

Optimization:

For each problem below, determine the optimal output level for each firm given the inverse demand function and marginal cost.

1. $p = 500 - q$ $MC = 50$

2. $p = 1000 - 2q$ $MC = 200$

3. $p = 300 - q_1 - q_2$ $MC = 60$

4. $p_1 = 400 - 2q_1 - q_2$ $MC_1 = 0$
 $p_2 = 400 - q_1 - 2q_2$ $MC_2 = 0$

For each problem below, calculate the optimal bundle of goods x and y given the utility function and budget constraint.

5. $u(x, y) = x^{0.4}y^{0.6}$ $2x + 3y \leq 50$

6. $u(x, y) = -(x - 3)^3(y - 2)^2$ $x + y \leq 4$

7. $u(x, y) = -(x - 3)^3(y - 2)^2$ $x + y \leq 10$