

ECO101A: Introduction to Economics

Tutorial 7

1. You are a duopolist producer of a homogeneous good. Both you and your competitor have zero marginal costs. The market demand curve is

$$P = 30 - Q$$

where $Q = Q_1 + Q_2$. Q_1 is your output and Q_2 your competitor's output. Your competitor has also read this book.

- Suppose you will play this game only once. If you and your competitor must announce your output at the same time, how much will you choose to produce? What do you expect your profit to be? Explain.
 - Suppose you are told that you must announce your output before your competitor does. How much will you produce in this case, and how much do you think your competitor will produce? What do you expect your profit to be? Is announcing first an advantage or disadvantage? Explain briefly. How much would you pay to be given the option of announcing either first or second?
 - Suppose instead that you are to play the first round of a series of 10 rounds (with the same competitor). In each round, you and your competitor announce your outputs at the same time. You want to maximize the sum of your profits over the 10 rounds. How much will you produce in the first round? How much do you expect to produce in the tenth round? In the ninth round? Explain briefly.
 - Once again you will play a series of 10 rounds. This time, however, in each round your competitor will announce its output before you announce yours. How will your answers to (c) change in this case?
2. Assume that scientific studies provide you with the following information concerning the benefits and costs of sulphur dioxide emissions:
Benefits of abating (reducing) emissions: $MB=500-20A$
Costs of abating emissions: $MC=200+5A$
where A is the quantity abated in millions of tons and the benefits and costs are given in dollars per ton.
- What is the socially efficient level of emissions abatement?
 - What are the marginal benefit and marginal cost of abatement at the socially efficient level of abatement?
 - What happens to net social benefits (benefits minus costs) if you abate 1 million more tons than the efficient level? 1 million fewer?
 - Why is it socially efficient to set marginal benefits equal to marginal costs rather than abating until total benefits equal total costs?