

Problem Set #2

Due Friday 2/24/06 by 6 p.m. in the Econ 101 slot in the Economics Alcove

Use a stapler! Write legibly and use full and grammatically correct sentences in your answers. Draw graphs neatly and label axes and points clearly. Each part below is weighted equally in grading, as are subparts within a part.

A. While the cases we see in the book of indifference curves are all well-behaved, it is useful to explore the concept of indifference by considering cases that are not well-behaved. Thus for each of the following scenarios, draw two utility indifference curves illustrating these various cases that do not conform to one or more of the standard assumptions. Indicate clearly which curve corresponds to the higher level of utility.

- 1) A person's preferences concerning pennies and nickels
- 2) Preferences concerning gloves for a person with two right hands and one left hand
- 3) Preferences concerning gloves for a person with one right hand and no left hand
- 4) Can you think of a case where the indifference curves would slope upward? Draw a graph illustrating your example. Remember indifference curves cannot cross, and indicate which of the two curves has the higher level of utility associated with it. (Hint: are goods always good?)

Bonus problem:

- 5) preferences concerning music cassettes and music cds for a deaf person
- B. 1) Tyler, a college student, has \$30 a week to spend; he spends it either on videos, at \$3 a rental, or on music cds, at \$10 each.
- a. Draw Tyler's opportunity set/budget constraint.

For each of the following changes, draw Tyler's new budget constraint:

- b. The price of video rentals rises to \$5.
  - c. Tyler gets a big raise and now has \$60 a week to spend.
  - d. The price of cds drops to \$6.
- 2) a. For **1a** above, what is the slope of Tyler's budget constraint? What is the economic interpretation of this number?  
b. Can a budget constraint ever be positively sloped? Why or why not?
  - 3) Do Problem 8 on p. 98 in Chapter 5.
  - 4) Do Problem 9 on p. 98 in Chapter 5.

- C. 1) For each of the following cases, draw two isoquants (i.e., production indifference curves) that do not conform to one or more of the standard assumptions. Indicate clearly which isoquant corresponds to the higher level of production.
- The case where labor and capital are perfectly substitutable for each other in the production function (e.g., use a human or a robot).
  - The case where two inputs must be used in fixed proportions in the production function (e.g., water is made using two parts hydrogen and one part oxygen).
- 2) Could isoquants ever slope upwards? Why or why not?
- 3) a. Do Problem 6 on p. 125 in Chapter 6.  
b. Do Problem 7 on p. 125 in Chapter 6.
- 4) a. Do Problem 8 on p. 125 in Chapter 6.  
b. Do Problem 9 on p. 125 in Chapter 6.
- D. The ABC Walk-in Tutoring Company needs to decide how many tutors to hire. The production function for the company looks like this:

<u>Number of tutors</u>	<u>Tutoring sessions provided per day</u>	<u>Marginal product</u>
0	0	
1	6	
2	16	
3	30	
4	36	
5	40	
6	43	

- Fill in the last column of the table. Over what range is the marginal product of labor increasing? Constant? Diminishing?
- Graph the production function. At what point should the average productivity of labor be at its highest? Calculate average productivity at each point to check your prediction.
- ABC's fixed costs are \$20 per day and the cost of paying a tutor for a day is \$30. Fill in the table:

<u>Output</u>	<u>TVC</u>	<u>TC</u>	<u>MC</u>	<u>AVC</u>	<u>AC</u>
0					
6					
16					
30					
36					
40					
43					

If the price of a session is \$10 and the shop sells 36 per day, what is the daily profit?

- Draw the total cost curve for the company on one graph. On a second graph, draw the marginal cost curve, the average cost curve, and the average variable cost curve. Then draw a line on the graph indicating the price of a lesson, and mark the profit-maximizing point. Would you expect entry, exit, or no change to occur in the market for tutoring?