Finance 360
Problem Set #6

1) Suppose that you are the manager of an opera house. You have a constant marginal cost of production equal to \$50 (i.e. each additional person in the theatre raises your costs by \$50 – we will ignore any fixed costs for now.) You have estimated your demand curve for tickets as follows:

$$Q = 150 - P$$

   a) Calculate your profit maximizing ticket price.

   Now, suppose that you re-estimated your demand curve, but this time, you included a dummy variable for gender:

$$Q = 175 - P - 50D$$
$$D = \begin{cases} 1, \text{if consumer is male} \\ 0, \text{if consumer is female} \end{cases}$$

   b) Given your new information, calculate your profit maximizing price assuming that you can't distinguish between male and female customers (i.e. your tickets are sold online)
   c) Now, calculate the prices you would charge if you could distinguish between male and female consumers (i.e. ticket purchasers show up to the box office to buy tickets.) Why might you be concerned about secondary markets forming for your product?
   b) Calculate your profits in (a) , (b) and (c) .

2) Continuing with the same example, suppose again, that you are faced with the same demand curve(s)

$$Q = \begin{cases} 175 - P, & \text{(women)} \\ 125 - P, & \text{(men)} \end{cases}$$

   a) Suppose that you charged the same price to each consumer (the price calculated in part (b) above. Calculate the consumer surplus for both consumer types.
   b) Suppose that you were to set a price equal to your marginal cost. Calculate the consumer surplus derived by both consumers.
   c) If you could distinguish between the types of consumers, how would you set up your prices to maximize profits? (i.e. you could start up an "opera lover's society" and charge a membership fee)

d) How would your answer to (b) change if you could not distinguish between customer types? (i.e. you could sell different ticket packages.

3) Suppose that you are George Lucas. You are in the process of packaging the final trilogy (actually the three prequels) of Star Wars for sale to the public. Your marginal costs of production are $2 per movie. Further, you know that there are two types of consumers that you face: children under the age of 10 and everybody else.

Children under 10: Love Jar Jar Binks
Everybody else: Would like to see Jar Jar crushed by a very large truck

Consequently, willingness to pay for each of the three movies is based on how many minutes Jar Jar is on the screen.

Movie	Under 10yrs old	Over 10 yrs Old
Episode 1	$60	$5
Episode 2	$30	$40
Episode 3	$10	$50

a) If you sold these three movies separately, what would your prices be?
b) If you only sold these movies as a box set, what should you charge?
c) Calculate your profits for (a) and (b).

4) Suppose that you have two manufacturers: one company specializes in the production of left shoes (They have a store called "The Left Shoe Emporium"). Another company specializes in right shoes ("Right Shoes 'R' Us"). Consumers have a demand for shoes given by:

$$Q = 150 - P$$

Where P is the price of a pair of shoes: $P = P_L + P_R$. For simplicity, assume that marginal costs for each firm constant and equal to zero.

a) Write down each firm's inverse demand curve (They price they can charge as a function of sales and their competitor's price)
b) Solve each firm's profit maximization problem as a function of their competitor's price.
c) What would each competitor set as their price in equilibrium?
d) Now, suppose that these two companies merged. What would happen to the cost of a pair of shoes?

5) Spatial competition is an example of *non-price* competition. Specifically, in addition to the price firm charges, it also chooses a location in which to set up shop.

    a) Describe how this firm location problem is solved.
    b) Suppose that you are a cosmetic manufacturer. How could you use a spatial competition model when choosing your cosmetic line?