

## Additional Problems for Review Two

### Section One: 2<sup>nd</sup> Degree Price Discrimination

- The Mooresville Swim Club wants to provide potential members with a choice of two membership plans. The club has determined that there are two potential consumer groups – the lap swimmers and recreational users. There are 100 customers in each group. The demand for admission to the pool (in visits per month) are given by the following equations:

$$\text{Lap Swimmers: } P = 10 - \frac{Q}{3}$$

$$\text{Recreational Swimmers: } P = 6 - Q$$

The club's monthly cost function is:

$$C(Q) = 15,000$$

If the club offers the following plans, then will the club 1) Induce the lap swimmers to buy more pool visits than the recreational swimmers and 2) earn a profit?

Proposed Plan A: 6 hours - \$18

Proposed Plan B: 30 hours - \$90

Challenge Question – Can the club design a better set of plans? Why or why not?

### Section Two: Other Pricing Plans

- Sony realizes that there are three types of video game consumers who buy their Playstation 3 video game console. Type 1 likes sports video games, Type 2 likes racing video games, and Type 3 likes action games. Sony is considering how it should price the following products:

NFL Football – a sports video game  
 Stock Car Racing – a racing video game  
 Armed Robbery – an action adventure video game  
 The Playstation 3 - console (that plays the video games)

Sony has collected the following information on the three types of customers' willingness to pay for these four products:

Customer/Product	NFL Football	Stock Car Racing	Armed Robbery	Playstation 3
Type 1	\$75	\$55	\$35	\$300
Type 2	\$60	\$100	\$80	\$350
Type 3	\$40	\$40	\$100	\$420

If Sony wants to maximize its **profit**, then how should it set the prices for these products? (You may assume that the marginal cost of producing each game is \$10, and the cost of producing the console is \$200.)

3. Out of Bounds golf club has estimated the demand for rounds of golf from an average citizen of the surrounding community to be:

$$P = 120 - 2Q$$

The club's cost function is described by the following expression:

$$C(Q) = 20,000 + 10Q$$

- a) If the club has the ability to act as a single price monopolist, then what price should it charge for a round of golf? How many rounds will the typical golfer play? If there are 200 golfers in the surrounding community, then how much profit will the club earn?
- b) The general manager of the club is thinking of creating an annual membership plan. If you were to advise her on the plan's structure, then what would you recommend? Would this plan result in more profit being earned by the club?

### Section Three: Monopsony

4. The town of Smithfield, VA is the home of Smithfield Pork. The company employs 71% of all of the workers employed in town. (Perloff, 2007) Suppose that the market for labor is described by the following equations:

$$\text{Demand - } w = 50 - \frac{1}{20}L$$

$$\text{Supply - } w = \frac{2}{20}L$$

$$\text{Marginal Expenditure on Labor - } w = \frac{4}{20}L$$

- a) Find the market equilibrium if this is a competitive labor market.
- b) Find the market equilibrium if this is a monopsonistic labor market.
- c) Calculate the deadweight loss associated with the monopsony equilibrium.