Universidad de Costa Rica
EC3201 - Teoría Macroeconómica 2

Practice 3: Optimization with Inequality Constraints

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For each of the problems, find the values of x and y that maximize function $f(x, y)$ subject to the given constraints.

1. $f(x, y) = -(x - 4)^2 - (y - 4)^2$ subject to $x + y \leq 4$.

2. $f(x, y) = -(x - 4)^2 - (y - 4)^2$ subject to $x + y \leq 4$ and $x \leq 1$.

3. $f(x, y) = \left(3\sqrt{x} + 2\sqrt{y}\right)^2$ subject to $2x + y \leq 17$

4. $f(x, y) = \left(3\sqrt{x} + 2\sqrt{y}\right)^2$ subject to $2x + y \leq 17$ and $x \geq 5$.

5. $f(x, y) = \left(\theta\sqrt{x} + (1 - \theta)\sqrt{y}\right)^2$ subject to $\ln x + \ln y \leq A$

6. $f(x, y) = 3x + 2y$ subject to $2x + y \leq 12$

7. $f(x, y) = 3x + 2y$ subject to $2x + y \leq 12$ and $x \geq 2$