ECON 002 - Principles of Microeconomics
Drake University, Spring 2013
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Printed name: _____

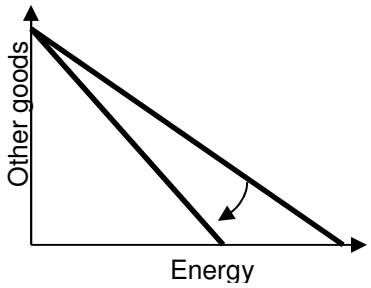
EXAMINATION 3 VERSION A
"Choices Underlying Supply and Demand"
April 12, 2013

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Numerical answers, if rounded, must be correct to at least 3 significant digits. Point values for each question are noted in brackets. Maximum total points are 100.

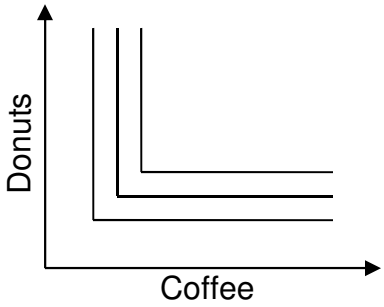
I. Multiple choice: Please circle the one best answer to each question. [1 pts each, 12 pts total]

(1) The price of orange juice is $1.50 per can. The price of milk is $3 per gallon. Amy's income is $60. Amy's opportunity cost of a gallon of milk is
a. 1 can of orange juice.
b. 1.5 cans of orange juice.
c. 2 cans of orange juice.
d. 3 cans of orange juice.
e. 20 cans of orange juice.
f. 40 cans of orange juice.

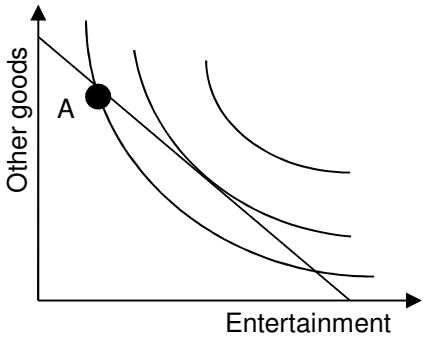
(2) In the graph below, the rotation of the budget line could be caused by
a. an increase in income.
b. a decrease in income.
c. an increase in the price of energy.
d. a decrease in the price of energy.
e. an increase in the price of other goods.
f. a decrease in the price of other goods.



(3) The indifference-curve graph below shows Beth's preferences. It reveals that, for Beth, coffee and donuts are
a. perfect squares.
b. perfect substitutes.
c. perfect complements.
d. perfectly elastic.

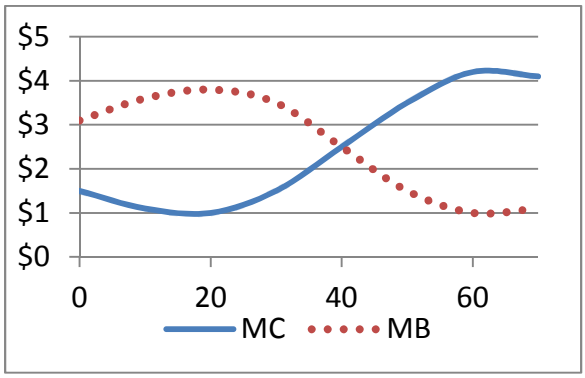


(4) Carl's indifference-curve diagram is shown below. The straight line represents Carl's budget line and the curved lines represent his indifference curves. If Carl is now at point A, he could be made better off without exceeding his budget by
a. buying more other goods and less entertainment.
b. buying more entertainment and fewer other goods.
c. either (a) or (b).
d. Carl cannot be made better off by changing his purchases.



(5) Suppose a study shows that the marginal benefit of keeping open the Ellwood City Recreation Center is $20 per hour, and the marginal cost is $25. If these numbers are accurate, then Ellwood City would be better off
a. keeping the Recreation Center open more hours.
b. keeping the Recreation Center open fewer hours.
c. making no change in the Recreation Center hours.
d. Cannot be determined from information given.

(6) The graph below shows Gotham City's marginal cost (MC) and marginal benefit (MB) of fire stations, in millions of dollars. Gotham City should have
a. zero fire stations.
b. 20 fire stations.
c. 40 fire stations.
d. 60 fire stations.



(7) Which of the following is an economic cost but not an accounting cost?
a. Money paid for electricity, raw materials, and supplies.
b. Lease payments.
c. The opportunity cost of the business owner's time spent running the business.
d. Wages paid to workers.
e. All of the above.

(8) If at a certain level of output, marginal cost is less than average cost, then average cost must be
a. increasing with output.
b. decreasing with output.
c. at its minimum point.
d. Cannot be determined from information given.

(9) A cost that you cannot avoid no matter what action you take is called
a. an opportunity cost.
b. a marginal cost.
c. a variable cost.
d. a sunk cost.
e. an average cost.

(10) In the *short run*, a firm should continue operating if its revenue is sufficient to pay at least its
a. fixed cost.
b. variable cost.
c. total cost.
d. accounting cost.

(11) If any firms enter the mobile-phone industry, the
a. short-run supply curve of mobile phones will shift right.
b. short-run supply curve of mobile phones will shift left.
c. short-run demand curve for mobile phones will shift right.
d. short-run demand curve for mobile phones will shift left.

(12) Price equals average cost in a competitive industry in long-run equilibrium because
a. business owners have a sense of fairness.
b. individual firms adjust their output levels using the rule "price equals average cost" to maximize profit.
c. consumers refuse to pay more than what is reasonable.
d. positive profits encourage entry of new firms while negative profits encourage existing firms to leave the industry.
e. the threat of government regulation causes firms to hold prices down.

II. Problems: Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Budget line: 14 pts] Amy's budget for food and clothing is depicted in the **budget line** below.

Determine whether the following combinations of goods are *exactly affordable, affordable with money left over,* or *not affordable* for Amy.

a. 7 units of clothing and 4 units of food.

b. 1 unit of clothing and 12 units of food.

c. 4 units of clothing and 8 units of food.

Assume that Amy spends all her income on food and clothing.

d. What is Amy's opportunity cost of a unit of food?

units of clothing

e. Amy's indifference curves are not shown in this graph. Nevertheless, we know that at Amy's best-choice combination, her marginal rate of substitution of food for clothing (that is, the slope of her indifference curve) must equal …

Assume that Amy's income is **$ 80**.

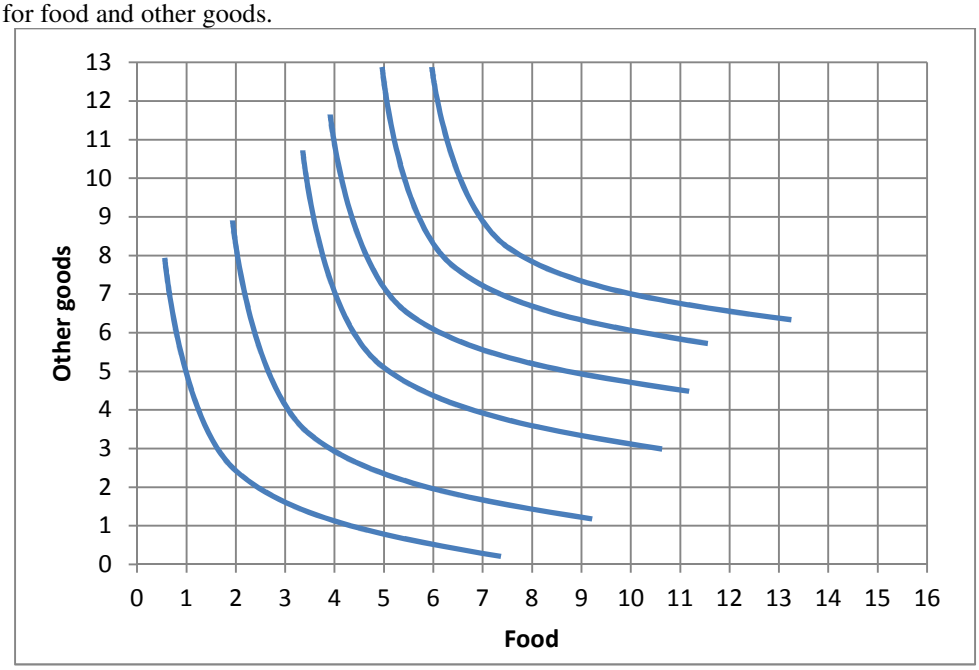
f. What must be the price of food?

$

g. What must be the price of clothing?

$

(2) [Consumer choice and demand: 16 pts] The indifference curves in the graph below represent Brian's preferences for food and other goods.



a. Would Brian rather have 10 units of food and 3 units of other goods, or 6 units of food and 6 units of other goods?

units of food and	units of other goods

b. Would Brian rather have 4 units of food and 11 units of other goods, or 7 units of food and 7 units of other goods?

units of food and	units of other goods

Suppose Brian has a budget of $30 to spend on food and other goods. The price of other goods is $3.

c. **Using a straightedge**, carefully draw Brian's budget line when the price of food is $2. Label this budget line "A".

d. How much food will Brian buy if the price of food is $2?

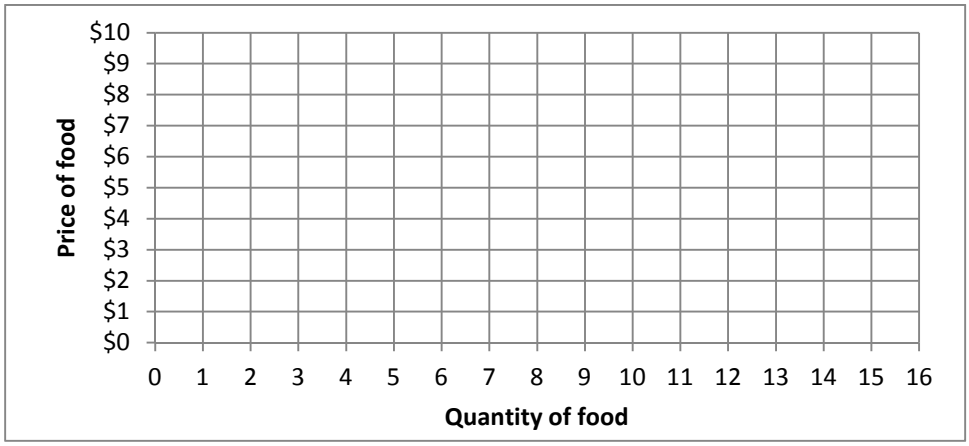
units of food

e. **Using a straightedge**, carefully draw Brian's budget line when the price of food is $6. Label this budget line "B".

f. How much food will Brian buy if the price of food is $6?

units of food

g. Plot two points on Brian's demand curve for food, and sketch his demand curve at right.



(3) [Basic definitions, cost and revenue: 6 pts] Insert the appropriate term from the list below in each box. The same term may be entered in more than one box.

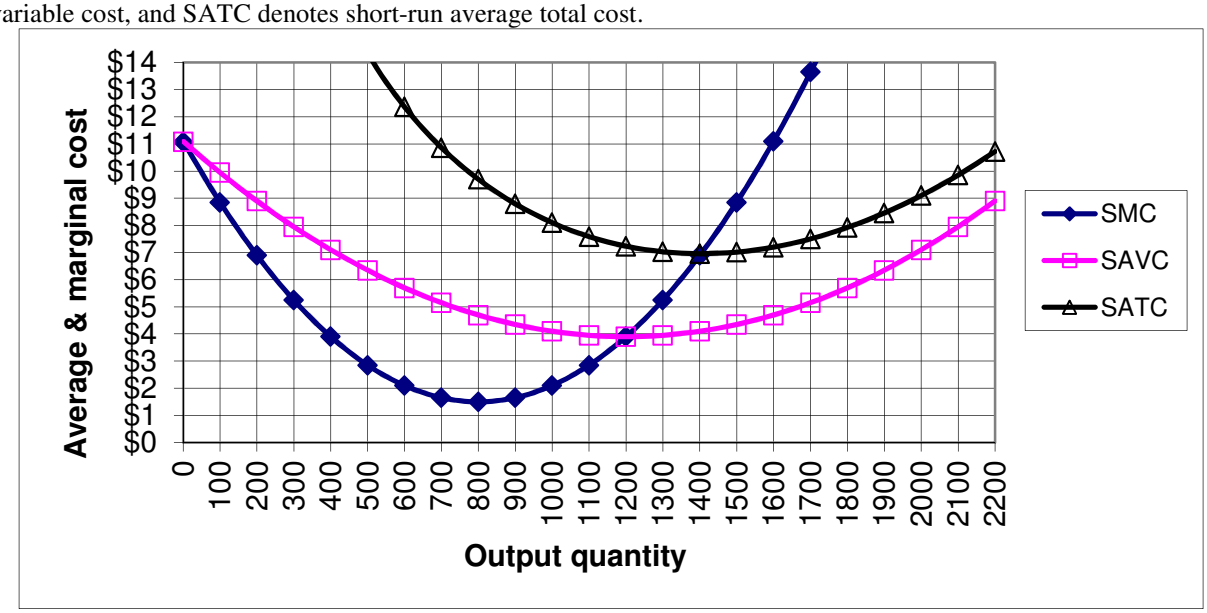
Total revenue	*Average revenue*	*Marginal revenue*
Total cost	*Average cost*	*Marginal cost*

a. Increase in cost from producing another unit of output.	
b. Change in cost divided by change in output.	
c. Money paid for inputs purchased or hired.	
d. Change in revenue divided by change in output.	
e. Increase in total revenue from producing and selling another unit of output.	
f. Total cost divided by the quantity of output.	

(4) [Discounting: 4 pts] Answer the following questions, assuming the interest rate is **4 %.**

a. Suppose a particular project will *cost* a firm $2000 today, but will bring $1500 in revenue a year from today, and $1000 in revenue two years from today. Compute the *net present value* of this project.	$
b. Suppose a firm is expected to enjoy $12 million in profit every year, perpetually, beginning a year from today. Compute the value of the firm.	$ million

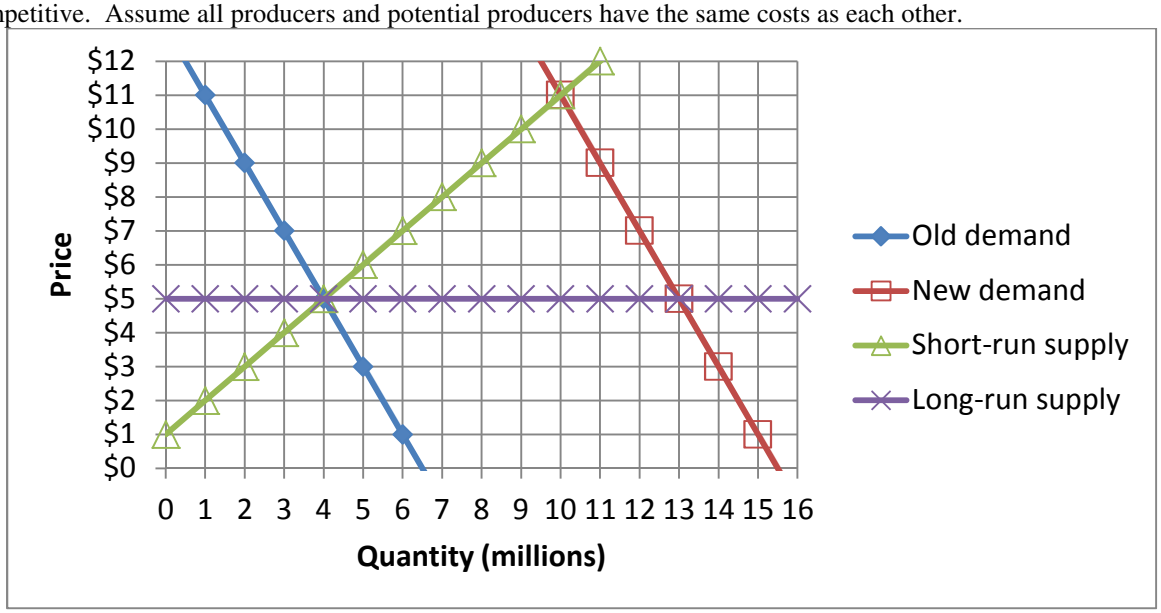
(5) [Short-run cost curves and supply: 24 pts] Rev Motor Company makes automobile parts. It is a small company in a big market, and therefore takes its output price as given. In the short run, the company faces daily cost curves as shown in the following diagram. Here, SMC denotes short-run marginal cost, SAVC denotes short-run average variable cost, and SATC denotes short-run average total cost.



Suppose the company were currently producing 1300 parts for some unknown reason.

a. Compute the company's short-run total cost, to the nearest thousand dollars.	$ thousand
b. Compute the company's short-run variable cost, to the nearest thousand dollars.	$ thousand
c. Compute the company's short-run fixed cost, to the nearest thousand dollars.	$ thousand
d. Suppose the company were currently producing 400 parts for some unknown reason. If the company produced one more part, by how much would its total cost increase? That is, what would be the *change in total cost* as the company increased output from 400 to 401 parts? (Give an answer to the nearest dollar.)	$
e. What is the company's break-even price—that is, the lowest price at which the company can avoid losses? (Give an answer to the nearest dollar.)	$
f. What is the company's shut-down price—that is, the lowest price at which it will remain in operation in the short run? (Give an answer to the nearest dollar.)	$
g. Suppose the price of parts is $5. How many parts should the company produce? (Give an answer to the nearest hundred.)	parts
h. Will the company make a *profit* or a *loss* at a price of $5?	
i. Suppose the price of parts is $11. How many parts should the company produce? (Give an answer to the nearest hundred.)	parts
j. Will the company make a *profit* or a *loss* at a price of $11?	
k. Suppose the price of parts is $2. How many parts should the company produce? (Give an answer to the nearest hundred.)	parts
l. Will the company make a *profit* or a *loss* at a price of $2?	

(6) [Long-run competitive equilibrium: 24 pts] The graph below shows the market for asparagus, which is competitive. Assume all producers and potential producers have the same costs as each other.



Initially the market is in long-run equilibrium, with the demand curve given by "old demand" and the short-run supply curve given by "short-run supply" as shown in the graph.

a. What is the initial equilibrium price?	$
b. What is the initial equilibrium quantity?	million
c. What is the average cost of production for firms in this industry?	$

Suppose that a scientific study claims that eating asparagus can prevent cancer, and the demand shifts right to "new demand." Consider the **short-run** market response to this demand shift.

d. What is the new equilibrium price in the short run?	$
e. What is the new equilibrium quantity in the short run?	million
f. Are asparagus producers making economic *profits, losses*, or just *breaking even*?	

Now, consider the **long-run** market response to this demand shift.

g. Given your answer to (f) above, will existing firms try to *exit* the industry or will new firms try to *enter* the industry?	
h. What is the new equilibrium price in the long run?	$
i. What is the new equilibrium quantity in the long run?	million
j. What is the new long-run average cost of production for firms in this industry?	$
k. Has the number of firms in this industry *increased, decreased*, or remained *constant*?	
l. Should this industry be called a *constant-cost* industry, an *increasing-cost* industry, or a *decreasing-cost* industry?	

[end of exam]