
Econ 302: Assignment 2

Instructor: Huan Xie, Concordia University
due 12:00pm July 13th 2015, Monday, put in my mailbox

Provide complete work that leads to each answer. Do the problems in the order given.

1. (35points) A monopolist has access to an industry with market demand

$$P = 10 - y \quad (1)$$

where y is the firm's quantity. Its cost function is

$$C(y) = 2y \quad (2)$$

- a. Determine the firm's profit maximizing quantity. Show your outcome on a graph. What is the firm's profit? Compute the elasticity of demand at the profit-maximizing output.
- b. Now suppose the firm's cost function is

$$C(y) = 4y \quad (3)$$

Again determine the profit-maximizing quantity, profit and the elasticity at the profit-maximizing quantity. (No graph is required in this case.)

- c. Essentially, we have two types of monopolist, one with a low marginal cost and one with a high marginal cost. Which monopolist type operates at the higher level of elasticity? Why?
- d. Calculate the price elasticity of demand at the optimal output level the monopolist will choose, given any linear demand, $p = a - by$, and constant marginal cost, c , and show that a monopolist would never operate at a point elasticity less than 1.

2. (35 points) A monopolist faces a market evenly split high valuation consumers, with individual demand

$$P^h = 10 - y^h \quad (4)$$

and low valuation consumers with individual demand

$$P^l = 8 - 2y^l \quad (5)$$

For convenience, suppose the firm has a marginal cost equal to zero. Arbitrage is impossible for this good.

- a. Suppose the firm can observe group status. Determine the firm's profit-maximizing third degree price discrimination for these groups. Show this outcome on a graph.
- b. Now suppose the firm cannot observe group status and so must use second degree price discrimination. Determine the firm's optimal second-degree pricing scheme. Show this outcome on a graph, and explain why your answer is the best outcome for the firm.
- c. Which of these two outcomes (second degree and third degree) is better from the economy's view? (hint: which one is more efficient?)

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