

The Linear Programming

Question1. Solve the following inequalities.

1. $3x + y < 0$

2. $x + 5y < -5$

3.
$$\begin{aligned} 2x + 3y &> 6 \\ y &> 6 - 2x \end{aligned}$$

4.
$$\begin{aligned} x - y &< 1 \\ y - x &< 1 \end{aligned}$$

5.
$$\begin{aligned} 4x + 3y &\geq 12 \\ y &\geq x \\ 2y &\leq 3x + 6 \end{aligned}$$

6.
$$\begin{aligned} 5y - 2x &\leq 10 \\ 4x - 6y &\leq 12 \\ y &\geq 0 \end{aligned}$$

Question2. Minimize $Z = 20x + 30y$
subject to

$$\begin{aligned} 2x + y &\leq 10 \\ 3x + 4y &\leq 24 \\ 8x + 7y &\geq 56 \\ x, y &\geq 0 \end{aligned}$$

Question3. Maximize $Z = 4x - 6y$
subject to

$$\begin{aligned} y &\leq 7 \\ 3x - y &\leq 3 \\ x + y &\geq 5 \\ x, y &\geq 0 \end{aligned}$$

Question4. Maximize $Z = 10x + 2y$
subject to

$$\begin{aligned} x + 2y &\geq 4 \\ x - 2y &\geq 0 \\ x, y &\geq 0 \end{aligned}$$