ASSIGNMENT 9

SOWMYA BANDI

Download all python codes from

https://github.com/Sowmyabandi99/Assignment9/blob/main/assignment9.py

Latex-tikz codes from

https://github.com/Sowmyabandi99/Assignment9/blob/main/main.tex

1 Question No 2.44

Solve 3y-5x < 30.

2 SOLUTION

Let $\begin{pmatrix}-5 & 3\end{pmatrix}\mathbf{x} = 30$ intersects the x-axis and y-axis at **A** and **B** respectively.

1) Let $\mathbf{A} = \begin{pmatrix}x\\0\end{pmatrix}$

Put **A** in equation

$$\begin{pmatrix}-5 & 3\end{pmatrix}\begin{pmatrix}x\\0\end{pmatrix} = 30 \tag{2.0.1}$$

$$\implies x = -6 \tag{2.0.2}$$

$$\therefore \mathbf{A} = \begin{pmatrix}-6\\0\end{pmatrix} \tag{2.0.3}$$

2) Let $\mathbf{B} = \begin{pmatrix}0\\y\end{pmatrix}$

Put **B** in equation

$$\begin{pmatrix}-5 & 3\end{pmatrix}\begin{pmatrix}0\\y\end{pmatrix} = 30 \tag{2.0.4}$$

$$\implies y = 10 \tag{2.0.5}$$

$$\therefore \mathbf{B} = \begin{pmatrix}0\\10\end{pmatrix} \tag{2.0.6}$$

3) Origin = $\begin{pmatrix}0\\0\end{pmatrix}$ satisfy the equation $\begin{pmatrix}-5 & 3\end{pmatrix}\mathbf{x}$ <30

$\implies$ The solution is the right side of the line $\begin{pmatrix}-5 & 3\end{pmatrix}\mathbf{x} = 30$

4) The following python code is the diagrammatic representation of the solution in Fig. 2.1

Solution of $\begin{pmatrix}-5 & 3\end{pmatrix}\mathbf{x} < 30$

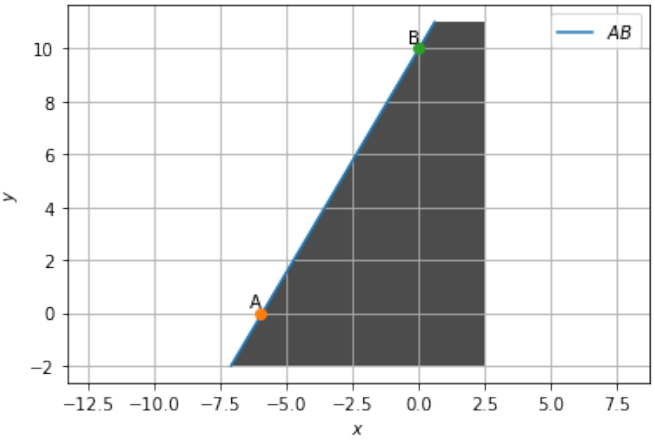

Fig. 2.1: $\begin{pmatrix}-5 & 3\end{pmatrix}\mathbf{x}$ <30