Seminar 3.

- **Task 1.** An individual, who has a utility function $u = x_1^2 x_2$, chooses between goods x1 and x2 with prices p1 and p2. Find the optimum for the individual at b=105. Determine the demand function for goods 1.
- **Task 2.** The student always eats sausages in the form of sandwiches consisting of one bread, sausage and one teaspoon of mustard. Each such sandwich brings 15 units of usefulness.
- a) What do student indifference curves look like? If the sausage costs 10 coins., bread 4 coins., and a teaspoon of mustard 1 coin, how will the utility depend on the cost of these benefits?
- b) How many sandwiches can a student eat if he has 500 coins., and his utility function $U(x_1, x_2) = x_1 x_2^2$, where x1 is the number of sandwiches, x2 is the amount of money?
- **Task 3.** Oksana needs to allocate 1200 minutes of free time to prepare for 2 exams, and the overall score for the course in her perception will be the minimum score of two subjects. She knows that she will get 0 points in the exams if she does not prepare at all. Every 10 minutes that a student spends preparing for the first exam, increases her score on this exam by one point. Every 20 minutes that a student spends preparing for the second exam, increases her score on this exam by one point.
- a) Draw Oksana's "budget line" and a map of her "indifference curves".
- b) How will Oksana allocate her own time to prepare for exams?
- c) Let Oksana consider the maximum of two grades as a grade for the course. How will the solution change b)?
- **Task 4.** The utility function is U = xyz, the income of the individual is 48, the price of products x,y,z are 4, 2 and 5, respectively. Find an equilibrium set.
- **Task 5.** Demand function U = xy, product price of x is 2, income is 120. Construct the price-consumption curve and the demand curve for the product y.

Task 6. Marina consumes only apples and bananas, its utility function is $u(x_1, x_2) = x_1x_2$. The price of apples is 3 coins, the price of bananas is 6 coins. Marina's income is 120 coins per day.

- a) What will be the best choice for her?
- b) Let the price of apples increase by 25% and the price of bananas fall by 60%. What should be the daily income in this case to reach the previous set?

Task 7. A consumer with an income level of 400 coins buys 25 units of product x and 15 units of y at the same price 10 coins per unit. The level of income fell to 336 coins, the price of product x decreased to 8 coins per unit, the price of y rose to 12 coins. The consumer buys 30 units of x and 8 units of y. Has his well-being increased after the price change?

Task 8. The utility function of the individual $u(x_1, x_2) = x_1 x_2^2$, budget constraint $3x_1 + 2x_2 = 100$. The price of the first product is reduced by 1 coin.

- a) Find the income and substitution effects by Slutsky.
- b) Find the income and substitution effects by Hicks.

Task 9. The consumer has a utility function $u = x_1 x_2$, the budget is 100 coins, the price for goods are 4 and 2 coins respectively. Price for x1 increases to 5 coins. Calculate the income and substitution effects of by Slutsky and Hicks.