Assignment 10

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Download all python codes from

https://github.com/ooharapolu/Matrix−Theory/tree/main/Assignment10/Codes

and latex-tikz codes from

https://github.com/ooharapolu/Matrix−Theory/tree/main/Assignment10

1 Question No. 2.53

Solve x+y ≤ 9,y > x,x ≥ 0

2 SOLUTION

Let x+y=9 intersects the x-axis and y-axis at **A** and **B** respectively.

1) Let

$$\mathbf{A} = \begin{pmatrix} x \\ 0 \end{pmatrix} \tag{2.0.1}$$

$$x = 9 \tag{2.0.2}$$

$$\mathbf{A} = \begin{pmatrix} 9 \\ 0 \end{pmatrix} \tag{2.0.3}$$

2) Let

$$\mathbf{B} = \begin{pmatrix} 0 \\ y \end{pmatrix} \tag{2.0.4}$$

$$y = 9 \tag{2.0.5}$$

$$\mathbf{B} = \begin{pmatrix} 0 \\ 9 \end{pmatrix} \tag{2.0.6}$$

3) Origin=$\begin{pmatrix} 0 \\ 0 \end{pmatrix}$ does satisfy the equation x+y≤9

$\implies$ The solution is the left side of the line x+y=9

Now,let y=x intersects the x-axis and y-axis at C and D respectively.

1) Let

$$\mathbf{C} = \begin{pmatrix} 0 \\ y \end{pmatrix} \tag{2.0.7}$$

$$y = 0 \tag{2.0.8}$$

$$\mathbf{C} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.9}$$

2) Let

$$\mathbf{D} = \begin{pmatrix} 2 \\ y \end{pmatrix} \tag{2.0.10}$$

$$y = 2 \tag{2.0.11}$$

$$\mathbf{D} = \begin{pmatrix} 2 \\ 2 \end{pmatrix} \tag{2.0.12}$$

3) Origin=$\begin{pmatrix} 9 \\ 0 \end{pmatrix}$ does not satisfy the equation x>y

$\implies$ The solution is the left side of the line x=y

Also,x≥0

So,the solution is the right side of y-axis.

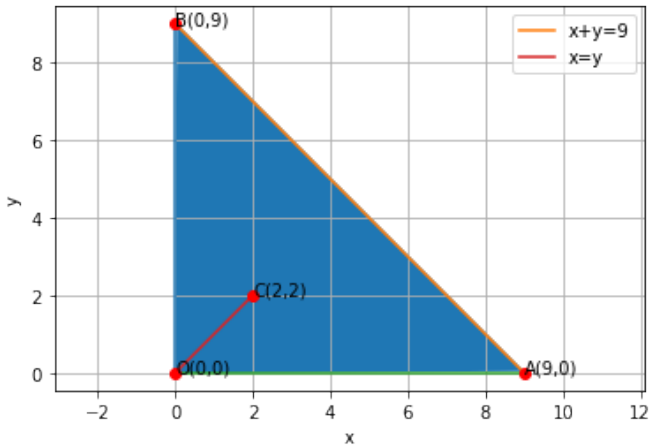

Fig. 2.1: fig:2.0