EC3322
Industrial Organization I
Semester 1, 2015-2016
Tutorial #3

You will receive full credit if you present your attempt at the solution during tutorial, whether or not you have the correct answer. Also, feel free to discuss the questions and answers with other students who have not yet attended tutorial. However, I request that you do not ask former students of this module or current students who attend an earlier tutorial than you for the answers before your own tutorial has taken place.

1. (∗) Instead of using quantity to second-degree price discriminate, a monopolist can use quality to infer customer type. In fact, the model discussed in lecture doesn't change at all except that Q is interpreted as quality instead of quantity.

   Sometimes, to implement second degree price discrimination using quality a monopolist takes a perfectly good product and creates a second version of lesser quality by damaging it (this phenomenon is called *damaged goods*). For example, IBM took their fully functioning 486 chip, disabled a math co-processor, and sold the chip as a budget version of the 486.

   Find an example of damaged goods to discuss in tutorial.

2. (Midterm, 2013) Suppose that you manage a cafe. You have estimated the demand for drinks for each customer to be:
$$Q = 1 - P.$$
   That is, if you charge a price of P, then each customer will purchase $1 - P$ drinks. The marginal cost of a drink is c.

   Thinking back to your days attending EC3322 lectures, you remember that profit is greatest under a two-part tariff $\{F, P\}$, where F is an entry fee and P is the price per drink. Although you recall being told what the optimal F and P are, you want to derive the result yourself just in case your prof was mistaken.

   (a) Write the entry fee F as a function of P.

   (b) What is the per-customer profit function? The profit function should include P but not F since F can be substituted out using what you derived in part (a).

   (c) Maximize the profit function to find the optimal P.

(d) What is the optimal F?

3. (Midterm Sem 2, 2013/14) In a monopoly market there are 2 "low-demand" people and 1 "high-demand" person. Each low-demand person has demand $P = 12 - Q$. The high-demand person has demand $P = 16 - Q$. The monopolist's cost function is $C(Q) = 8Q$.

   Assume that the monopolist is not able to distinguish between the low-demand people and the high-demand person, and offers two different packages, one targeted to each type of person. A package consists of a fee for a given number of units. That is, the monopolist uses block pricing.

   (a) What is the package targeted to low-demand people?

   (b) What is the package targeted to the high-demand person?

   (c) What are the monopolist's profits?

   (d) Draw a graph of your answers to parts (a) and (b). Be sure that all the relevant parts of the problem are clearly labeled.

4. (Midterm, Sem 2, 2014-15) The amusement park Legolandia has two types of customers: *locals* and *tourists*. As seen in the table below, a tourist has a willingness to pay (WTP) of $4 for the first ride, $3 for the second ride, $1 for the third ride, and 0 for any additional rides. A local has a willingness to pay of $2 for the first ride, $1 for the second ride, and 0 for any additional rides. Assume that there are equal numbers of tourists and locals. Note that rides can only be bought in whole numbers. The MC of providing a ride is $1.

Tourist			Local	
Ride	WTP		Ride	WTP
1	4		1	2
2	3		2	1
3	1			

   (a) Suppose that Legolandia can identify customer type and practices *first-degree* price discrimination using two-part pricing. What entry fees and prices per ride maximizes profit?

   (b) Suppose that Legolandia cannot identify customer type and practices *second-degree* price discrimination using block pricing. What are the profit maximizing packages?