



1- Use graphical method to solve

$$\text{Maximize } Z = 50x + 18y$$

Subject to the constraints

$$2x + y \leq 100$$

$$x + y \leq 80$$

$$x \geq 0, y \geq 0$$

2- Use graphical method to solve

$$\text{Maximize } Z = 100 + 100y.$$

Subject to the constraints

$$10x + 5y \leq 80$$

$$6x + 6y \leq 66$$

$$4x + 8y \geq 24$$

$$5x + 6y \leq 90$$

$$x \geq 0, y \geq 0$$

3- Use the graphical method to solve this problem:

$$\text{Minimize } Z = 3x_1 + 2x_2,$$

subject to

$$x_1 + 2x_2 \leq 12$$

$$2x_1 + 3x_2 = 12$$

$$2x_1 + x_2 \geq 8$$

and

$$x_1 \geq 0, x_2 \geq 0.$$

4- Use the graphical method to solve this problem:

$$\text{Minimize } Z = 15x_1 + 20x_2,$$

subject to

$$x_1 + 2x_2 \geq 10$$

$$2x_1 - 3x_2 \leq 6$$

$$x_1 + x_2 \geq 6$$

and

$$x_1 \geq 0, x_2 \geq 0.$$

5- Use the graphical method to solve the problem:

$$\text{Maximize } Z = 2x_1 + x_2,$$

subject to

$$x_2 \leq 10$$

$$2x_1 + 5x_2 \leq 60$$

$$x_1 + x_2 \leq 18$$

$$3x_1 + x_2 \leq 44$$

and

$$x_1 \geq 0, \quad x_2 \geq 0.$$

6- Use the graphical method to solve the problem:

$$\text{Maximize } Z = 10x_1 + 20x_2,$$

subject to

$$-x_1 + 2x_2 \leq 15$$

$$x_1 + x_2 \leq 12$$

$$5x_1 + 3x_2 \leq 45$$

and

$$x_1 \geq 0, \quad x_2 \geq 0.$$