

ASSIGNMENT 9

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Download all python codes from

<https://github.com/nagajyothi/Assignment9/tree/main/Assignment9>

Latex-tikz codes from

<https://github.com/nagajyothi/Assignment9/tree/main/Assignment9>

1 QUESTION No 2.40

solve $Y+8 \leq 2x$

2 SOLUTION

Let $-2X+Y \geq -8$
 $\begin{pmatrix} 3 & 4 \end{pmatrix}x = 12$ intersects the x-axis and y-axis at
A and **B** respectively.

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

Put \mathbf{A} in equation

$$\begin{pmatrix} -2 & 1 \end{pmatrix} \begin{pmatrix} x \\ 0 \end{pmatrix} = -8 \quad (2.0.1)$$

$$\implies x = 4 \quad (2.0.2)$$

$$\therefore \mathbf{A} = \begin{pmatrix} 4 \\ 0 \end{pmatrix} \quad (2.0.3)$$

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

Put \mathbf{B} in equation

$$\begin{pmatrix} -2 & 1 \end{pmatrix} \begin{pmatrix} 0 \\ y \end{pmatrix} = -8 \quad (2.0.4)$$

$$\implies y = -8 \quad (2.0.5)$$

$$\therefore \mathbf{B} = \begin{pmatrix} 0 \\ -8 \end{pmatrix} \quad (2.0.6)$$

3) Origin $= \begin{pmatrix} 0 \\ 0 \end{pmatrix}$ satisfy the equation $\begin{pmatrix} -2 & 1 \end{pmatrix}x - 8$
 \implies The solution is the right side of the line
 $\begin{pmatrix} -2 & 1 \end{pmatrix}x = -8$

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

Solution of $-2x+Y \geq -8$

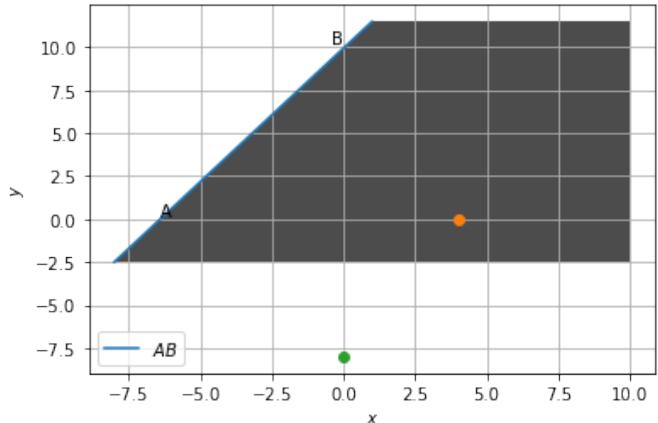


Fig. 2.1: Graphical Solution