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Economics 111: Intermediate Microeconomics S2b
Spring 2009
Midterm 1

You have 1 hour and 20 minutes. Only clarifying questions are allowed. Do not cheat. Do not panic. Enjoy the exam. (There were two versions of this midterm differing on small details)

Questions 1 to 6 are multiple choice. Circle the correct answer. (5 points each correct answer).

1. The law of demand says that:

   a. an inferior good must also be giffen.

   b. an inferior good must also be ordinary.

   c. a giffen good must also be ordinary.

   d. a normal good must also be giffen.

   e. none of the above.

2. Suppose a consumer has preferences between two goods, x and y, that are perfect substitutes. Imagine that an increase in the price of good x resulted in a decrease in the consumption of that good from 4 units to 1 and no change in the consumption of good y. The following is true about the effect of the price change on good x:

   a. Total effect=-3, but not enough information to distinguish the other effects.

   b. Total effect=-3, substitution effect=-1, income effect=-2

   c. Total effect=-3, substitution effect=0, income effect=-3

   d. Total effect=-3, substitution effect=-2, income effect=-1

   e. Total effect=-3, substitution effect=-3, income effect=0

3. The MRS (the absolute value of the slope of the indifference curve) of the following utility function $U = x_1^2 + x_2^2$ is:

a. $MRS = \frac{x_2}{x_1}$.

b. $MRS = 2\sqrt{x_2}$.

c. $MRS = \frac{1}{2}\frac{1}{x_2}$.

d. $MRS = \sqrt{\frac{x_2}{x_1}}$.

e. $MRS = \frac{x_1}{x_2}$.

4. If a consumer has the utility function $U = \sqrt{x_1} + \sqrt{x_2}$, and income of $m = 10$ and faces prices $p_1 = p_2 = 1$, her optimal consumption bundle is:

a. $x_1^* = 10$ and $x_2^* = 0$.

b. $x_1^* = 0$ and $x_2^* = 10$.

c. $x_1^* = 5$ and $x_2^* = 5$.

d. $x_1^* = 10$ and $x_2^* = 10$.

e. none of the above.

5. María may consume three goods and has utility function $U = x_1 + x_2 + x_3$, income $m = 12$ and faces prices $p_1 = 1$, $p_2 = p_3 = 2$. Her optimal consumption bundle is:

a. $x_1^* = 12$, and $x_2^* = 0$ and $x_3^* = 0$.

b. $x_1^* = 0$, and $x_2^* = 12$ and $x_3^* = 0$.

c. $x_1^* = 0$, and $x_2^* = 0$ and $x_3^* = 12$.

d. $x_1^* = 4$, and $x_2^* = 4$ and $x_3^* = 4$.

e. none of the above.

6. The Armchair Economist thinks that installing spears in driving wheels may:

a. decrease the quantity of life insurance.

b. increase the price of life insurance.

c. reduce global warming since people would drive less.

d. reduce car accidents since it will increase the incentives to drive carefully.

e. All of the above.

7. Consider the following utility function: $U = x_1 x_2$. (35 points)

a. Find the demand functions for general p_1, p_2 and m.

b. What would be the optimal demand if $p_1 = 1$, $p_2 = 1$ and $m = 24$?

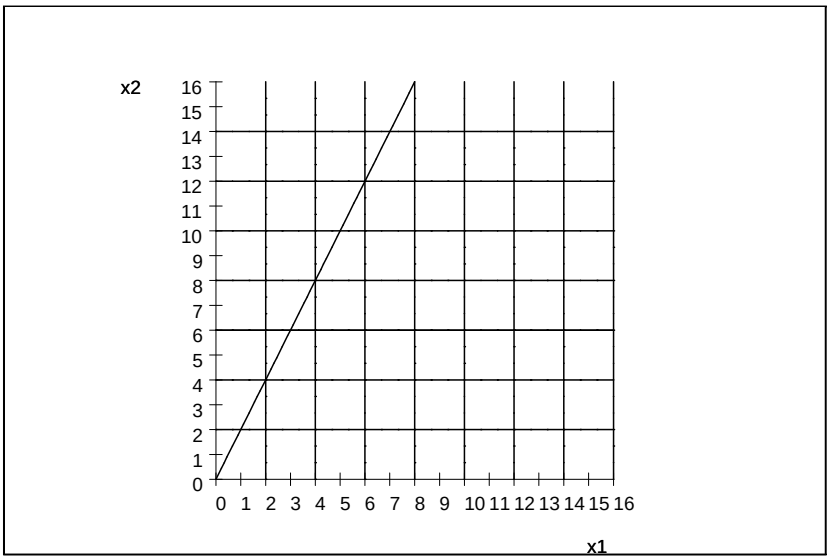
c. What would be the optimal demand if the price of good one increases to $p_1 = 4$, and the other price and income remain the same?

d. How much of the difference on the consumption of good one in points b and c is due to the substitution effect?

e. How much of the difference is due to the income effect?

8. Consider the following utility function: $U = \min\{2x_1, x_2\}$. (35 points)

a. In the following figure graph the indifference curves for U=4 and 8.



b. Find the formula for the MRS. Is the MRS defined for all bundles?

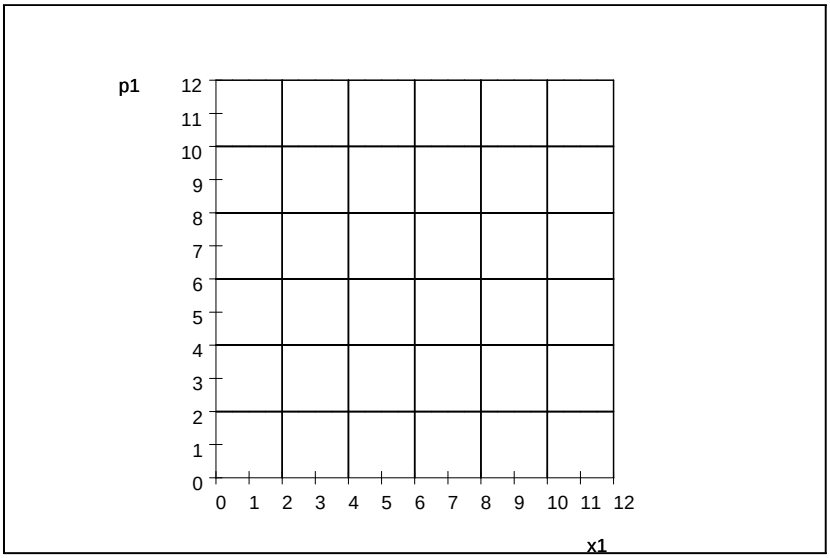
$$MRS = \begin{cases} \infty \text{ if } x_2 > 2x_1 \\ 0 \text{ if } x_2 < 2x_1 \end{cases}$$

MRS is not defined if $x_2 = 2x_1$.

c. Find the demand functions for general p_1, p_2 and m.

d. Based on their demand functions how do you classify these goods?: Normal or inferior? Giffen or ordinary? Complements or substitutes?

e. Assume that $m = 5$ and $p_2 = 1$. In the following figure graph the demand function (x_1 as a function of p_1).


p1
12
11
10
9
8
7
6
5
4
3
2
1
0
0 1 2 3 4 5 6 7 8 9 10 11 12
x1