ASSIGNMENT 9

ATLA KEERTHANA

Download all python codes from

https://github.com/Atlakeerthana/Assignment9/tree/main/Assignment9

Latex-tikz codes from

https://github.com/Atlakeerthana/Assignment9/tree/main/Assignment9

1 Question No 2.39

Solve 3x+4y ≤ 12.

2 SOLUTION

Let 3x+4y = 12 intersects the x-axis and y-axis at **A** and **B** respectively.

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

$$3x = 12 \tag{2.0.1}$$
$$\implies x = 4 \tag{2.0.2}$$
$$\mathbf{A} = \begin{pmatrix} 4 \\ 0 \end{pmatrix} \tag{2.0.3}$$

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

$$4y = 12 \tag{2.0.4}$$
$$\implies y = 3 \tag{2.0.5}$$
$$\mathbf{B} = \begin{pmatrix} 0 \\ 3 \end{pmatrix} \tag{2.0.6}$$

3) Origin $= \begin{pmatrix} 0 \\ 0 \end{pmatrix}$ satisfy the equation 3x+4y ≤ 12

$$\implies 0 \leq 12 \tag{2.0.7}$$

Which is true. Hence origin lies in plane

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

Solution of 3x+4y = 12

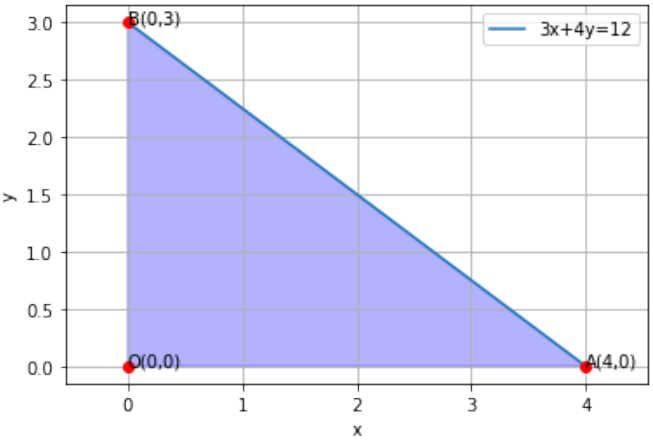

Fig. 2.1: Graphical Solution