EF210 Intermediate Microeconomics

Semester 1, 2016

Continuous Assessment, Homework No.4

**To be handed in at your lecture
in week 12, 8ᵗʰ December 2016**
Guideline answers will be discussed in the tutorial on the 9ᵗʰ.

Question 1 [5 marks; 1 mark for each sub-question]
The bakeries in a town face demand, inverse demand and marginal revenue of, respectively:
$$Q = 10 - 0.4P$$
$$P = 25 - 2.5Q$$
$$MR = 25 - 5Q$$
where P is the price of a loaf of bread and Q is the number of loaves produced.
All bakeries can manufacture bread at marginal cost of $MC = 5Q$.
   a) If the bakery market is competitive, and each firm acts as a price taker, what will be the equilibrium price for bread and quantity produced?
   b) Calculate the consumer surplus and producer surplus under competition?
   c) If there is only one bakery in the town acting as a monopolist and charging a single price for loaves of bread, calculate the equilibrium price and quantity.
   d) What would the consumer and producer surplus be in the case of monopoly?
   e) What is the deadweight loss under monopoly?

Question 2 [5 marks; 1 mark for each sub-question]
An airline estimates demand by frequent and infrequent passengers on a given route are respectively:
$$Q^{fd} = 5,000 - 10P, \qquad Q^{id} = 10,000 - 100P$$
The management believes it can distinguish members of the two passenger groups. Inverse Demands functions and marginal revenue functions of frequent and infrequent passengers are:
$$P = 500 - 0.1Q^{fd}, \qquad P = 100 - 0.01Q^{id}$$
$$MR^f = 500 - 0.2Q, \qquad MR^i = 100 - 0.02Q.$$

Average and marginal costs are estimated to be constant at €10. The managers wish to segment the market to charge frequent and infrequent passengers different prices.
   a) To maximize profits, what amount is sold in each segment of the market?
   b) What price is charged in each sub-market? Who pays more?
   c) What profits is earned under the policy of price discrimination?
   d) If the airline was unable to charge different prices to the different passengers, and so had to treat them as one aggregate group, what single price would it charge?
   e) What profits is earned when a single price is charged?