MICROECONOMÍA. CURSO 2009/10
TEMA 1: TEORÍA DEL CONSUMIDOR

1.- Consider the following market baskets: A=(1,4); B=(1,5); C=(2,3); D=(4,2); E=(3,4); F=(1,2), where the first component represents the quantity of books while the second component represents the quantity of CD's. We also know that the student strictly prefers basket C to basket A.
(a) Represent graphically these baskets
(b) Order these baskets whenever possible if preferences over baskets are monotonic.
(c) Order now these baskets if preferences satisfy transitivity and monotonicity.
(d) If prices of books and CD's are 3 and 5 €, respectively and student's income is 21€, which is the budget constraint? Can we state which is the basket selected by the student? What if income=30 €? Justify your answer.

2. Consider the following utility functions representing preferences over goods:

1) $U(x_1, x_2) = x_1 + x_2$
2) $U(x_1, x_2) = \ln x_1 + \ln x_2$
3) $U(x_1, x_2) = x_1^{1/3} x_2^{2/3}$
4) $U(x_1, x_2) = -\left[(x_1 - 1)^2 + (x_2 - 1)^2\right]$
5) $U(x_1, x_2) = x_1$

(a) Represent graphically an indifference map for each utility function
(b) Compute marginal utilities and the MRS for each u.f.
(c) Are these preferences regular? What kind of preferences are?

3. Your preferences over two goods can be represented by the utility function
$U(x, y) = 3\ln x + \ln y$
Assume that, initially, your income is m=1600 and prices over goods are $(p_x, p_y) = (4,4)$.
(a) How many units of each good will be selected? Why?
(b) Given any price vector and any income, obtain and represent graphically the demand function for both goods

4. Assume that there are only two goods in the economy books (x) and CD's (y) and prices are
px=10 y py=15 € for books and CDs respectively. Penny, whose monthly pay is 100€, has a preferences that can be represented by U(x,y)= x + 2y.
(a) State which preferences represent the UF. Are these regular?
(b) Which is the quantity of books and CD's chosen by Penny?
(c) Assume now that px=5, Which is the quantity of books and CD's chosen by Penny?
(d) Determine the individual demand of books and CDs for any income any price vector. Show them graphically

5.- John's preferences over goods can be represented by the following UF

(a) Are these preferences regular? Which preferences are represented by this UF?
(b) If john has an income of 100€ and prices are p=(5,5), compute the demand for both goods. What if p=(4,5)?
(c) Determine the individual demand of good 1 and good 2 for any income any price vector. Show them graphically

6.- A consumer has some preferences that can be represented by the following UF, *U(x, y) = Min{x,3y}*.
(a) State which preferences represent this UF. Are these preferences regular?
(b) Assume income is 140€ and prices are p=(2,1), which is the quantity of good 1 and good 2 selected by the consumer?
(c) Determine the individual demand of books and CDs for any income any price vector. Show them graphically

7. Assume that the tariffs of providing water are set up in the following way: in order to consume water (good y), it is compulsory to pay a fixed fee of 50€ (due to connection). The first 20Hm3 of consumption are paid at a cost of 2€ each Hm3, whereas all Hm3 above 20 has a cost of 3€.
(a) Represent graphically and derive the budget constraint between water and the rest of the goods (goods x), for a family who spends 1000€ per month (let us consider that the price of the other goods is 10€).
(b) The preferences of this family over water and the rest of goods are given by this utility function,

$$U(x,y) = x^3 y^{1/2}$$

Which is the consumption of water decided by this family? Interpret the result

8.-Mr Andrew and Mr Ben are two close friends that typically meet at the "Ateneo de Sevilla". They enjoy the consumption of both cigars "Puros" (P) and wine "Jerez" (J). The preferences are represented by the following utility functions:

$$U_A(P,J) = \sqrt{P^2 + J^2} \quad U_B(P,J) = P^2 J^2$$

Both friends own 20€ (each one) to spend during the meeting. Given that both the price of a cigar and the price of the wine is 5 €:
(a) Analyze the properties of the preferences and comment the typo of preferences.
(b) Which is the choice (cigars and wine) of both friends? Find the solution analytically and show it also graphically
(c) Years ago, the utility function of Mr Andrew was slightly different.

$$U_A(P,J) = P^2 + J^2$$

Are these preferences representing the same than before? Justify your answer

9.- John has an income of 50€ to spend Esther on food (good x) or on clothes (good y). His preferences are represented by this utility function:

$$U_A(x, y) = Min\{x, y\}$$

(a) Find the demand of both food and clothes (as a function of his Income I)
(b) Find (and represent graphically) the budget constraint when the prices of both goods are 2 for food and 2 for clothes.