University of Oum El-Bouaghi

Faculty of Economics Commercial and Management Sciences

First Year

Microeconomics 1

Second Series

Exercise1:

Table below gives points on three different indifference curves for a consumer. (1) Plot the indifference curves I, II, III, on the same set of axes. (2) What do indifference curves show?

(3) Find the MRS_{xy} between all consecutive points on the four indifference curves

(4) What is the difference between MRS_{xy} and the MU_x?

I	Q_x	2	3	4	5	6	7
	Q_y	13	6	4.5	3.5	3	2.7
II	Q_x	3	4	5	6	7	8
	Q_y	12	8	6.3	5	4.4	4
III	Q_x	5	5.5	6	7	8	9
	Q_y	12	9	8.3	7	6	5.4

Exercise2:

Consider the consumer's utility function: $U= 4X^{0.5}Y^{0.5}$, suppose that a person has a utility level $TU_0=16$ utils,   1-Ditermine the indifference curve equation.   2-Plot this curve.

Exercise3:

Suppose a person consumes two commodities where the marginal Utilities are:

$$MUx=6X^{1/2}Y^{3/2} \qquad\qquad MUy=6X^{3/2}Y^{1/2}$$

1-Calculate the Marginal rate of substitution $MRSxy$, if he wants to consume 4 units of both goods.

2. suppose his income M is 360, the price of X is 60, and the price of Y is 30, does the combination (4,4) represent the equilibrium point? If not, determine the optimal consumption basket.

Exercise4:

Consider the consumer's utility function $U=XY+2X$, and the budget constraint $M=XPx+YPy$ suppose that the prices of X and Y are respectively 4, 2 and the income is 32

1. Find the equilibrium quantities that maximize the utility. Then represent the equilibrium graphically.

2- Calculate the marginal rate of substitution between X and Y $MRSxy$ at the equilibrium, and interpret the result.

3. Suppose that the price of X changes from 2 to 4 and then to 8 ceteris paribus (while other factors remain constant), plot the consumption-price curve and derive the demand curve of X commodity.

4. Suppose that the income changes from 32 to 20 and then 12, plot the consumption-income curve and the Angel curve of commodity X, is X a normal good?

Exercise 5:

I-A consumer purchases two goods, food and clothing. he has the utility function $U(X, Y) = XY$, where X denotes the amount of food consumed and y the amount of clothing. Denote the price of X as P_x and the price of Y as P_y.

1-Find the marginal utilities.

2-In terms of marginal utilities found above, write down the consumer's optimum condition and rearrange to find an expression for x in terms of y.

3-Write the budget constraint, substitute for x from the expression found in (2).

4-What can you say about the expression found above?

5-Is clothing a normal good?

II-Suppose now that The consumer has an income of 72 per week, that the price of clothing is $P_y = 1$. Suppose also that the price of food is initially $P_{x1} = 9$ per unit, and that the price falls to $P_{x1} = 4$.

6-Find the initial consumption basket when the price of food is 9, by using the two equilibrium conditions (budget constraint and tangency condition).

7-Repeat this step to find the consumption basket when is price of food is 4

8-Find the utility level corresponding to the initial consumption basket.

9-Find the compensated basket, and therefore the substitution effect. Remember that at that point, The consumer faces the new budget constraint, but is compensated to obtain the same level of utility as before the change in price.

10-Using your answer in7. and 9., find the income effect.

11-Graph your results.

Exercise 6:

Consider the consumer's utility function $U = \frac{1}{2} XY^2$. Where Px is the price of good X, and Py is the price of good Y, his income is M, and T is an income tax

1- Ditermine the demand functions, and calculate the equilibrium quantities if Px=1 , Py=3 and the income M=16

2-Find the demand functions taking into account the income tax T, and calculate the equilibrium quantities if T=10%

2-Ditermine the properties of the demand functions.

3-Calculate the loss of utility due to the imposition of income tax.