

EconS 503 - Microeconomic Theory II
Homework #3 - Due date: Monday, February 4th, in class

1. **[Entry deterrence before Bertrand competition]** Consider a market with inverse demand $p = a - Q$, where Q denotes aggregate output. The incumbent monopolist is present in the market and a potential entrant considers entering the industry at a fixed setup cost $K > 0$. For simplicity, assume that both firms face no production costs. If entry does not occur, the incumbent (firm 1) keeps its monopoly position. If entry ensues, firms compete a la Bertrand, with sales going to the firm setting the lowest price (and in the case that both firms set the same price, assume that consumers buy from firm 1).
 - (a) Find the SPNE of the game. Does firm 2 chooses to enter in equilibrium?
 - (b) Let us now allow firm 2 to choose, before the beginning of the game, a pair (c_2, p_2) of a capacity c_2 and price p_2 , where capacity c_2 sets an upper bound on firm 2's production. For simplicity, assume that each unit of capacity costs one dollar. If entry occurs, now firm 1 observes the pair (c_2, p_2) , responds to the pair setting a price p_1 before consumers choose which firm to buy from. Find firm 1's profits if it chooses to deter entry. Find firm 1's profits from accommodating entry. Compare its profits. Under which parameter values does firm 1 choose to deter entry?
2. **Exercises from Tadelis:** 7.9 and 8.15.
3. **Exercises from Munoz-Garcia (MIT Press):** 8.18, 8.22, and 8.26.