

Name \_\_\_\_\_

Economics 111: Intermediate Microeconomics  
Spring 2005  
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 5 are multiple choice. Circle the correct answer. (5 points each correct answer).

1. A Giffen good must also be:

- a. a superior good.
- b. a luxury good.
- c. an inferior good.
- d. an ordinary good.
- e. none of the above.

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 of 4 units. The following is true about the effect of the price change:

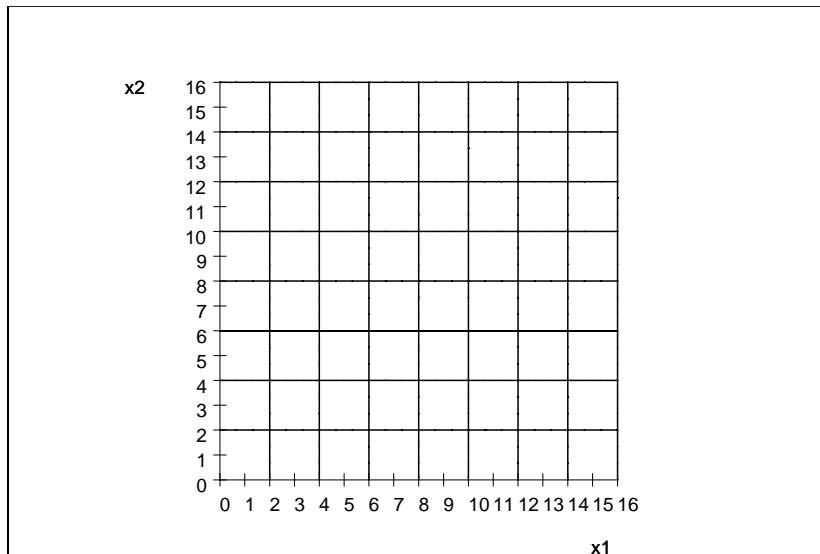
- a. Total effect=-4, substitution effect=-4, income effect=0
- b. Total effect=0, substitution effect=-4, income effect=4
- c. Total effect=-4, substitution effect=-2, income effect=-2
- d. Total effect=-4, but not enough information to distinguish the other effects.
- e. Total effect=-4, substitution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

3. According to the First Welfare Theorem:
  - a. every competitive equilibrium is fair.
  - b. every competitive equilibrium is efficient.
  - c. a competitive equilibrium always exists.
  - d. every efficient allocations is preferred to every inefficient allocation.
  - e. none of the above.
  
4. The Armchair Economist thinks that economists want Americans:
  - a. to die happy.
  - b. to respond to incentives.
  - c. to work harder and die wealthy.
  - d. to clear markets.
  - e. none of the above.
  
5. In the Tale of Two Cities, the Armchair Economist argues that Grimyville's Clean Air Act will make:
  - a. Grimyville's tenants happier since the air will be cleaner.
  - b. Grimyville's landlords happier since they will be able to charge higher rents.
  - c. Cleanstown's landlords less happy since some tenants will move to Grimyville.
  - d. Cleanstown's tenants happier since rents will be lower.
  - e. All of the above.

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6. Consider the following utility function:  $U = \sqrt{x_1} + \sqrt{x_2}$ .

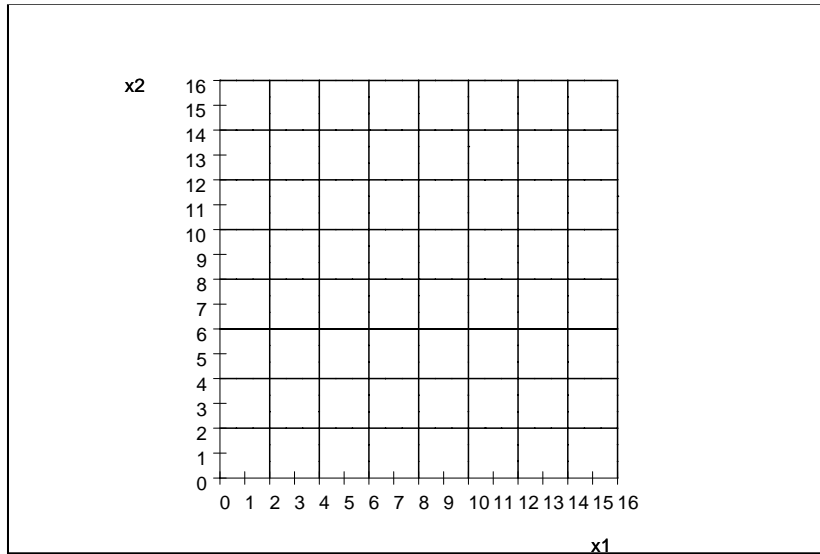
a. For  $U=2$  and  $U=4$ , find the function that describes each indifference curve ( $x_2$  as a function of  $x_1$ ). In the following figure graph the indifference curves for  $U=2$  and 4. (Be sure to graph correctly where each indifference curve cuts the 45 degree line).



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

c. Find the MRS for  $x_1 = 4$  and  $x_2 = 0$  and for  $x_1 = 0$  and  $x_2 = 4$ . Is there any combination of prices and incomes that would make the agent buy any of these two bundles?

d. Assume that  $p_1 = 1$ ,  $p_2 = 1$  and  $m = 8$ . Draw his budget line in the following figure. Also draw the indifference curve that goes through  $(16, 0)$ .



e. What is his optimal consumption if  $p_1 = 1$ ,  $p_2 = 1$  and  $m = 8$ ?

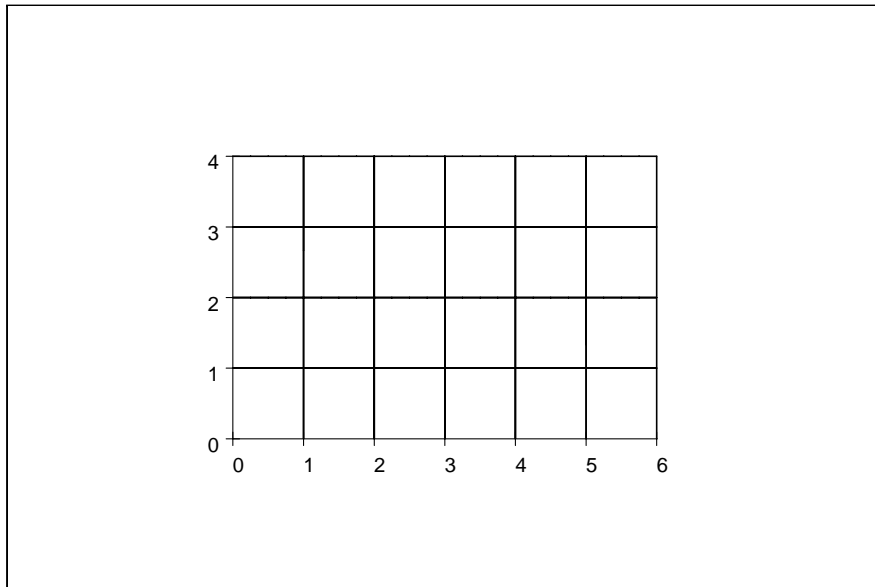
f. Find the demand functions for general  $p_1$ ,  $p_2$  and  $m$ . (Some of the algebra may get a little difficult/ugly! Do not panic.)

g. How are these goods?: Normal or inferior? Giffen or ordinary? Complements or substitutes?

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7. Consider a world with two agents: A and B. The utility of A is  $U_A = x_{A1}x_{A2}^2$  and the utility of B is  $U_B = x_{B1}x_{B2}^2$ . The initial endowments are  $\omega_A = (4, 1)$  and  $\omega_B = (2, 3)$ . (25 points)

a. In the following figure draw the Edgeworth Box labeling all axis and draw the initial endowment and the indifference curves that go through it.



b. Find the Contract Curve. Draw the Contract Curve in the Edgeworth Box of point a.

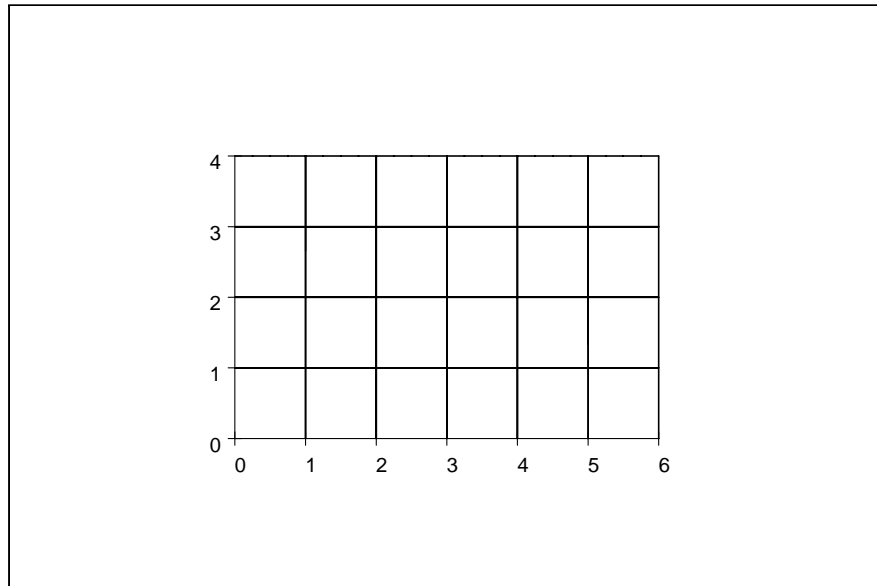
c. What is the MRS of both players in the contract curve?

d. Find the demand functions of A for general  $p_1$ ,  $p_2$  and  $m_A$ .

e. Find the demand functions of B for general  $p_1$ ,  $p_2$  and  $m_B$ .

f. Find the competitive equilibrium price  $p_1^*$  (assume that  $p_2 = 1$ ). Find the equilibrium allocation  $(x_{A1}^*, x_{A2}^*, x_{B1}^*$  and  $x_{B2}^*)$ .

g. In the following figure draw the draw the initial endowment, the contract curve, the equilibrium budget lines and the equilibrium consumption bundles. (Label each of them in the graph).



h. Why is good one cheaper than good 2? Provide two reasons.