

Assignment No.4

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Download latex-tikz codes from

<https://github.com/shishirNIPER/ASSIGNMENT04/blob/main/main.tex>

Download python codes from

<https://github.com/shishirNIPER/ASSIGNMENT04/blob/main/untitled29.py>

Question taken from

linear_form, exercises 2.3,b,e

1 QUESTION No 1

Draw the graphs of the following equations

$$a) \begin{pmatrix} 1 & -1 \end{pmatrix} \mathbf{x} = 2 \quad (1.0.1)$$

$$b) \begin{pmatrix} 1 & -1 \end{pmatrix} \mathbf{x} = 0 \quad (1.0.2)$$

2 SOLUTION

$$a) \text{ put } \mathbf{x} = \begin{pmatrix} x \\ 0 \end{pmatrix}$$

$$\begin{pmatrix} 1 & -1 \end{pmatrix} \begin{pmatrix} x \\ 0 \end{pmatrix} = 2 \quad (2.0.1)$$

$$\Rightarrow x = 2 \quad (2.0.2)$$

$$\text{put } \mathbf{x} = \begin{pmatrix} 0 \\ y \end{pmatrix}$$

$$\begin{pmatrix} 1 & -1 \end{pmatrix} \begin{pmatrix} 0 \\ y \end{pmatrix} = 2 \quad (2.0.3)$$

$$\Rightarrow y = -2 \quad (2.0.4)$$

$$\mathbf{P} = \begin{pmatrix} 2 \\ 0 \end{pmatrix}, \mathbf{Q} = \begin{pmatrix} 0 \\ -2 \end{pmatrix} \quad (2.0.5)$$

b)

1) there is no constant in the line equation thus it passes through the origin

put $\mathbf{x} = \begin{pmatrix} 1 \\ y \end{pmatrix}$ in equation

$$\mathbf{A} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \mathbf{B} = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \quad (2.0.6)$$

Graphs using python are constructed for equations (a) and (b)

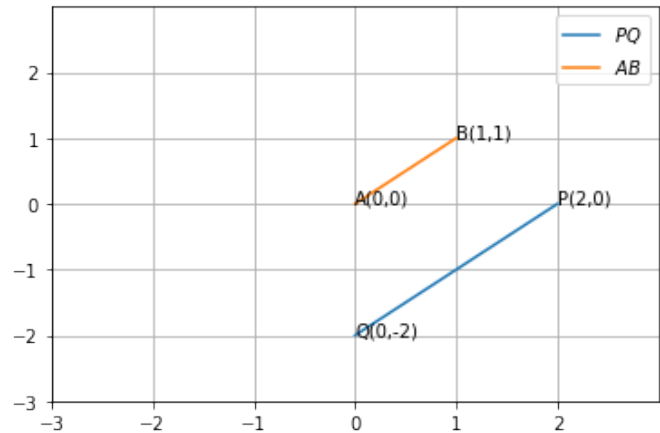


Fig. 2.1: Graphs of Equations (a) and (b)