

ECON 310
Nazarov
Problem set (Chapter 10-12)

1. Silverscreen Movie Rentals has market power in the previously viewed video sales market. The demand curve for Silverscreen movies is

$$Q_D = 10 - 0.4P$$

Silverscreen's marginal revenue function is

$$MR(Q) = 25 - 5Q$$

Silverscreen's marginal cost curve is

$$MC(Q) = 0.53 + 0.026Q$$

- a. Determine Silverscreen's profit maximizing price.
- b. Calculate Silverscreen's elasticity of demand at this price.
- c. What is Silverscreen's mark-up over marginal cost as a percentage of price?

2. John Gardner is the city planner in a medium-sized southeastern city. The city is considering a proposal to award an exclusive contract to Clear Vision, Inc., a cable television carrier. Mr. Gardner has discovered that an economic planner hired a year before has generated the demand, marginal revenue, total cost and marginal cost functions given below:

$$P = 28 - 0.0008Q$$

$$MR = 28 - 0.0016Q$$

$$TC = 120,000 + 0.00062Q$$

$$MC = 0.0012Q$$

where Q = the number of cable subscribers and P = the price of basic monthly cable service. Conditions change very slowly in the community so that Mr. Gardner considers the cost and demand functions to be reasonably valid for present conditions. Mr. Gardner knows relatively little economics and has hired you to answer the questions listed below.

- a. What price and quantity would be expected if the firm is allowed to operate completely unregulated?
- b. Mr. Gardner has asked you to recommend a price and quantity that would be socially efficient. Recommend a price and quantity to Mr. Gardner using economic theory to justify your answer.
- c. Compare the economic efficiency implications of (a) and (b) above.

3. McCullough has a monopoly on rental dwellings in the local community. The demand for rental dwellings is

$$Q_D = 70000 - 50P$$

The resulting marginal revenue function is

$$MR(Q) = 1400 - 0.04Q_D$$

McCullough's marginal cost of providing rental dwellings is

$$MC(Q) = 0.01Q + 20$$

Suppose that to ease the burden on renters, the local community has instituted a price ceiling of \$480.

- a. Does consumer surplus increase due to this price ceiling?
- b. Does social welfare increase as a result of the price ceiling?

4. Assume a multiplant monopolist in the widget industry. The demand curve for widgets is

$$QD = 120 - 4P$$

This implies the marginal revenue function is

$$MR(Q) = 30 - 0.5Q$$

A monopolist has two plants to produce widgets. The marginal cost of using plant 1 is

$$MC_1(Q_1) = \frac{1}{2}Q_1$$

The marginal cost of using plant 2 is

$$MC_2(Q_2) = \frac{1}{2}Q_2$$

- a. Determine how many widgets plant 1 will produce?
- b. Determine how many widgets plant 2 will produce?
- c. What is the price a monopolist receives for selling widgets?

5. Suppose that the market demand for mountain spring water is given as follows:

$$P = 1200 - Q$$

Mountain spring water can be produced at cost 200 per unit.

- a. What is the profit maximizing level of output and price of a monopolist?

b. What level of output would be produced by each firm in a Cournot duopoly in the long run? What will the price be?

c. What will be the level of output and price in the long run if this industry were perfectly competitive?

5 The market structure of Red Raider Gear is best characterized by monopolistic competition. Red Raider Gear is one of the producers in this market. The demand for Red Raider Gear is:

$$Q_d = 50 - P$$

The resulting marginal revenue curve is

$$MR = 50 - 2Q_d$$

The Red Raider Gear cost function is

$$C(Q) = \frac{1}{8}Q^2 + 555.56$$

Therefore we have $MC(Q) = 0.25Q$. Determine the profit maximizing level of output and the price charged to customers for Red Raider Gear. Is this a long-run equilibrium?