EC3322
Industrial Organization I
Semester 1, 2015-2016
Tutorial #7

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. Pick an industry and argue that the firms are quantity setters or price setters. The more interesting and local the industry the better!

2. (Final Semester 1, 2013-14) In August 1999, Sony cut the price of its video game system from \$129 to \$99. One hour after Sony's price change was announced, Nintendo sent out a news release announcing its own price cut to match Sony's. Nintendo suffered severe shortages during the following 1999 holiday season. Based on these events, would the Cournot model or the Betrand model be a better approximation to the behavior of this industry? Explain.

3. Firm 1, 2, and 3 produce a homogeneous product and face a market demand curve of $Q = 120 - 4p$, where Q is the total quantity and p is the price. Firm 1 and firm 2 have the cost function $C(q_i) = 40 + 10q_i$. Firm 3 has the cost function $C(q_i) = 50 + 25q_i$. (Note that the firms incur the fixed costs regardless of whether they actually produce any output.) Firms compete in prices in this market. **Note:** You do not have to prove your answers formally as we did for the simple Bertrand case in lecture.

   (a) Find the Nash equilibrium, outputs, and profits.

   (b) Suppose now that there are only two firms in the market, firm 1 and firm 3. Find the Nash equilibrium, outputs, and profits.

4. (Final Exam, Sem 2, 2014/15) Suppose that two firms in a homogeneous-product market compete in prices. Demand is given by

$$Q = 9 - p.$$

The capacity of each firm is 3, and the firms have zero costs.

(a) What is the equilibrium price?

(b) Argue/show that neither firm would want to deviate from the equilibrium price found in (a).

(c) Now suppose that firm 1's capacity is 5 and firm 2's capacity is 3. Is $p = 1$ the equilibrium price? Why or why not?

5. (Final 2011) Consider a homogeneous good duopoly with linear demand $P(q) = 1 - q$, where q is the total industry output. Suppose that firms are quantity setters and that marginal cost of each firm is initially zero. Firm 1 is already in the market. In stage 1, firm 1 can make an investment after which firm 2's marginal cost increases to $c_2 = 1/4$. Afterwards, firm 2 observes the investment decision of firm 1 and, in stage 2, decides whether to enter at a negligible entry cost $e > 0$ (i.e., e is very small). In stage 3, the active firms choose quantities.

(a) Suppose initially that the investment costs, k, is zero. Determine the equilibrium outcome of the game. That is, does firm 1 invest? Does firm 2 enter? What are the quantities and profits of each firm and the price?

(b) How large does the cost of the investment, k, have to be for firm 1 *to not make the investment*?