



Homework 1

due September 14, 2018

Homework must be submitted AFTER the end of the lecture in piles by group number on the due day. Submissions in any other way or time will be ignored. Your name and your group number must be clearly visible on the TOP-RIGHT CORNER of your paper. Any paper which does not resemble work by a student of a world-class institution (not in A4 sheets, not clean, illegible, unnamed, unstapled, unlabeled tasks, final results not in boxes etc.) will be penalized with up to 50 points at the discretion of the grader. Do not submit your work in plastic covers. Copying in homework will be penalized with a 0 in that assignment and an additional penalty of 10 points in the course homework average. Students who give their homework away for others to copy from will be penalized with 0 in that assignment and a penalty of 30 points in their course homework average. Repeated offenders will be terminated from the course.

1. Consider

$$S(q) = \frac{AC}{MC}$$

$S(q)$ is a measurement of economies of scale such that

- if $S(q) > 1$: economies of scale;
- if $S(q) = 1$: constant economies of scale;
- if $S(q) < 1$: dis-economies of scale;

Find the range of outputs for which the cost function $C(q) = f + cq^2$ is characterized by (i) economies of scale, (ii) diseconomies of scale, and (iii) constant economies to scale. Are there economies of scale if $f = 0$? [25 pts]

2. Nastya is in the process of setting up a small taxi firm. Her plan is to lease 3 cars on a four-year contract and hire 6 drivers to operate them.

- (a) Explain if the production function of Nastya's firm is of fixed proportions. [5p]
- (b) Nastya has two alternative options for the cars. She can buy either *Hyundai Solaris* which is cheaper but has higher operation costs or *Skoda Octavia* which is more expensive but cheaper to operate. Plot the cost structures of the two alternative options and explain if this is a L-R or a S-R decision. [10p]
- (c) Nastya also has to consider how she will pay her drivers. She can pay them with a fixed wage so that they will drive more carefully but take less rides or she can pay them with bonuses so that they will drive faster and take more risks damaging the cars. Explain if this is a L-R or a S-R decision. [10p]

3. Sergey operates a profile selling books on Amazon.com. His best-selling item is "Crime and Punishment", which he currently sells for 449 rubles a copy, a price very similar to most of his competition. Sergey recently came across the diploma paper of an HSE graduate, who has calculated the demand elasticity of this book to be negative 0.8.

- (a) What does an elasticity of demand equal to negative 0.8 mean for a product in general? [5p]
- (b) How should Sergey use this information to improve his profits? [10p]

4. AirCrash is an airline that lately does not perform very well. The company owns 12 Airbus-a330 planes and employs 200 workers on a 1 million ruble salary per year each. 50 of those workers are on a 3-year contract and the rest have no contract. AirCrash has bought each aircraft for 1 billion rubles and can re-sell it immediately for 0.5 billion. The life expectancy of each aircraft is (another) 12 years. The company currently runs losses of around 98 million rubles a year. What would you consult this company (other than changing its name)? [10p]

5. {Updated} An employee is hired in a job that requires a car. The demand curve for car service for this employee is $q = 200 - 0.05p$, where q is the horse power of the car in hp and p is the price of the car in rubles per hp . The current price in the market is 1K rubles per hp . However the company offers to the employee a company car of 90 hp for 40K rubles. Find the employee's CS if she takes the company car and if she buys another car. What will she do? [25p]

Good afternoon!

In previous years, part of homework assignments were created by assistant teachers. This year I have created every single question of the homework myself because I want to make homework the core of assesment in this module. Several test and exam tasks will be based on homework problems much more than in previous years.

Work on the homework by yourself. Some parts of the homework will be easy but others will be challenging. Have in mind that the purpose of the homework is NOT to make you solve, it is to make you THINK. Homework counts for just 15% of your score. If you copy or pay someone to solve it for you, you will get 0.3-0.5 points more in the module (if you are not caught). If YOU solve it by yourself you will get 10 – 20 points because you will kill in the tests!

BTW here is how a loser thinks: "I will copy the homework now to receive the grade and I will learn the solution before the test". Apart from risking to be caught (and get in deep trouble), this method will never work. Homework is not meant to be read, it is meant to make your brain work and exercise on economic thinking. That is why it is called homeWORK!! Reading problems you have not solved is like watching a marathon run on TV and then expect to be able to run the 42 km yourself. Do not be an idiot.

Success involves work. Skipping the work, will never make you successful.

K.M.

Estimated completion time: 120 min

Difficulty level (normalized to exam standards): 1.5/5 2. 5/5 3. 4/5 4. 3/5 5. 6/5