

ECON 321, Assignment 9:
BP, Chapter 4: 4.2.2
Business Stealing and Cournot

1. Reread 4.2.2. Let's work with the linear model $P(q) = a - bq$ and $C(q_i) = cq_i$ introduced right after Lesson 4.4. (Note that this is an inverse demand curve so we can't directly compare to our Bertrand examples we've been using.)
2. Confirm that the equilibrium quantity is as given in the text. (You can refer back to Section 3.2.1 for help, and no, you don't have to use Mathematica if you don't want.)
3. Using Mathematica and the equilibrium Cournot quantity from (2), find the equilibrium price, equilibrium profit of 1 firm, and equilibrium consumer surplus. (You can find CS using the area of the triangle of the demand curve – note the choke price is a .)
4. Using your results from (3) and assuming a fixed cost of entry e , you should be able to confirm the formulas for $\pi(n)$ and $W(n)$ given in the text. Also find the formula for the marginal welfare of an additional firm.
5. Let $a = 10$, $b = 2$, $c = 1$, $e = 1$, and then graph the profits per firm and the marginal welfare of an additional firm for n from 1 to 10. What are the free entry and socially optimal numbers of firms. (Check the notebook for assignment 8 for some guidance on the plotting.)