

Review Questions Consumer Theory

Chapter 2: Budget Constraint

1. Suppose there are two goods x_1 and x_2 which are being sold for prices p_1 , p_2 , and that the consumer has income m .
 - a. Write down the budget constraint.
 - b. What is the slope of the budget line?
 - c. What is the intercept with the vertical axis vs. the horizontal axis?
 - d. How many units can you at most buy of x_2 ?
 - e. How does the budget line change when the price of good x_1 increases?
 - f. How does the budget line change when income increases?
2. Al has an income of $m=100$, and he is faced with the following prices $p_1=4$ and $p_2=2$.
 - a. What is the intercept with the horizontal axis?
 - b. What is the slope of the budget line?
 - c. Draw the budget line when Al gets a coupon to buy the first ten units of x_1 for only \$2 a piece.
3. Betty spends her income on school supplies and other goods. She has \$100 to spend per week. The price of school supplies and other goods are both \$1. A friend gives her a \$20 gift certificate to the book store. What does her budget line look like? What would her budget line look like if instead she had received \$20 in cash?

Chapter 3: Indifference Curve

1. What does it mean that preferences are complete and transitive?
2. Which two conditions need to be satisfied when preferences are well behaved?
3. What do each of the conditions mean?
4. What is an indifference curve?
5. When preferences are complete what do we know about the indifference curves?
6. When preferences are transitive what do we know about the indifference curves?
7. What is the Marginal Rate of Substitution?
8. What does it mean that $MRS_{1,2} = -2$? How many x_2 's are you willing to give up for one x_1 ?
9. What does it mean that the absolute value of $MRS_{1,2}$ diminishes? How would you explain this in plain English?
10. What is known about preferences when absolute value of $MRS_{1,2}$ diminishes?
11. Draw a representative indifference curve when preferences are perfect substitutes. Are these preferences convex and/or strictly convex?
12. Draw a representative indifference curve when preferences are perfect complements. Are these preferences convex and/or strictly convex?

Chapter 4: Utility

1. What is a monotonic transformation?
2. Why does $U_1(x_1, x_2) = x_1 x_2$ represent the same preferences as $U_2(x_1, x_2) = 100 + (x_1 x_2)^3$?
3. Will two utility functions that represent the same preferences always have the same $MRS_{1,2}$?
4. What does the Marginal utility of good x_1 (MU_1) measure?
5. What is the MU_1 when the utility function is $U(x_1, x_2) = 3 x_1^2 x_2 + 10$?
6. If $MU_1 = 2$ and $MU_2 = 1$ what is the $MRS_{1,2}$?
7. If $U(x_1, x_2) = x_1 x_2$ what is MU_1 , MU_2 and $MRS_{1,2}$? What is $MRS_{1,2}$ when $x_1 = 4$, $x_2 = 1$? What is $MRS_{1,2}$ when $x_1 = 4$, $x_2 = 10$? What type of preferences are these (perfect substitutes, perfect complements, or Cobb-Douglas)?
8. Sal's preferences over apples (x_a) and bananas (x_b) can be described by the utility function $U = x_a \cdot x_b$. Please illustrate his indifference curve through the bundle $(x_a, x_b) = (3, 12)$. Be sure to indicate at least 4 precise bundles on his indifference curve.
9. Draw a picture of the indifference curve through the bundle $(x_1, x_2) = (10, 10)$ when $U(x_1, x_2) = x_1 + 2 x_2$. Are x_1 and x_2 perfect substitutes or perfect complements?
10. Draw a picture of the indifference curve through the bundle $(x_1, x_2) = (10, 10)$ when $U(x_1, x_2) = \min(x_1, 2 x_2)$. Are x_1 and x_2 perfect substitutes or perfect complements?
11. Suppose an individual only cares about the total number of sodas that she has. What would her utility function for six packs and single cans look like?
12. Suppose an individual only cares about peanut butter and jelly if they are consumed together. The consumer's preferred ratio is three times as much jelly as peanut butter. What does his utility function look like?

Chapter 5: Choice

1. When is $MRS_{1,2} = -p_1/p_2$?
2. Suppose $MRS_{1,2} = -2$ and $-p_1/p_2 = -1$. How can this consumer be made better off? Should the consumer buy more x_1 or more x_2 ?
3. Which two equations would you solve to find the demand function for x_1 when $U(x_1, x_2) = x_1 x_2$?
4. What is the demand function for x_1 when $U(x_1, x_2) = x_1^2 x_2$?
5. What is the demand function for x_1 when $U(x_1, x_2) = x_1 + x_2$?
6. What is the demand function for x_1 when $U(x_1, x_2) = \min(x_1, x_2)$?
7. What is the demand function for x_1 when $U(x_1, x_2) = x_1 + 2x_2$?
8. What is the demand function for x_1 when $U(x_1, x_2) = \min(10 x_1, x_2)$?
9. Suppose we observe an individual's consumption of x_1 and x_2 over three periods. In all periods his income is \$100, in the first period $p_1 = 1$ and $p_2 = 1$, in the second period $p_1 = 2$ and $p_2 = 1$, and in the third period $p_1 = 1$ and $p_2 = 2$. In the first period he consumes $(x_1, x_2) = (60, 40)$, in the second period he consumes $(x_1, x_2) = (30, 40)$, and in the third period $(x_1, x_2) = (60, 20)$. What do you think his utility function might look like?

Chapter 6: Demand

1. What is the Income Expansion Path?
2. What is the Engle Curve?
3. What does the Engle Curve look like for a necessity? A luxury good?
4. What does the Engle Curve look like when preferences are homothetic?
5. What does the Engle Curve look like for an inferior good?
6. What does the Engle Curve look like for a normal good?
7. If there are only two goods can both of those goods be inferior goods?
8. Draw the Engle Curve for the following demand function $x_1 = m/2p_1$ when $p_1 = 1$.
9. Are two goods that are perfect complements also necessities? Why or why not?
10. Are x_1 a substitute or complement for x_2 when $x_1 = m/(p_1 + p_2)$?
11. Are x_1 a substitute or complement for x_2 when $x_1 = m/2p_1$?