



B.E. International Program
Faculty of Economics
Thammasat University



EE311 Microeconomics Theory, Semester 1/2019

Homework Assignment #8 | Due date: Friday 22 November 2019 (Before lecture begins!)

Instruction:

- 1) Attempt all questions.
- 2) You may study and discuss in group but you have to write up your solutions independently and by handwriting only. Copying and/or Plagiarism is considered as a serious crime in academic arena and it will not be tolerated. If detected, all parties involved receive 'zero.'
- 3) If you have any questions, please feel free to email me at pwrasai@econ.tu.ac.th

Oligopoly (CH 13)

8. A homogeneous products duopoly faces a market demand function given by $P = 300 - 3Q$, where $Q = Q_1 + Q_2$. Both firms have a constant marginal cost $MC = 100$.
- a) What is Firm 1's profit-maximizing quantity, given that Firm 2 produces an output of 50 units per year? What is Firm 1's profit-maximizing quantity when Firm 2 produces 20 units per year?
 - b) Derive the equation of each firm's reaction curve and then graph these curves.
 - c) What is the Cournot equilibrium quantity per firm and price in this market?
 - d) What would the price in this market be if it were perfectly competitive?
 - e) What would the equilibrium price in this market be if the two firms colluded to set the monopoly price?
 - f) What is the Bertrand equilibrium price in this market?
(Hint: This is the case of Bertrand Duopoly with Homogeneous Product.)
 - g) What are the Cournot equilibrium quantities and industry price when one firm has a marginal cost of 100 but the other firm has a marginal cost of 90?
 - h) Assuming that Firm 1 is the Stackelberg leader, find the Stackelberg equilibrium quantities for each firm and the market price.

18. Suppose that the industry consists of a dominant firm, Braeutigam Cobalt (BC), which has a constant marginal cost equal to \$40 per unit. The market demand for cobalt is given by $Q = 200 - P$. There are 9 fringe producers, each of whom has a marginal cost curve $MC = 40 + 10q$, where q is the output of a typical fringe producer. Assume there are no fixed costs for any producer.

- a) What is the supply curve of the competitive fringe?
- b) What is BC's residual demand curve?
- c) Find BC's profit-maximizing output and price. What is BC's market share?
(Hint: Market Share of a firm = (Q of the firm) / (Total Q in the market).)

24. RyanAir and EasyJet both fly between London and Marrakech. Their demand curves for EasyJet and RyanAir are given, respectively, by $Q_E = 500 - 2P_E + P_R$ and $Q_R = 500 - 2P_R + P_E$. Q_E and Q_R stand for the number of passengers per day for EasyJet and RyanAir, respectively. The marginal cost of each carrier is £10 per passenger.

- a) If EasyJet sets a price of £100, what is the equation of RyanAir's demand curve and marginal revenue curve? What is RyanAir's profit-maximizing price when EasyJet sets a price of £100?
- b) Derive the equations for EasyJet's and RyanAir's price reaction curves.
- c) What is the Bertrand equilibrium in this market?

Monopsony (CH 10)

26. A coal mine operates with a production function $Q = L/2$, where L is the quantity of labor it employs and Q is total output. The firm is a price taker in the output market, where the price is currently 32. The firm is a monopsonist in the labor market, where the supply (AFC) curve for labor is $w = 4L$.

- a) What is the monopsonist's MFC?
- b) Calculate the monopsonist's optimal quantity of labor. What wage rate must the monopsonist pay to attract this quantity of labor?
- c) What would be the w^* and L^* if the factor market were competitive?