

Worksheet 3.4 Linear Programming

Graph each system of constraints. Name all vertices. Find the values of x and y that maximize or minimize the objective function.

$$1. \begin{cases} x \geq 0 \\ y \geq 0 \\ y \leq 3x + 3 \\ y \leq -x + 7 \end{cases}$$

Maximize: $P = 10x + 16y$

$$2. \begin{cases} x \geq 0 \\ y \geq -1 \\ y \leq x + 1 \\ y \leq -\frac{1}{4}x + 6 \end{cases}$$

Minimize: $P = 3x + 5y$

$$3. \begin{cases} x \geq -2 \\ y \leq 1 \\ y \geq \frac{1}{2}x - 2 \\ y \leq -2x + 3 \end{cases}$$

Maximize: $P = 2.4x + 1.5y$

$$4. \begin{cases} x \geq 0 \\ y \geq 0 \\ y \geq 4x - 4 \\ y \leq x + 5 \end{cases}$$

Maximize: $P = -21x + 11y$

$$5. \begin{cases} x \leq 0 \\ y \geq 0 \\ y \leq 9 \\ y \geq -2x - 7 \end{cases}$$

Minimize: $P = -2x - 4y$

$$6. \begin{cases} x \geq 0 \\ y \leq 5 \\ y \geq \frac{1}{5}x - 3 \\ y \leq -x + 4 \end{cases}$$

Maximize: $P = x + 3y$