PROBLEM SET #7: PRODUCTION COSTS, MONOPOLY, PRICE DISCRIMINATION

Costs

1.   Suppose that McDonald's produces hamburgers at a constant LMC of $2 each. Plot the LAC and LTC as a function of output on a diagram with output on the horizontal axis.

2.   Suppose that Ford produces a particular model of auto only with a lumpy investment of $1 billion in research and development. Once this investment is undertaken they can produce vehicles at a constant long run marginal cost of $10,000 each. Graph the LTC and LAC curves as a function of output, q.

3.   A firm has short run total costs, $STC = 9 + 2q + q^2$. It has short run marginal costs of $2+2q$ (these are just the derivative of STC with respect to q).

(a) Calculate SAC as a function of q.
(b) Plot on a diagram SAC, and SMC as a function of q.
(c) Show that SMC = SAC at the point where SAC is minimized.

Monopoly, Price Discrimination

4. Kurt Vile produces and distributes the Libertarian Magazine, "Anarchy." Demand is given by $P = 55 - 2Q$. His cost function is $TC = 100 - 5Q + Q^2$. So $MC = -5+2Q$.

a. What is Kurt's marginal revenue as a function of Q?

b. If Kurt wants to maximize profits, what price does he charge? How much profit and consumer surplus is generated at this price?

c. If Kurt wants to maximize total social surplus what price does he charge? What are his profits at this price?

d. What is the deadweight loss if profits are maximized?

5. Suppose the distributor charges Holiday Cinemas $4 per ticket sold to rent the movie, "STAR WARS 15: THE NEXT BILLION." Suppose the theater can seat a maximum of 200 people. Suppose also that the demand to see the movie is given by $P = 10 - Q/10$ in the afternoon, and $P = 20 - Q/10$ in the evening.

(a) Calculate the profit maximizing price in the evening and the afternoon, and the

number of people who see each show. (Using graphs to set up the problem will be helpful)

(b) What is the amount of revenue paid to the movie distributor?

(c) Suppose that the distributor instead asks the theater owner for a flat fee of $1000 to show the movie, with no charge per customer. Calculate whether or not the theater owner would prefer this arrangement.

(d) Show whether the fee per viewer of $4 charged by the distributor, or the flat fee of $1000 results in a more EFFICIENT outcome.

(e) What is the efficient price for admission in the afternoon and in the evening?

6. Auto dealerships are of two sorts. Those that bargain over prices, and those that sell only at the posted price. Customers report great dissatisfaction with dealers that bargain over prices. Yet the number of fixed price dealerships has been declining recently. Explain why.

7. Suppose that the demand for electricity by residential consumers is the same for all consumers and is given by $P = 1 - Q/100$ where P is the price per kw-hour in $ and Q is the kwhours per week. Suppose that the marginal cost of supplying electricity is $0.20 per kw-hour.

(a) If the electricity company can charge a fixed fee as well as a price per unit, calculate the profit maximizing fee per week, the quantity of units sold, and the price charged.

(b) What is the consumer surplus under the profit maximizing pricing scheme?

(c) Is the profit maximizing pricing scheme socially efficient? Explain.

8. Suppose that it is proposed to run a train between Sacramento and San Francisco. The smallest train seats 150 people and the cost per trip is found to be $2,500, irrespective of how many people travel. The demand for travel (in $) is $P = 40 - Q/5$.

(a). On a diagram draw the demand curve for service each day and the marginal cost curve.

(b) What will happen if a private firm tries to provide the service and can charge only one price? Explain.

(c) Show what the socially efficient price for the service is, and that it is socially beneficial to provide the service.

(d) If the private firm was able to effectively price discriminate would it provide the service and would it provide it at efficient levels? Explain.