

Name _____

Economics 111: Intermediate Microeconomics S1a
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.

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

1. The MRS (the absolute value of the slope of the indifference curve) of the following utility function $U = x_1 + \sqrt{x_2}$ is:

- a. $MRS = \frac{1}{\sqrt{x_2}}$.
- b. $MRS = 2\sqrt{x_2}$.
- c. $MRS = \frac{1}{2} \frac{1}{\sqrt{x_2}}$.
- d. $MRS = \frac{1}{2} \frac{1}{\sqrt{x_1}}$.
- e. $MRS = \sqrt{x_2}$.

2. Suppose a consumer has preferences between two goods, x and y , that are perfect complements. Imagine that an increase in the price of good x resulted in a decrease in the consumption of that good from 4 units to zero and an decrease in the consumption of good y of 2 units The following is true about the effect of the price change on good x :

- a. Total effect=-4, but not enough information to distinguish the other effects.
- b. Total effect=-4, substitution effect=-2, income effect=-2
- c. Total effect=-4, substitution effect=0, income effect=-4
- d. Total effect=-4, substitution effect=-4, income effect=0
- e. Total effect=0, substitution effect=-4, income effect=4

3. Which of the following pairs of utility functions represent exactly the same preferences?

- a. $U = x_1 + x_2, V = x_1^2 + 2x_1x_2 + x_2^2$.
- b. $U = (\sqrt{x_1} + x_2)^2, V = 2x_1x_2$.
- c. $U = x_1^2 - x_2, V = -x_1 + x_2^2$.
- d. $U = x_1x_2, V = x_1x_2^2$.
- e. $U = 2x_1x_2, V = \frac{1}{x_1+x_2}$.

4. Which of the following cannot be true about a good:

- a. it is inferior and giffen.
- b. it is inferior and ordinary.
- c. it is normal and giffen.
- d. it is normal and ordinary.
- e. none of the above.

5. The Armchair Economist thinks that installing spears in the driving wheel of cars may:

- a. reduce global warming since people would drive less.
- b. increase the price of life insurance.
- c. decrease the quantity of life insurance.
- d. reduce car accidents since it will increase the incentives to drive carefully.
- e. All of the above.

6. If a consumer has the utility function $U = \min\{x_1, 2x_2\}$, 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. $x_1^* = 10$ and $x_2^* = 10$.
- d. $x_1^* = 5$ and $x_2^* = 5$.
- e. none of the above.

7. Consider the following utility function: $U = x_1^2 x_2$. (35 points)

a. Find the formulas for the marginal utilities MU_1 and MU_2 .

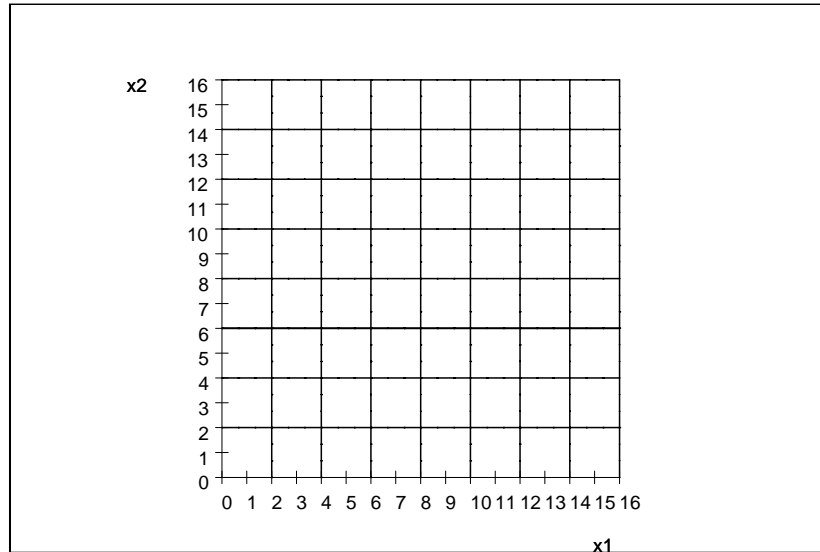
b. Find the formula for the MRS. How does it depend on x_2 and x_1 ? Are these preferences convex?

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?

8. Consider the following utility function: $U = x_1 + 2x_2$. (35 points)

a. In the following figure graph the indifference curves for $U=8$ and 16 .



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

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 $m = 10$ and $p_2 = 4$. In the following figure graph the demand function (x_1 as a function of p_1).

