CONSUMER BEHAVIOUR

THEME PROBLEMS:

- *cardinal model of choice*
- *axioms of ordinal theory of choice*
- *indifference relations and budgetary constraint*
- *marginal rate of substitution between goods*
- *optimum of the consumer in the ordinal utility conditions*
- *income-consumption curves*

THEORETICAL FOUNDAMENTS:

Relations of indifference for consumer – are given by all the possible combinations for different quantities of goods correspondent of each level of the total utility. For two goods (or basket of goods) it is about one family of indifference curves.

Indifference curve of the consumer (iso-utility) – is given by all the combinations between different quantities of two goods that provide the same level of satisfaction (total utility).

Marginal rate of substitution between goods – the additional quantity that should be consumed in order to compensate the reduction with one unit the consumed quantity from a different good so that the total utility will remain the same. Obviously this quantity is determined by the comparison between the marginal utilities of those two goods.

Budgetary constraint of consumer – all the possibilities of acquisitions of different quantities from wanted in the limit of the available income of the consumer. The budgetary constraint in the particular case of two goods is expressed by the budgetary line.

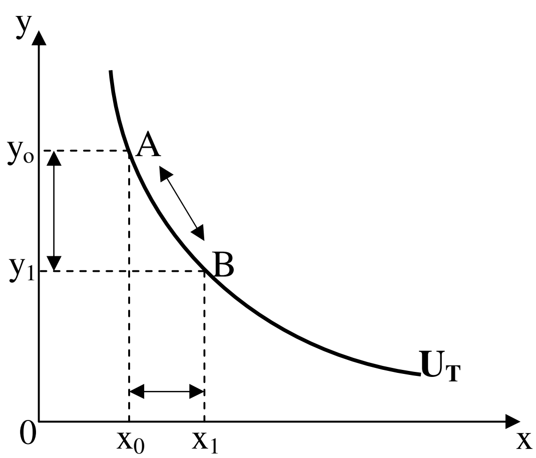
The budgetary line of the consumer – all the maximum combinations from two goods that can be bought with the available sum of money that one consumer has at a certain moment. At each level of income we have one budgetary line.

1. Describe the ordinal model of choice using the next elements:
   - Axioms of ordinal choice
   - Relations of indifference of consumer
   - Marginal rate of substitution between goods
   - Budgetary constraint of consumption
   - Equilibrium in conditions of ordinal utility theory

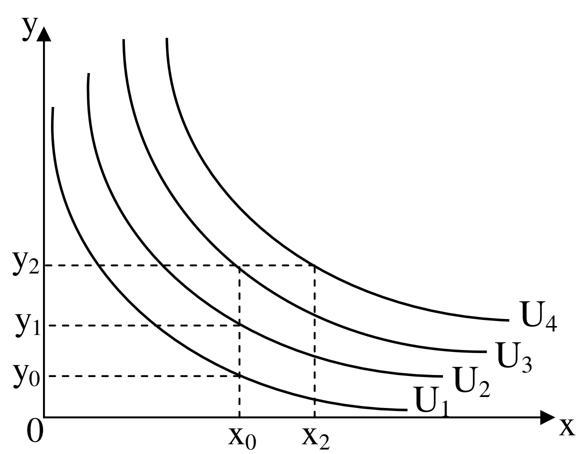
2. Analyze the axioms of ordinal theory of choice:
   a) *comparability*
   b) *reflexivity*
   c) *transitivity*
   d) *non saturation*
   e) *continuity*
   f) *convexity*

3. Comment on the next graphs:

A)



B)



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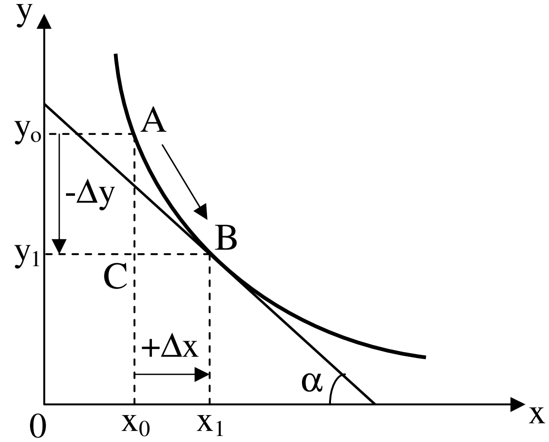
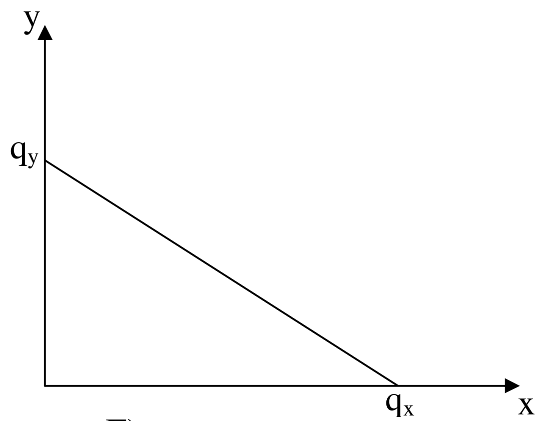
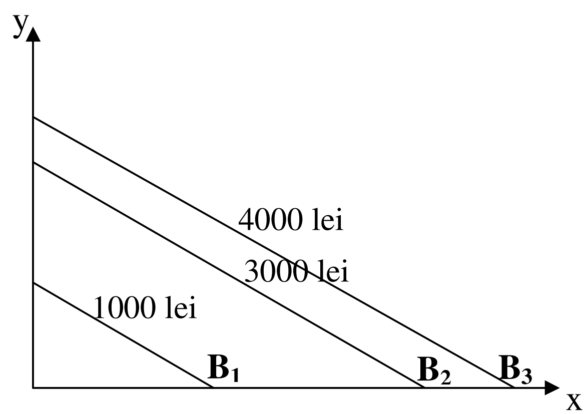


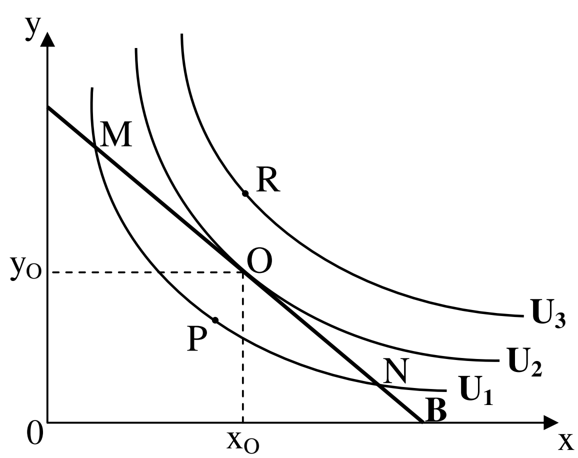
D)

E)

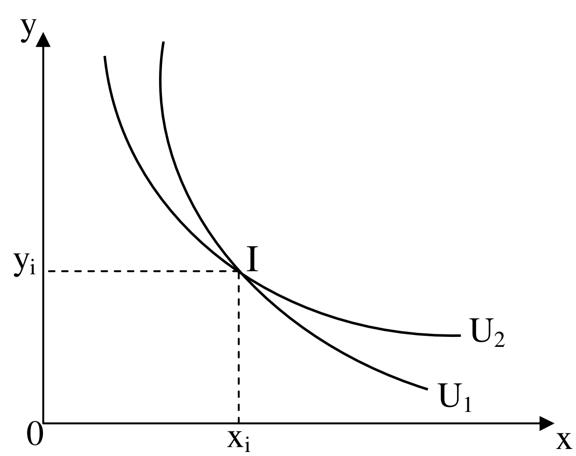




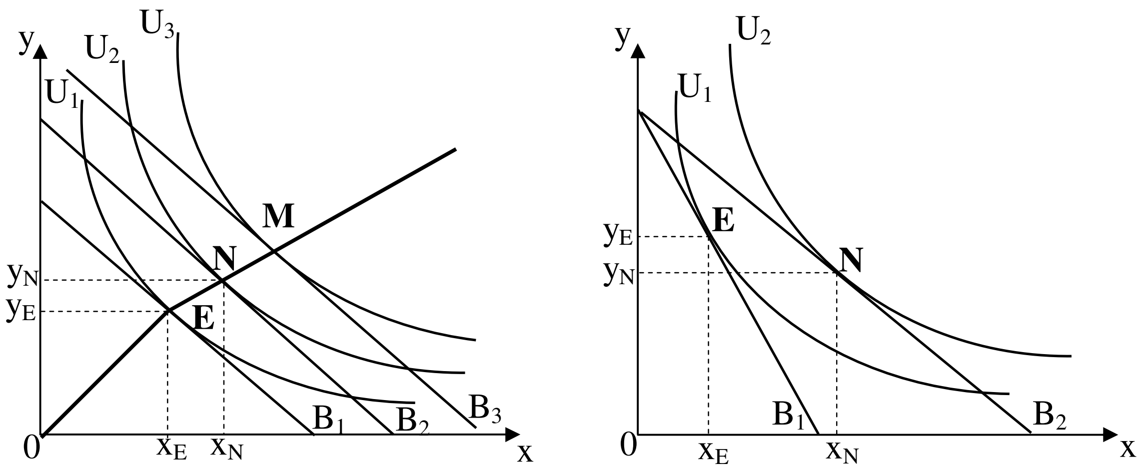
F)



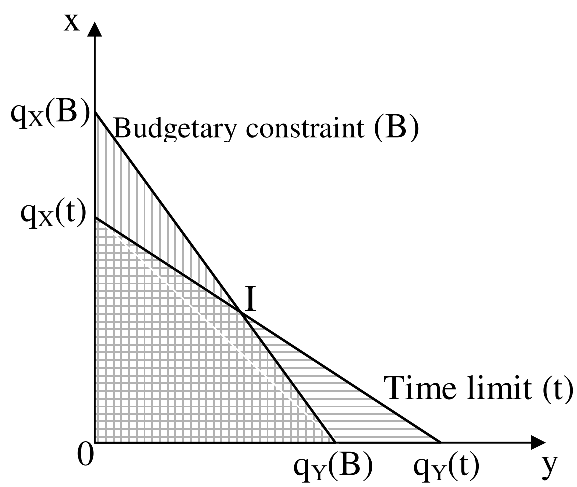
4. Indifference curves never intersect. Explain



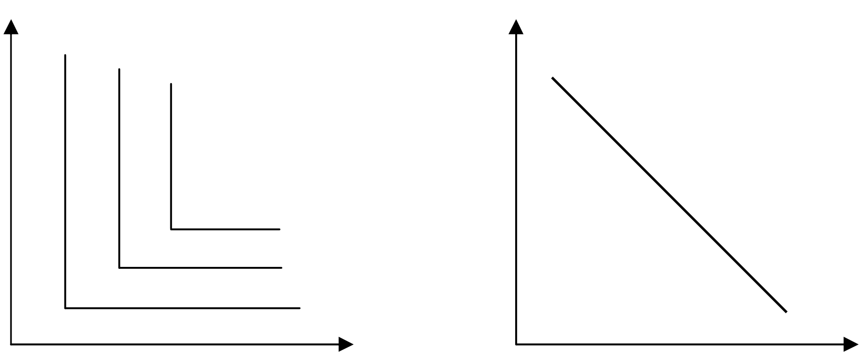
5. Analyze the next figures:



6. Analyze the alternatives of a consumer in a double constraint situation: budgetary (possibilities of acquisitions) and time limit:



7. Discuss the following particular cases of indifference curves:



RELATIONS, EXAMPLES AND MODELS:

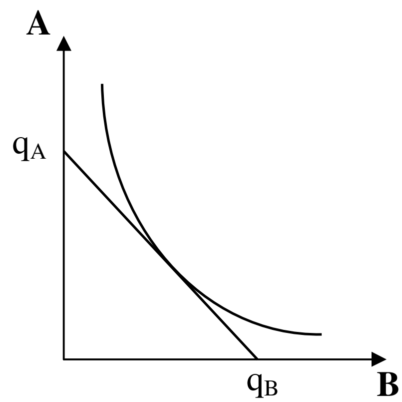
1. Formulas:

Marginal rate of substitution between goods: $MRS = \left|\frac{\Delta y}{\Delta x}\right| = \frac{Uma(x)}{Uma(y)}$

$$MRS = \frac{y_1 - y_0}{x_1 - x_0} = \left|\frac{\Delta y}{\Delta x}\right| = \frac{CB}{AC} = tg(180 - \alpha) = -m_B = \frac{Uma(x)}{Uma(y)}$$

SOLVED EXERCISES:

1. If in the next graph q_A = 60 pcs., and the optimum for the consumer is 40 units from A and 40 units from B, then:



A) What is the income of the consumer if p_A is 12 m.u.?
B) What is the maximum quantity from B that can be bought and at what price?
C) What will be the quantity from B that one consumer at the optimum point is willing to give up to from A?
D) What about the quantity from A for one additional unit from B?

Solution:

A) $TR = p_A * q_{A(max)} = 12*60 = 720\ (m.u.)$

B) *At the optimum point:*

$TR = p_A * q_A + p_B * q_B$

From where: $p_B = (TR - p_A * q_A) / q_B$

$p_B = (660 - 12*40) / 70 = 240 / 60 = 4\ (m.u.)$

$q_{B(max)} = TR / p_B = 720 / 4 = 180\ (pcs.)$

C) $MRS = \left|\frac{\Delta q_B}{\Delta q_A}\right| = \frac{Uma(A)}{Uma(B)}$

$$Optimum\ condition:\ \frac{Uma(A)}{p_A} = \frac{Uma(B)}{p_B},\ so\ that:$$

$$\frac{Uma(A)}{Uma(B)} = \frac{p_A}{p_B} \rightarrow MRS = \frac{p_A}{p_B} = \frac{12}{4} = 3$$

That means: 3 units B = 1 units A

D) $$MRS = \left|\frac{\Delta q_A}{\Delta q_B}\right| = \frac{Uma(B)}{Uma(A)} = \frac{p_B}{p_A} = \frac{4}{12} = 0{,}25$$

That means: 0,25 units A = 1 units B

To be solved:

1. Individual utility of two goods (A and B) are shown in the table below:

- utili -

Quantity(units)	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*
Prod A	40	25	15	9	6	5	0	-2	-5
Prod B	20	15	13	12	10	9	8	7	6
$U_T(A)$									
$U_T(B)$									

A) State the combinations between 2 goods that will provide to the consumer a total utility of 100.
B) Make the graphical situation using one indifference curve
C) Regardless the price of the products which will be the preferred order of consumption?
D) What is the maximum total utility that can be obtained in this case and what is the saturation point?

2. The utility of some goods measured in units is shown below:

- în utili -

	Food *A*		***Clothes*** *B*		***Drinks*** *C*		***Hygiene*** *D*		***Shelter*** *E*	
Unit	u_A	10 *u/p*	u_B	20 *u/p*	u_C	10 *u/p*	u_D	12 *u/p*	u_E	50 *u/p*
1	50		44		33		24		18	
2	40		32		21		12		0	
3	30		22		15		0			
4	20		14		(-3)					
5	10		0							
6	(-2)									

A) Regardless the price, state the order of the first 10 acquisitions?
B) If the price of those goods are: food and drinks 10 m.u./unit, clothes 20 m.u./unit, hygiene 12. m.u./unit and shelter 50 m.u./unit?
C) What if all prices are equal with 10 m.u.

3. Individual utilities of different quantities from A and B are shown in the table below. Considering that the prices are: 5 (m.u.) for A and 10 m.u. for B:
   A) What quantities will the consumer buy if he has 100 m.u.?
   B) What will be the case is the budget is 55 m.u.?

Quantity	1	2	3	4	5	6	7	8	9
Prod A	40	25	15	10	5	4	3	2	1
Prod B	40	20	10	7	5	4	3	2	1

4. The initial budget line for two goods is:

$$q_B = 20 - 4q_A$$

where q_A and q_B are quantities from those two goods.

This is for the situation in which the price for B is5 m.u./unit If the price will drop to 4 m.u. what will be the budgetary equation line?

5. If the entire available income is used for buying one single good in a quantity of 8 units at the price of 1.50 m.u. each. In the condition of budgetary constraint with two possible acquisitions, what will be the price of the other good knowing that the quantity possible to be bought is 6 units? State the budgetary equation.

6. The total utility brought by the consumption of two goods (A and B) that are the alternatives in consumption for one individual can be expressed by the next functions:

$$U_T(A) = 10q_A - (q_A^2/2)$$
$$U_T(B) = 22q_B - q_B^2$$

   A) If the price for A is 1 m.u., and the one for B is 2 m.u., what will be the amount bought from those two goods is the available income is 14 m.u.?

B) Care ar fi ordinea de preferințe pentru primele 7 achiziții dacă prețul ar fi de 2 m.u. pentru ambele bunuri? Care ar fi suma necesară pentru cumpărarea lor?

7. The total utility obtained with the consumption of two goods can be expressed with the function:

$$U_T(A,B) = 6q_A + 2q_B$$

If in the initial moment the consumption was 10 units from A and 20 units from B, and now the available quantity from B is 14 units:

A) What quantity from A should be consumed so that we maintain the same level of satisfaction?

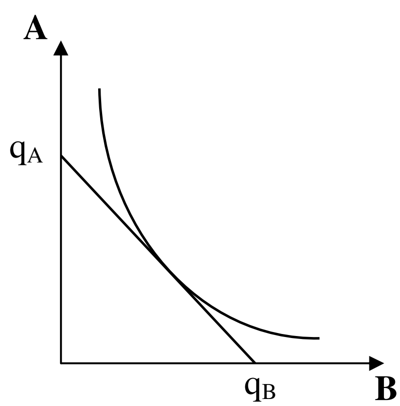
B) What is the marginal rate of substitution in this case?

8. If in the next graph q_A = 30 units, and the optimum point for the consumer is 20 units from A and 35 from B, then:

A) What is the income of the consumer is the price for A is 10.5 m.u.?

B) What will be the maximum quantity from B that can be bought and at what price?

C) What will be the quantity from B that a consumer being at the optimum point is willing to give up to for an additional unit from A?



9. The utility function for a consumer is:

$$U_T(A, B) = q_A * q_B$$

If the consumer is using 3 units from A and the marginal rate of substitution is 1.5. What will be the marginal utility of those two goods?

10. In the case of a function as in the previous example and knowing that: p_A = 10 m.u., p_B = 20 m.u. and the income of the consumer is 480 m.u., to be solved:
    A) Make the indifference curves for U_T (A, B) = 4 and 12.
    B) State the optimum combination
    C) What is the marginal rate of substitution in the optimum point?

11. The utility function for a consumer is :

$$U_T(A, B) = q_A * q_B^2$$

if $p_A = 10$, $p_B = 20$ and the income of the consumer is 480 m.u., to be found out:
    A) State the optimum combination
    B) What is the marginal rate of substitution in the optimum point?