



Semester: 1/2011

EE 311 Microeconomic Theory

Exercise 9: Oligopoly, Part I

1. An industry consists of one large firm and five small firms all producing identical products. The small firms have identical plants. The cost functions of the large firm and each small firm are:

$$C_L = 0.001 q_L^2 + 3 q_L$$

$$C_S = 0.01 q_S^2 + 3 q_S$$

where L = Large firm

S = Small firm

C = total cost per week in Baht

q_i = firm output per week, in units ($i = L, S$)

The market demand curve is given by the equation:

$$Q = 5,250 - 250p$$

where Q = total sales per week, in units

p = price per unit, in Baht,

Determine the equilibrium situation according to the dominant firm price leadership model.

2. The photographic film market has 2 firms where marginal costs are:

$$MC_1 = 2 \quad MC_2 = 4$$

Market demand is given by

$$P = 24 - 2Q$$

- (a) Find price, quantity and profit for each firm for each of the following market strategies:
- (i) Cournot
 - (ii) Stackelberg with firm 1 leading
 - (iii) Stackelberg with firm 2 leading
 - (iv) Both firms attempt to lead
- (b) Write the results of (a) in a pay-off matrix.
- (c) Find the dominant strategy of each firm (if it exists) and find the Nash equilibrium, if it exists.
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