

Assignment 2

Assignment answers should be submitted on Moodle in PDF format.

1 Duopolies

Suppose that $\pi(z) = 69 - 6z$, and that $\gamma(z) = 5 + 3z$ is the same cost function for every firm.

1. (10 points) Compute q^* for monopoly.
2. (10 points) Compute q_1^* and q_2^* for Cournot duopoly.
3. (10 points) Plot $q_2^*(q_1)$ as a function of q_1 for Stackelberg duopoly. You may chose an appropriate range of values (say $[0, 50]$) for q_1 .
4. (10 points) Compute q_1^* and $q_2^*(q_1^*)$ for Stackelberg duopoly.
5. (10 points) Compare the outcomes for Cournot and Stackelberg. Is one player at an advantage in Cournot? How about in Stackelberg?

2 Duopolies with distinct cost functions

(40 points) What happens when each firm has a distinct cost function? For instance, suppose that $\gamma_1(z) = 5 + 3z$ for Firm 1, whereas $\gamma_2(z) = 7 + 2z$ for Firm 2. Repeat the analysis of Question 1.

3 Duopolies with distinct nonlinear functions

(40 points) Suppose that $\pi(z) = \frac{10}{2z+1}$ for $z \in [0, \infty)$, and that $\gamma(z) = 5 + 3z$ is the same cost function for every firm. Repeat the analysis of Question 1. You may use your favorite software package to do the computations.

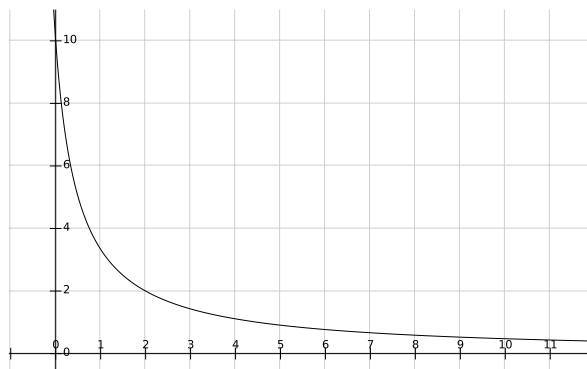


Figure 1: Market-clearing price function or inverse demand function π for Question 3.