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Homework I  
Economics 365  
Spring 2020

Name \_\_\_\_\_

You may use your class notes, your textbook, and any other written material that you find useful. However, you may not work with anyone else or consult anyone else when answering the questions, including other faculty members or other students.

(10 points) Answer both of the following essay questions (write only on the paper provided):

1. Carefully define demand for a good such as oranges. Show using indifference curve analysis (graphs) how the demand for oranges is derived. Briefly explain your answer and the graphs that you use.

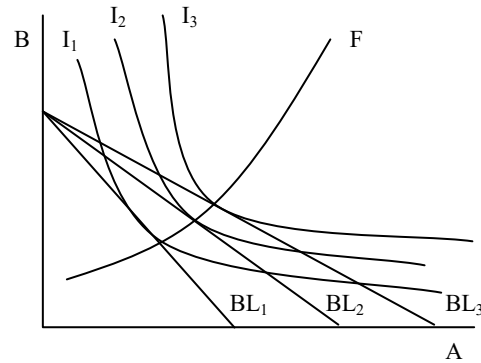
2. Suppose that an individual's utility function is given by  $U = X_1X_2^2$ . This utility function results in  $MU_1 = X_2^2$  and  $MU_2 = 2X_1X_2$ . What is the equation for the marginal rate of substitution? Derive the demand curve for both good 1 and good 2, showing all of your steps. Briefly explain your answers.

(15 points) Answer all of the following 15 multiple-choice questions. Make sure that your answers are coded in the answer sheet provided.

1. Suppose that the price of good x triples and the price of good y doubles while income remains constant. On a graph where the budget line is drawn with x on the horizontal axis and y on the vertical axis, the new budget line
  - A. Is flatter than the old one and lies below it.
  - B. Is flatter than the old one and lies above it.
  - C. Crosses the old budget line.
  - D. Is steeper than the old one and lies below it.
2. Which of the following statements about budget lines are true?
  - I. Budget lines reflect a consumer's preferences.
  - II. If a consumer's income rises then the consumer's budget line will move out parallel to his original budget line.
  - A. both statements are true.
  - B. both statements are false.
  - C. I is true while II is false.
  - D. I is false while II is true.
3. Which of the following statements about budget lines are true?
  - I. If all prices double and income triples, then the budget line will become steeper.
  - II. If good 1 is measured on the horizontal axis and good 2 is measured on the vertical axis and if the price of good 1 is  $p_1$  and the price of good 2 is  $p_2$ , then the slope of the budget line is  $-p_2/p_1$ .
  - A. Both statements are true.
  - B. Both statements are false.
  - C. I is true while II is false.
  - D. I is false while II is true.
4. Charlie's indifference curves have the equation  $X_B = \text{constant}/X_A$ , where larger constants denote better indifference curves. Charlie strictly prefers the bundle (10, 17) to
  - A. The bundle (11, 16).
  - B. The bundle (17, 10).
  - C. The bundle (12, 15).
  - D. More than one of these bundles.
  - E. None of these bundles.
5. Economists assume that for most consumers indifference curves are convex, which means that:
  - A. Indifference curves are bowed out from the origin.
  - B. Indifference curves are downward sloping lines.
  - C. Consumers tend to prefer medium amounts of all goods they consume rather than just consuming a little of one and a lot of another good.
  - D. Consumers tend to prefer consuming a little of one good and a lot of another good rather than consuming medium amounts of both goods.
6. Angela has preferences represented by the utility function  $U(x, y) = 2x + 2y$ . She consumes 10 units of good x and 6 units of good y. If her consumption of good x is lowered to 4, how many units of y must she have in order to be exactly as well off as before?
  - A. 15
  - B. 12
  - C. 16
  - D. 8
  - E. None of the above.
7. The marginal rate of substitution measures:
  - A. The price a consumer pays for one good relative to a second good.
  - B. The rate at which a consumer would be willing to trade one good for another.
  - C. The extra utility a consumer gains by consuming additional units of a good.
  - D. The marginal product of labor.
8. A consumer is maximizing her total utility when at the consumer's current consumption levels the consumer's:
  - A. Budget line intersects her indifference curve.
  - B. Marginal rate of substitution is greater than the slope of the budget line.
  - C. Budget line is tangent to her indifference curve.
  - D. Marginal rate of substitution is less than the slope of the budget line.

9. An individual would be able to reach a higher indifference curve in all of the following circumstances except:
- An increase in the individual's income.
  - An increase in the price of one good, holding prices for other goods constant.
  - A decrease in the price of one good, holding prices for other goods constant.
  - A decrease in the price of all goods.
10. Suppose Charlie has a utility function  $U(X_A, X_B) = X_A \cdot X_B$ . This utility function yields the following marginal utilities:  $MU_A = X_B$  and  $MU_B = X_A$ . Further, the price of apples is \$1, and the price of bananas is \$2. If Charlie's income were \$200, how many units of bananas would he consume if he chose the bundle that maximized his utility subject to his budget constraint?
- 25
  - 50
  - 10
  - 100
11. Walt consumes strawberries and cream but only in the fixed ratio of three boxes of strawberries to two cartons of cream. At any other ratio, the excess goods are totally useless to him. The cost of a box of strawberries is \$10 and the cost of a carton of cream is \$10. Walt's income is \$200. Which of the following statements is true?
- Walt demands 10 cartons of cream.
  - Walt demands 10 boxes of strawberries.
  - Walt considers strawberries and cartons of cream to be perfect substitutes.
  - Walt demands 12 boxes of strawberries.
12. Which of the following statements are true?
- Perfect substitutes have indifference curves that are right angles.
  - the marginal rate of substitution measures the opportunity cost of one good in terms of units of the other good lost.
- Both statements are true.
  - Both statements are false.
  - I is true while II is false.
  - I is false while II is true.

Use the following Figure to answer question 13



13. In the figure above, the curve labeled F is a(n):
- Engel curve
  - Income offer curve
  - Price offer curve
  - Inverse demand curve
14. When the price of x rises, Marvin responds by changing his demand for x. The substitution effect is the part of this change that represents his change in demand
- Holding the prices of substitutes constant.
  - If he is allowed to substitute as much x for y as he wishes.
  - If his money income is held constant when the price of x changes.
  - If the prices of all other goods are held constant.
  - None of the above.
15. Which of the following statements are true?
- A simultaneous increase in both income and prices of both goods may leave the budget line unchanged.
  - A simultaneous increase in both income and prices of both goods will leave the budget line unchanged.
- Both statements are true.
  - Both statements are false.
  - I is true while II is false.
  - I is false while II is true.