

ASSIGNMENT 9

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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 $(-5 \ 3)\mathbf{x} = 30$ 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

$$(-5 \ 3)\begin{pmatrix} x \\ 0 \end{pmatrix} = 30 \quad (2.0.1)$$

$$\Rightarrow x = -6 \quad (2.0.2)$$

$$\therefore \mathbf{A} = \begin{pmatrix} -6 \\ 0 \end{pmatrix} \quad (2.0.3)$$

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

Put **B** in equation

$$(-5 \ 3)\begin{pmatrix} 0 \\ y \end{pmatrix} = 30 \quad (2.0.4)$$

$$\Rightarrow y = 10 \quad (2.0.5)$$

$$\therefore \mathbf{B} = \begin{pmatrix} 0 \\ 10 \end{pmatrix} \quad (2.0.6)$$

3) Origin $= \begin{pmatrix} 0 \\ 0 \end{pmatrix}$ satisfy the equation $(-5 \ 3)\mathbf{x} < 30$
 \Rightarrow The solution is the right side of the line $(-5 \ 3)\mathbf{x} = 30$

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

Solution of $(-5 \ 3)\mathbf{x} < 30$

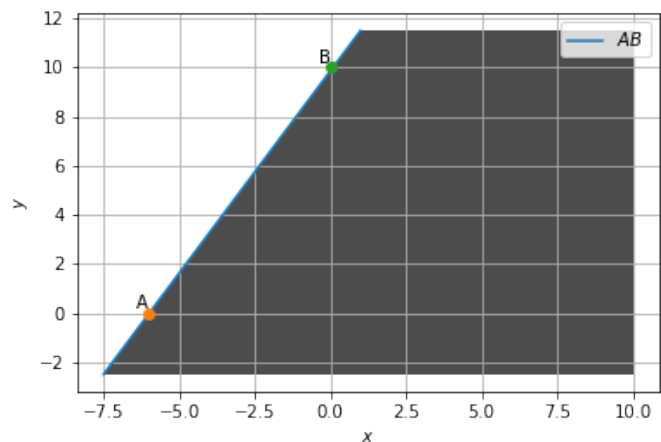


Fig. 2.1: $(-5 \ 3)\mathbf{x} < 30$