

## Practice Set 5

### Strategic Competition

This set contains problems for your own practice. It is highly recommended to work on the problems on your own. Do not just read the provided solutions. Instead, try to solve the problems and use the solutions only when you cannot continue on your own. Reading problems that someone else has solved has the same value for your preparation like watching someone else running a marathon on TV and then expecting to be able to run it, too. If you have questions on this set, please ask your section's teaching assistant.

1. Firm 1 and firm 2 compete by setting quantities. Market demand is  $p = 14 - Q$ . Each firm has zero fixed costs and constant  $MC = 2$ .
  - (a) Calculate the Cournot reaction functions for the two firms.
  - (b) Find the Cournot equilibrium quantities and price.
  - (c) Find the profit for the two firms under Cournot competition.
  - (d) Find the quantities and price if the two firms collude.
  - (e) Find the profit for the two firms under collusion.
  - (f) If firm 1 produces its collusion quantity, what is the quantity that maximizes firm's 2 profit?
  - (g) What will be the price, if firm 2 cheats?
  - (h) What will be the profit for each firm, if firm 1 colludes and firm 2 cheats?  
If firm 1 believes that firm 2 is going to cheat, what quantity maximizes firm's 1 profit and what would the price be?
  - (i) What will be the profit for each firm if firm 2 cheats, while it believes that firm 1 will not cheat; and firm 1 cheats, while it believes that firm 2 will cheat?
  - (j) Order all possible outcomes of competition, collusion, and cheating starting from the one that yields the highest profit to firm 1. Include Bertrand competition in the comparison.
2. Firm 1 and firm 2 compete by setting *prices*. Market demand is  $p = 14 - 2Q$ . Each firm has zero fixed costs and constant  $MC = 2$ . Find the price, the profit maximizing quantities, and the profits for the two firms.
3. Explain what it means that "a Monopolistically Competitive firm exhibits *excess capacity* at the L-R equilibrium" and that "Monopolistic Competition allows for more than optimal firms to survive in the L-R".
4. In the kinked-demand model, if a \$1 price decrease from the prevailing price causes an increase in quantity demanded equal to 100 units, what should you expect for a \$1 price increase over the prevailing price?
5. A radio commercial includes the message: "*Buy now before prices go up in October!*". Explain how this message could facilitate collusion.
6. A radio commercial includes the message: "*If you find a better price, we will pay you back double the difference*". Explain how this message could facilitate collusion.
7. A radio commercial includes the message: "*We will give you the same price that we give to our own employees, no one gets a lower price than you!*". Explain how can this message facilitate collusion.