Ecn 100 - Intermediate Microeconomics
University of California - Davis May 6, 2011
Instructor: John Parman

Midterm 2

You have until 11:50am to complete this exam. Be certain to put your name, ID number and section on both the exam and your scantron sheet and fill in test form A on the scantron. Answer all multiple choice questions on your scantron sheet. Choose the single best answer for each question; if you fill in multiple answers for a question you will be marked wrong. Answer the long answer questions directly on the exam. You must show your work where relevant for full credit. Good luck!

Name: **ID Number:** **Section:**

SECTION I: MULTIPLE CHOICE (60 points)

1. Suppose that the price of rice increases. The sign of the substitution effect for rice will be:
   (a) Negative if rice is a Giffen good.
   (b) Negative if rice is an ordinary good.
   (c) Both (a) and (b) are true.
   (d) Neither (a) nor (b) is true.
2. There are ten consumers in the market for apples. All ten consumers have identical individual demand curves with a slope of -2. The slope of the market demand curve will be:
   (a) -2.
   (b) $-\frac{1}{5}$.
   (c) $-\frac{1}{40}$.
   (d) None of the above.
3. Coffee and donuts are the only two goods that Alex buys and both of them always have positive marginal utilities. If donuts are a luxury good, then we can say for certain that:
   (a) Coffee is an inferior good.
   (b) Coffee is a normal good.
   (c) The income elasticity of demand for coffee is less than zero.
   (d) The income elasticity of demand for coffee is less than one.
4. Suppose that apples and bananas are both normal, ordinary goods and are complements. The sign of the slope of the income offer curve will be:
   (a) The same as the sign of the slope of the Engel curve for apples.
   (b) The opposite of the sign of the slope of the Engel curve for apples.
   (c) The same as the sign of the slope of demand curve for apples.
   (d) None of the above.

5. Suppose that apartments are an ordinary good and demand for apartments is inelastic. A decrease in the price of apartments will:
   (a) Increase consumer surplus.
   (b) Decrease consumer suprlus.
   (c) Have no effect on consumer surplus.
   (d) Not enough information.
6. In which of the following cases would the income and subsitution effects for books have the same sign?
   (a) When books are a normal, ordinary good and the price of books increases.
   (b) When books are an inferior, ordinary good and the price of books increases.
   (c) When books are a Giffen good and the price of books increases.
   (d) None of the above.
7. Which of the following is the best ordering of goods from most inelastic to most elastic in terms of the price elasticity of demand?
   (a) Oreo cookies, all cookies, all snacks (including cookies).
   (b) All snacks (including cookies), all cookies, Oreo cookies.
   (c) Oreo cookies, all snacks (including cookies), all cookies.
   (d) All cookies, Oreo cookies, all snacks (including cookies).
8. Suppose that bread and sushi are the only two goods Bob consumes. Both have positive marginal utilities. If bread is a Giffen good and the price of bread increases:
   (a) Spending on sushi will increase.
   (b) Spending on sushi will decrease.
   (c) Spending on sushi will stay the same.
   (d) Not enough information.

Use the following information to answer questions 9 and 10. The demand for toys (T) and the demand for gadgets (G) as functions of the price of toys (p_T), the price of gadgets (p_G) and income (I) are given by:

$$T = \frac{I}{2p_T}$$

$$G = \frac{I}{2p_G}$$

Dave currently has an income of \$100. The price of a toy is \$10. The price of a gadget is \$1.

9. Suppose that the price of a gadget increases to \$2. The change in demand for the toys due to the income effect will be:
   (a) 2.5.
   (b) 7.5.
   (c) -2.5.
   (d) 0.

10. The magnitude of the substitution effect for toys will be:
    (a) Equal to the magnitude of the income effect for toys.
    (b) Greater than the magnitude of the income effect for toys.
    (c) Less than the magnitude of the income effect for toys.
    (d) Not enough information.

11. Suppose that there are two consumers in the market for hats. Both consumers have linear demand curves with different slopes but the same vertical intercept. Assuming that hats are an ordinary good, the market demand curve:
    (a) Will have a kink and be steeper to the left of the kink than to the right of the kink.
    (b) Will have a kink and be steeper to the right of the kink than to the left of the kink.
    (c) Will be a straight line without a kink.
    (d) None of the above.

12. At the current rental price, demand for movie rentals is inelastic. If the movie rental store lowers the price by a small amount:
    (a) The quantity of rentals will increase and the store's revenue will decrease.
    (b) The quantity of rentals will decrease and the store's revenue will decrease.
    (c) The quantity of rentals will increase and the store's revenue will increase.
    (d) The quantity of rentals will decrease and the store's revenue will increase.

13. William spends his entire income on soda and chips. He always buys positive quantities of both. Suppose that the cross price elasticity of demand for soda with respect to the price of chips is negative. If chips are an ordinary good, when the price of chips increases:
    (a) William's spending on chips will increase and his spending on soda will decrease.
    (b) William's spending on chips will decrease and his spending on soda will decrease.
    (c) William's spending on chips will increase and his spending on soda will increase.
    (d) William's spending on chips will decrease and his spending on soda will increase.

14. The market demand curve for video games is downward sloping. Consumers currently purchase 200 video games. If the price of a video game drops by \$2, the change in consumer surplus will be:
    (a) -400.
    (b) -200.
    (c) 400.
    (d) None of the above.

15. For an ordinary, inferior good, the Engel curve and demand curve will:
    (a) Both have positive slopes.
    (b) Both have negative slopes.
    (c) Have slopes with opposite signs.
    (d) Not enough information.

SECTION II: SHORT ANSWER (40 points)

1. (15 points) Calvin's demand for books (B) and magazines (M) in terms of his income (I), the price of a book (p_B) and the price of a magazine (M) is given by the equations below:

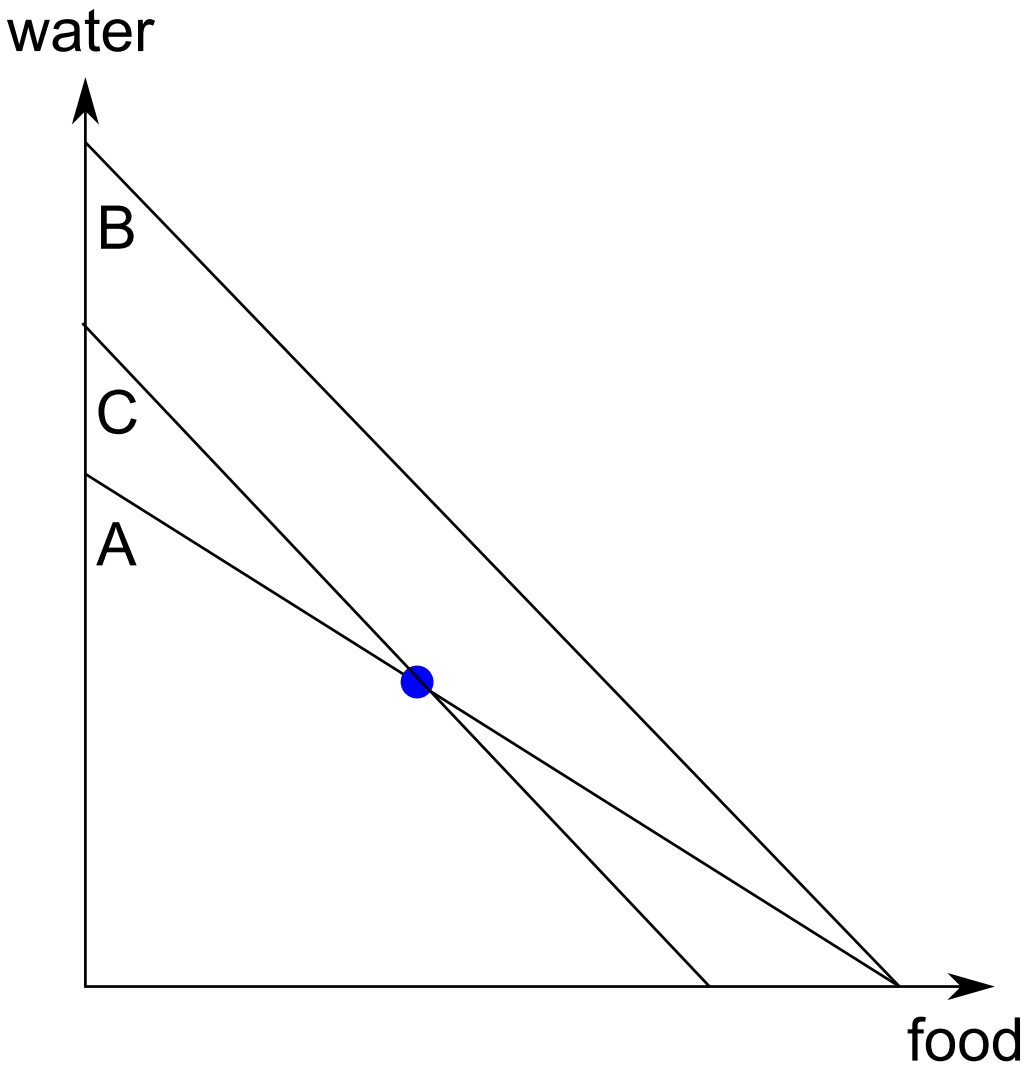
$$B = \frac{I}{p_B + \frac{p_B^2}{p_M}} \tag{1}$$

$$M = \frac{I}{p_M + \frac{p_M^2}{p_B}} \tag{2}$$

   (a) Suppose that income is \$100 and the price of magazines is \$1. Draw the price offer curve obtained by varying the price of books. Show the points on the price offer curve corresponding to the following prices of books: \$1, \$2, and \$3. Be certain to label the exact values of these three points on the graph and the end points of the budget lines they lie on (you may leave numerical values as fractions).

   (b) Graph the Engel curve for magazines assuming that the price of a magazine is \$1 and the price of a book is \$1. Label any intercepts and slopes with their exact numerical values where possible.

2. (15 points) The graph below shows three budget lines for a person who consumes only food and water. Budget line A is the consumer's original budget line. Budget line B is the consumer's new budget line after a decrease in the price of water. Budget line C is a budget line that is parallel to budget line B but passes through the consumer's original optimal bundle on budget line A. Water is a normal, ordinary good. Food is also normal and ordinary. Water and food are complements. Show the following on the graph:
   (a) Where the consumer's new optimal bundle will be on budget line B.
   (b) Where the consumer's optimal bundle would be on budget line C.
   (c) The portion of the change in demand for food from the price decrease due to the income effect.
   (d) The portion of the change in demand for food from the price decrease due to the substitution effect.



3. (10 points) The inverse demand curves for consumers A and B are given below:

$$p(x_A) = 10 - x_A \tag{3}$$

$$p(x_B) = 20 - 2x_B \tag{4}$$

   (a) Derive an expression for market demand as a function of price.
   (b) Graph the market demand curve, labeling all intercepts, kinks and slopes with their numerical values.