

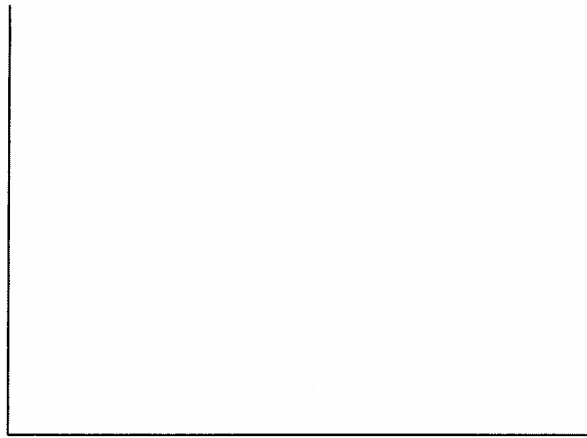
“I have neither given nor received aid on this exam” _____
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The following formula might be useful: $E_p = (P/Q) * (1/\text{slope})$

I. Discussion Questions (12.5 points each...50 points total):

1. The demand for calculators is $Q^d = 100 - 40P$, where P is the price of calculators.

a. Graph the demand for calculators below. Label your axes and intercepts. (4 points)



b. What is the slope of the demand curve for calculators? (2 points)

c. What is the price elasticity of demand for calculators if $P = \frac{1}{6}$? (hint, calculator a number) (3 points)

d. In words, precisely interpret the price elasticity number that you calculated in (c). (3.5 points)

2.

East Lake		West Lake	
# of Boats	Average # of Fish	# of Boats	Average # of Fish
1	20	1	24
2	19	2	22
3	18	3	20
4	17	4	18
5	16	5	16

a. Using the above chart, suppose Madison has 4 fishing boats. What is the optimal method of allocating 4 fishing boats between these two lakes? [No credit given if you don't show your work] (6.5 points)

b. Based on your answer from (a), how many fish will be caught from the East Lake? (3 points)

c. Based on your answer from (a), how many fish will be caught from the West Lake? (3 points)

3. Your company owns two t-shirt making plants: one plant in Ayden and the other in Grimesland with the following marginal cost and average total cost curves (subscripts A & G denote Ayden and Grimesland, respectively):

$$MC_A = 12Q_A$$

$$ATC_A = 6Q_A + 16/Q_A$$

$$MC_G = 4Q_G$$

$$ATC_G = 2Q_G + 240/Q_G$$

$$ATC_G = 2Q_G + 240/Q_G$$

a. What is the least costly way of producing 20 t-shirts? (6.5 points)

b. How much did it cost to produce the t-shirts selected in (a) from Ayden? (2 points)

c. How much did it cost to produce the t-shirts selected in (a) from Grimesland? (2 points)

d. What is the total cost to produce 20 t-shirts? (2 point)

4. Complete the following table for the short-run cost curves for the production function: $Q = 3KL$ where in the short-run K is fixed at 2 units, with the rental price of capital = \$5 and the wage rate = \$10. (1.5 points per column)

Workers	Output	TC	VC	FC	ATC	AVC	AFC	MC
0					--	--	--	--
1								
2								

*Extra Credit Eligibility – You must meet these two criteria to answer the extra credit question below:

- Please skip the extra credit question if your cell phone rang in class since the 1st test
- Please skip the extra credit question if you are not taking this test during the normally scheduled time in class (Mar. 26th at 10am)

Extra Credit (+2): Who is the governor of North Carolina?

→ INELIGIBLE!

II. Multiple Choice: (20 questions, worth 2.5 points each...50 points total)

Labor	Output	Marginal Product	Average Product
0	0	--	--
1	8		
2			9
3	30		
4		13	
5	55		

1. Based on the chart above, what is the marginal product from the 3rd worker?
 - A) 10
 - B) 11
 - C) 12
 - D) 13
 - E) 14
2. Do diminishing returns to labor appear in the above chart? If so, where does this occur?
 - A) Yes, after the 1st worker is hired
 - B) Yes, after the 2nd worker is hired
 - C) Yes, after the 3rd worker is hired
 - D) Yes, after the 4th worker is hired
 - E) No (diminishing returns are not exhibited in the above graph).
3. Which famous economist predicted more than 200 years ago that the world would starve to death due to diminishing marginal product in farming (hence Economics was labeled “the dismal science”)?
 - A) Adam Smith
 - B) Sir Edmund Hillary
 - C) Karl Marx
 - D) Lawrence Newbold
 - E) Thomas Malthus
4. What is the definition of a luxury good? (E_I is income elasticity of demand, E_P is price elasticity of demand)
 - A) $E_I > 0$
 - B) $E_P > 0$
 - C) $E_I > 1$
 - D) $0 < E_P < 1$
 - E) $0 < E_I < 1$
5. If demand for the agriculture products is inelastic, then an increase in farm technology which increases market supply is
 - a. good for farmers because it raises prices for their products, but bad for consumers because it raises prices consumers pay for food.
 - b. bad for farmers because total revenue will fall, but good for consumers because prices for food will fall.
 - c. good for farmers because it raises prices for their products, and also good for consumers because more output is available for consumption.
 - d. bad for farmers because total revenue will fall, and bad for consumers because farmers will raise the price of food to increase their total revenue.
6. If a 6% increase in income results in a 10% increase in quantity demanded of pizza, then the income elasticity of demand for pizza is:
 - A) negative and therefore pizza is a normal good
 - B) negative and therefore pizza is an inferior good
 - C) positive and therefore pizza is an inferior good
 - D) positive and therefore pizza is a normal good

7. If the price elasticity of demand is elastic... what does this mean?
- A) if price increases by 1% then the decrease in quantity demanded will be smaller than 1%
 - B) if price increases by 1% then the decrease in quantity demanded will be exactly 1%
 - C) if price increases by 1% then the decrease in quantity demanded will exceed 1%
8. The curve that shows the various input combinations that yield the same level of output is called a (an):
- A) Engel curve
 - B) isoquant curve
 - C) minimum efficient scale
 - D) isocost curve
 - E) indifference curve
9. Find the returns to scale for the following function: $Q = 2K + 3L$
- A) increasing returns to scale
 - B) decreasing returns to scale
 - C) constant returns to scale
10. What is marginal cost?
- A) fixed cost divided by the quantity of output
 - B) total revenue minus total cost.
 - C) the increase in total cost from producing one more unit of output.
 - D) the curve that shows all of the optimal input combinations.
 - E) costs that vary with the quantity of output produced.

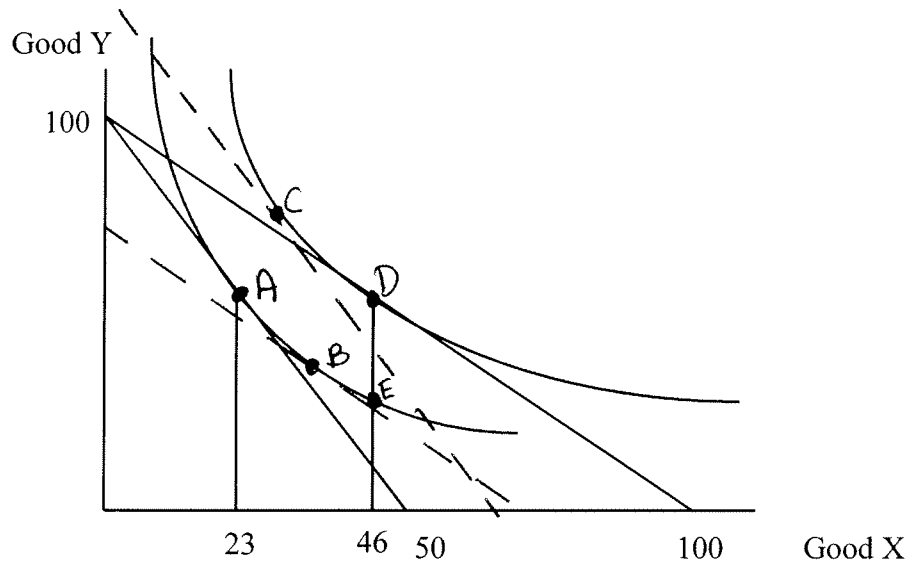
Use the following information to answer the next question. An apple orchard uses both machines and workers to pick apples. The daily rental price of an apple picking machine is \$50 while the daily wage rate per apple picker is \$40.

K

_____ L

11. In the space above, draw an isocost curve for this apple orchard spending \$200. What is the isocost curve slope?
- A) $-2/5$
 - B) $-5/4$
 - C) $-5/2$
 - D) $-4/5$
 - E) -4
12. Given the marginal product of daily rental price of capital is \$50 and the daily wage rate per worker is \$40. The marginal product of workers is 20 and the marginal product of capital is 40. What is your recommendation for this company?
- A) Rent more capital and fire workers.
 - B) Rent less capital and hire workers.
 - C) Don't change anything, since this company is already optimally using its inputs.

Use the graph below to answer questions 13-16.



13. If $M = \$100$, $P_Y = \$1$, and $P_X = \$2$. Find the best affordable bundle.
- A) A
 - B) B
 - C) C
 - D) D
 - E) E
14. Suppose the price of X decreases from $P_X = \$2$ to $P_X = \$1$. Everything else is unchanged ($M = \$100$ & $P_Y = \$1$). The total effect is represented by moving from point ____ to point ____.
- A) A to C
 - B) D to A
 - C) A to B
 - D) C to D
 - E) A to D
15. The substitution effect due to the price of X decreasing is represented as moving from point ____ to point ____.
- A) B to A
 - B) D to A
 - C) A to B
 - D) A to C
 - E) C to D
16. The income effect due to the price of X decreasing is represented as moving from point ____ to point ____.
- A) D to A
 - B) C to D
 - C) B to C
 - D) B to D
 - E) C to B

17. If Jerry and Ben's demand curves are: $P = 8 - Q_J$ and $P = 8 - 2Q_B$, respectively. Find the market demand curve.

- A) $P = 8 - (1/3)Q$
- B) $P = 8 - (2/3)Q$
- C) $P = 16 - (3/2)Q$
- D) $P = 8 - (3/2)Q$
- E) $P = 16 - 3Q$

18. The cross-price elasticity of coffee and creamer is most likely:

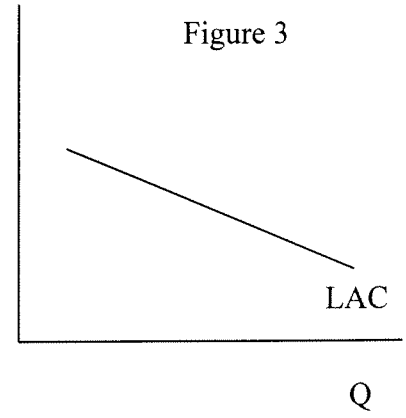
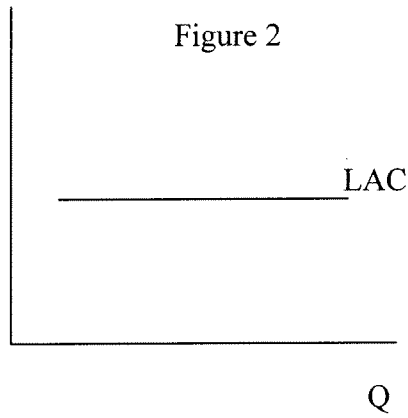
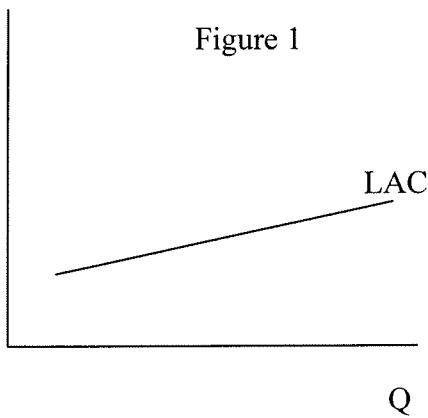
- A) positive
- B) negative
- C) zero

19. Joe earns \$9.90 each week. He buys two goods: coffee (\$0.25 per cup) and creamer (\$0.15 per oz.). Joe will only drink coffee if it is prepared with two creamers per cup. How much coffee and creamer will Joe buy?

- A. 25 coffees and 25 creamers
- B. 18 coffees and 18 creamers
- C. 36 coffees and 18 creamers
- D. 25 coffees and 50 creamers
- E. 18 coffees and 36 creamers

20. Which of the figures below represents Long-run average costs curves for a decreasing returns production function?

- A) Figure 1
- B) Figure 2
- C) Figure 3



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EXAMPLE

- WRONG
1
- WRONG
2
- WRONG
3
- RIGHT
4

**SPR '08
Test 2**

IMPORTANT DIRECTIONS FOR MARKING ANSWERS

Use #2 pencil only.
Make heavy black marks that fill the circle completely.
Erase clearly any answer you wish to change.
Make no stray marks on this answer sheet.

PRACTICE

- 1
- 2
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REFER TO THESE EXAMPLES BEFORE STARTING PRACTICE EXERCISES

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