Homework 6

Problem 1 A monopolist faces the demand curve $p = 24 - Q$, and has constant marginal cost of \$4. If the firm runs an advertising campaign, its demand shifts out to $p = 32 - Q$. What is the largest amount the firm would be willing to pay for this campaign?

Problem 2 Suppose that BMW can produce and quantity of cars at a constant marginal cost of \$20,000 and a fixed fost of \$10 billion. You are asked to advise the CEO as to what prices and quantities BMW should set for sales in Europe and the United States. The demand for BMW's in each market is given by

$$Q_E = 4,000,000 - 100p_E$$
$$Q_{US} = 1,000,000 - 20p_{US}$$

where all prices and costs are in thousands of dollars. Assume that BMW can restrict U.S. sales to authorized BMW dealerships only, so that reslae is impossible.

a. What quantity of BMW's should the firm sell in each market, and what should the price be in each market? What will be BMW's total profit?

b. If BMW were forced to charge the same price in each market, what would be the quantity sold in each market, the equilibrium price, and the company's profit?

Problem 3 The demand function for a monopolist's product is given by $p = 43 - 2q$. The monopolist has a constant marginal cost of \$3.

a. Find the monopolist's profit-maximizing price and quantity. What is his profit?

b. Suppose the monopolist is able to perfectly price discriminate. What quantity will he sell, and what will his profit be?

c. Suppose the monopolist is able to charge a two-part tariff. What up-front fee will he charge, and how much will he charge for each unit?

Problem 4 The Grand Theater is a movie house in a medium-sized college town. On any given night, if the theater is open, it must pay \$500 in fixed costs (paying electricity, ushers, etc) regardless of how many people come to the theater. If the theater is closed, its costs are 0. There are two groups of people who come to the Grand Theater, students and non-students. Students have demand function $q_s = 220 - 40p_s$ while non-students have demand function $q_n = 140 - 20p_n$.

a. Suppose that the theater cannot tell students apart from non-students. What price will it charge? How many students will come? How many non-students? What will the profits of the Grand Theater be?

b. Now suppose that the cashier can accurately tell students from non-students by asking students to show their student IDs. Students cannot resell their tickets to non-students after purchase. Will the Grand charge students and non-students different prices? What will these prices be? What will be the Grand's profits?

c. Finally, suppose that the Grand Theater can only hold 150 people. If the theater is able to charge separate prices to students and non-students, what prices will it charge, and how many students and non-students will come?

Problem 5 Your firm produces 2 products, each at 0 marginal cost. You face four types of customers, each comprising 25% of your total customers (say you have N total customers). The groups have the following willingness to pay for your product:

customer	good 1	good 2
A	\$25	\$100
B	\$40	\$80
C	\$80	\$40
D	\$100	\$25

a. Compare selling these two products separately to bundling them and selling them together for one price. Which leads to a higher profit?

b. Now consider the possibility that you sell these goods both bundled and unbundled (that is, you set three prices, one for good 1 alone, one for good 2 alone, and one for the bundle of good 1 and good 2). Would doing this improve upon the outcome of part a? Explain.

c. Now suppose that the production of each good entails a marginal cost of \$30. How does this information change your answers to a and b above? Is it better to sell the goods unbundled, bundled, or both bundled and separately?