

THE UNIVERSITY OF ZAMBIA
SCHOOL OF HUMANITIES AND SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

ECN 2115 INTERMEDIATE MICROECONOMICS

TUTORIAL SHEET TWO.

1. Suppose the market demand curve for a product is given by $Q_d = 1000 - 10P$ and the market supply curve is given by $Q_s = -50 + 25P$.

- a. What are the equilibrium price and quantity?
- b. What is the Inverse Form of the demand curve?
- c. At the market equilibrium, what is the price elasticity of demand?
- d. Suppose the price in this market is \$25. What is the amount of excess demand?

2. Suppose demand for good A is given by $Q_A^d = 500 - 10P_A + 2P_B + 0.70I$ where P_A is the price of good A, P_B is the price of some other good B, and I is income. Assume that P_A is currently \$10, P_B is currently \$5, and I is currently \$100.

- a. What is the elasticity of demand for good A with respect to the price of good A at the current situation?
- b. What is the cross-price elasticity of the demand for good A with respect to the price of good B at the current situation?

c. What is the income elasticity of demand for good A at the current situation?

3. Consider the utility function $U(x, y) = 3x^2 + 5y$ with $MU_x = 6x$ and $MU_y = 5$.

- a. Is the assumption that “more is better” satisfied for both goods?
- b. What is the $MRS_{x,y}$ for this utility function?

c. Is the $MRS_{x,y}$ diminishing, constant, or increasing as the consumer substitutes x for y along an indifference curve?

4. Consider two goods, A and B. For each of the following scenarios, develop the utility function $U(A, B)$ that matches the given information.

a. The consumer believes that good A and B are perfect substitutes with one unit of A equivalent to four units of B.

b. The consumer believes that good A and B are perfect compliments and always uses three units of B for every unit of A.

d) Will the indifference curves corresponding to this utility function be convex to the origin (bowed toward the origin), concave to the origin (bowed away), or straight lines?

Explain.

5. Linda consumes two goods, X and Y. Her utility function is $U = XY$. Initially, $P_x = \$18$ and $P_y = \$2$. Linda's income is \$288. Then the price of X falls to \$8. [The following questions ask you to calculate a mathematical example of the income and substitution effects of a price decrease for good X.]

a) Complete the following table.

Basket	X	Y	$U = XY$	$\frac{MU_x}{MU_y} = \frac{P_x}{P_y}$	Expenditure $P_x X + P_y Y$
A					
B	12	48			
C					

b) The movement from point A to point B illustrates which effect, the income effect or the substitution effect? Explain.

c) The movement from point B to point C illustrates which effect, the income effect or the substitution effect? Explain.

d) Is good X a normal, inferior, or Giffen good? Explain.

6. A firm's production function is

$$Q = 5L^{\frac{2}{3}}K^{\frac{1}{3}} \text{ with } MP_K = \left(\frac{5}{3}\right)L^{\frac{2}{3}}K^{-\frac{2}{3}} \text{ and } MP_L = \left(\frac{10}{3}\right)L^{-\frac{1}{3}}K^{\frac{1}{3}}$$

- a) Does this production function exhibit constant, increasing, or decreasing returns to scale?
- b) What is the marginal rate of technical substitution of L for K for this production function?
- c) What is the elasticity of substitution for this production function?

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