Assignment 11

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Download all python codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment11/Codes

and latex-tikz codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment11

1 Question No. 2.68

Solve 5(2x-7) - 3(2x+3) ≤ 0 , 2x+19 ≤ 6x+47 .

2 Solution

1) Solving first inequality by taking slack variable $s_1 \geq 0$.

$$5(2x-7)-3(2x+3) \leq 0 \tag{2.0.1}$$
$$\implies 10x-35-6x-9+s_1 = 0 \tag{2.0.2}$$
$$\implies 4x-44+s_1 = 0 \tag{2.0.3}$$
$$\implies x = 11-\frac{s_1}{4} \tag{2.0.4}$$
$$\implies x \leq 11 \tag{2.0.5}$$
$$\implies x \in (-\infty, 11] \tag{2.0.6}$$

2) Solving second inequality by taking slack variable $s_2 \geq 0$

$$2x+19 \leq 6x+47 \tag{2.0.7}$$
$$\implies 2x+19+s_2 = 6x+47 \tag{2.0.8}$$
$$\implies -4x-28+s_2 = 0 \tag{2.0.9}$$
$$\implies x = -7+\frac{s_2}{4} \tag{2.0.10}$$
$$\implies x \geq -7 \tag{2.0.11}$$
$$\implies x \in [-7, \infty) \tag{2.0.12}$$

From (2.0.5) and (2.0.11),solution of the given system of inequality is given by

$$-7 \leq x \leq 11 \tag{2.0.13}$$
$$\implies x \in [-7, 11] \tag{2.0.14}$$

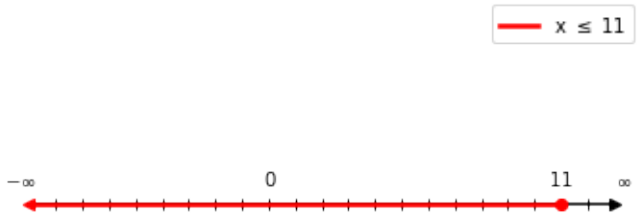

Fig. 2.1: x ≤ 11

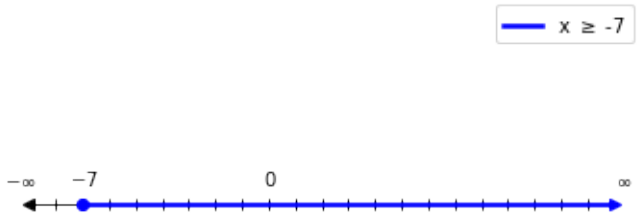

Fig. 2.2: x ≥ -7

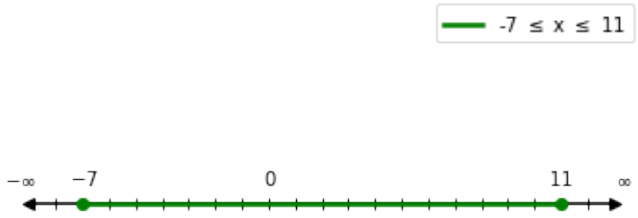

Fig. 2.3: -7 ≤ x ≤ 11