end{pmatrix}\begin{pmatrix}x\\y\end{pmatrix}=0$$

$$\mathbf{x} = 2 \tag{12}$$

$$\implies \mathbf{y} = 6 \tag{13}$$

$$\text{Q}=\begin{pmatrix}2\\6\end{pmatrix}$$

intercept on X and Y axis for equation 2 can be

$$\text{P}=\begin{pmatrix}0\\0\end{pmatrix},\ \text{Q}=\begin{pmatrix}2\\6\end{pmatrix}$$

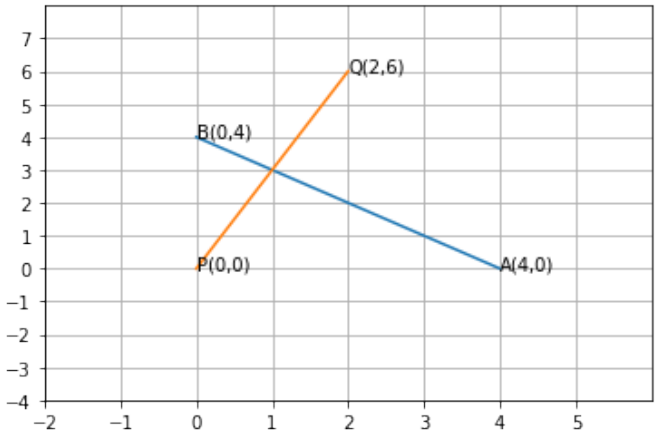

Fig. 2.1. graph assignment 4