

## MICROECONOMIC PROBLEMS #9

### **Problem 1**

Companies A and B are the only producers of a homogenous good. Marginal revenue of company A amounts to  $100-8(Q_A+Q_B)$ , where  $Q_A$  and  $Q_B$  are the production levels of the two firms. If marginal cost of company A equals 4 for all levels of production, what is the reaction function?

### **Problem 2**

A duopoly faces the following demand function:  $P=160-2Q$ . They both have the same and constant average cost at the level of 10. What is the production level for each of them in Cournot-Nash equilibrium?

### **Problem 3**

There are two sellers of ice cream in a small city. They can buy stock in a warehouse, who finances also the refrigerators, at a constant price of \$2. A weekly demand of citizens is best described by  $Q=1750-500p$ . What will be the supply under Cournot-Nash equilibrium? What would be the supply if they colluded? What would it be, if they decided to take over each others' clients?

### **Problem 4**

One of two producers on a market considers an option of buying a new assembly line for a new product. He must, however, take into account the reaction of his competitor, who can do the same. Assuming technology to be standard and requires no increase in the marginal cost ( $MC=10$ ), while the market demand is given by  $Q=1000-20p$ , what should be the decision of the first company?

### **Problem 5**

One of the two rivals is about to publish the price catalogue. With the technology he uses, marginal costs are constant ( $MC_1=4$ ). His competitor has a different technology and thus different cost pattern ( $MC_2=y_2^*/10$ ). Demand can be estimated as  $Q=1000-10p$ . What should be his price (as a leader), if he knows the competitor will adjust?

### **Problem 6**

Consider a Stackelberg duopoly. Are the profits of the leader higher than in Cournot equilibrium?