Practice set 7
The bertrand paradox

This problem set contains material for the relevant lab. Lab teachers are expected to provide sufficient guidance for the entire problem set. It is in the teacher's discretion to select the most representative tasks to solve instructionally in every lab. For the rest of the tasks, methodology, hints and final answers will be provided. Students are expected to work on practice problems, however, they are not required to submit written solutions. It is a non-negotiable policy in this course to not provide handouts with the solutions of practice problem sets.

1. Describe how the existence of capacity constraints can allow firms in a homogeneous good industry to set price above marginal cost and make positive profits. Then comment briefly of how this analysis can provide a foundation for the widely used Cournot model of oligopoly.

   UoL: 2013 za/2013 zb

2. Two firms produce differentiated goods and compete by simultaneously setting prices. The demand for each firm's output is $q_i = a - bp_i + dp_j$, where $i \in \{1,2\}, j \in \{1,2\}$ and $j \neq i$. Assume that costs are zero.
   - (a) What is the equilibrium profit of each firm?
   - (b) Show that the firms wish their products to be as homogeneous as possible and explain why this happens.
   - (c) Assume that the two firms colluded. What would be their profit?
   - (d) Imagine that there are N firms instead of two firms with demand for firm i's output being equal to $q_i = a - bp_i + d\bar{p}$, where $\bar{p}$ is the average price set by firms other than i. What are the equilibrium prices?
   - (e) Are consumers better off as the number of firms increases from 2 to N?

   End-semester 1 exam – December 2015

3. In the simple version of the Bertrand model we get the (unrealistic) result that, even with 2 firms, the price will be at the full competition level. Name 4 ways, which enable the Bertrand model to yield more realistic results.

   End of 2nd Module Examination – 2012

4. Consider a Bertrand duopoly in which the two rivals are capacity constrained. Both rivals have identical cost structure. The sum of the maximum capacities they can supply to the market is equal to the quantity the two firms would sell if they price equal to their MC. Graph the model and explain what is the equilibrium in this market?

   End of 2nd Module Examination – 2013

5. Consider two capacity constrained Bertrand sellers. Each seller can sell up to 2 units and each unit's cost is 2. Reservation prices of the consumers are 10, 8, 6, 4 and 3. Assume that allocation is efficient and find the equilibrium combination(s) of price and revenue for each seller.

   Module 1 Test – 2014