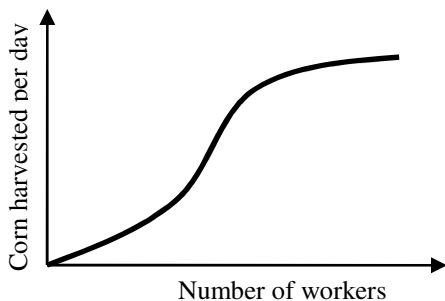


**EXAMINATION #1 VERSION A**  
**"Competitive Supply and Demand"**  
**February 8, 2012**

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:** Circle the one best answer to each question. [1 pt each, 12 pts total]

- (1) In economics, *rational behavior* means
- a. using math to make decisions.
  - b. ignoring "soft" concerns like friendships and charity.
  - c. doing the best one can with what one has.
  - d. making sacrifices today for a better future.
  - e. maximizing one's income.
- (2) "If the gasoline tax is raised, people will use less gasoline" is an example of
- a. a positive statement.
  - b. a normative statement.
  - c. both of the above.
  - d. none of the above.
- (3) "To contain global warming, the government should raise the gasoline tax" is an example of
- a. a positive statement.
  - b. a normative statement.
  - c. both of the above.
  - d. none of the above.
- (4) Consider the production function shown below. As more labor is used, the marginal product of labor
- a. decreases.
  - b. increases.
  - c. first increases, then decreases.
  - d. remains constant.



- (5) Farm A can produce 100 units of corn or 100 units of soybeans. Farm B can produce 300 units of corn or 150 units of soybeans. Which farm has a comparative advantage in soybeans?
- a. Farm A.
  - b. Farm B.
  - c. Both farms.
  - d. Neither farm.
- (6) Monetary exchange is more common today than bartering because
- a. bartering is a lost art.
  - b. monetary exchanges are subject to less tax.
  - c. bartering requires a "double coincidence of wants."
  - d. bartering is often illegal whereas anything can be legally bought and sold with money.
- (7) The *law of one price* means that
- a. each buyer will pay her or his own price.
  - b. each buyer will pay only once for a good.
  - c. all buyers will pay roughly the same price.
  - d. the prices of different goods—like cell phones and bicycles—will gradually converge to each other.
- (8) If the price of milk falls, and nothing else affecting the demand for milk changes, then this will cause
- a. the demand curve for milk will rotate clockwise until it becomes upward-sloping.
  - b. a movement along the demand curve for milk.
  - c. the demand curve for milk to shift left.
  - d. the demand curve for milk to shift right.

- (9) Spaghetti sauce is made from tomatoes, so if the price of tomatoes rises, then the
- demand for spaghetti sauce will shift left.
  - demand for spaghetti sauce will shift right.
  - supply of spaghetti sauce will shift left.
  - supply of spaghetti sauce will shift right.

- (10) Caribbean cruises are a normal good, so in a boom, when consumer incomes are rising,
- demand for Caribbean cruises will shift left.
  - demand for Caribbean cruises will shift right.
  - supply of Caribbean cruises will shift left.
  - supply of Caribbean cruises will shift right.

- (11) In February, the price of roses rises and the quantity sold increases. This could be caused by a
- rightward shift in the demand.
  - rightward shift in the supply.
  - leftward shift in the demand.
  - leftward shift in the supply.

- (12) In February, the price of grapefruit decreases and the quantity sold increases. This could be caused by a
- rightward shift in the demand.
  - rightward shift in the supply.
  - leftward shift in the demand.
  - leftward shift in the supply.

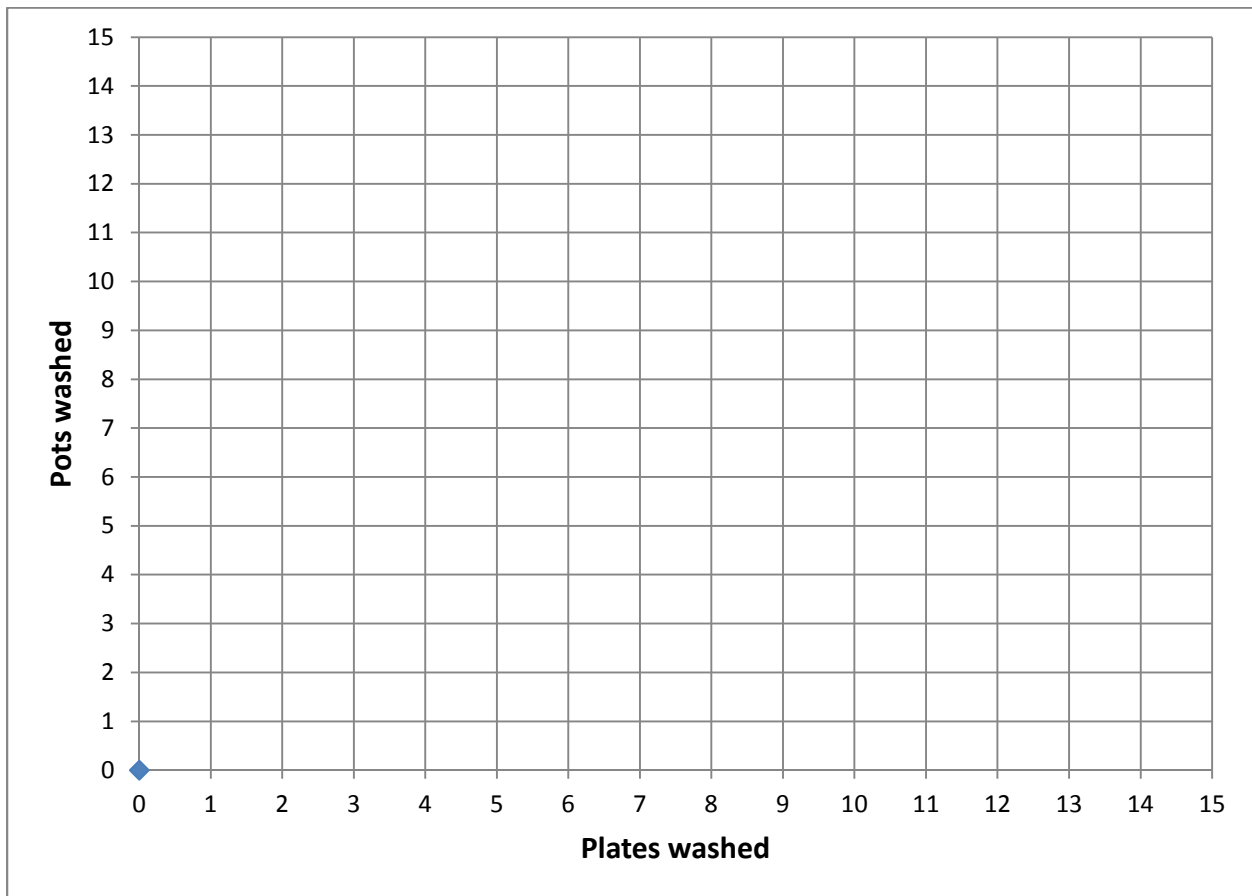
**II. Problems:** Insert your answer to each question in the box provided. Use margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Production functions: 7 pts] A work crew plows parking lots. Complete the table by computing the work crew's average product and marginal product and placing your answers in the unshaded cells of the third and fourth columns below. Then answer the question below.

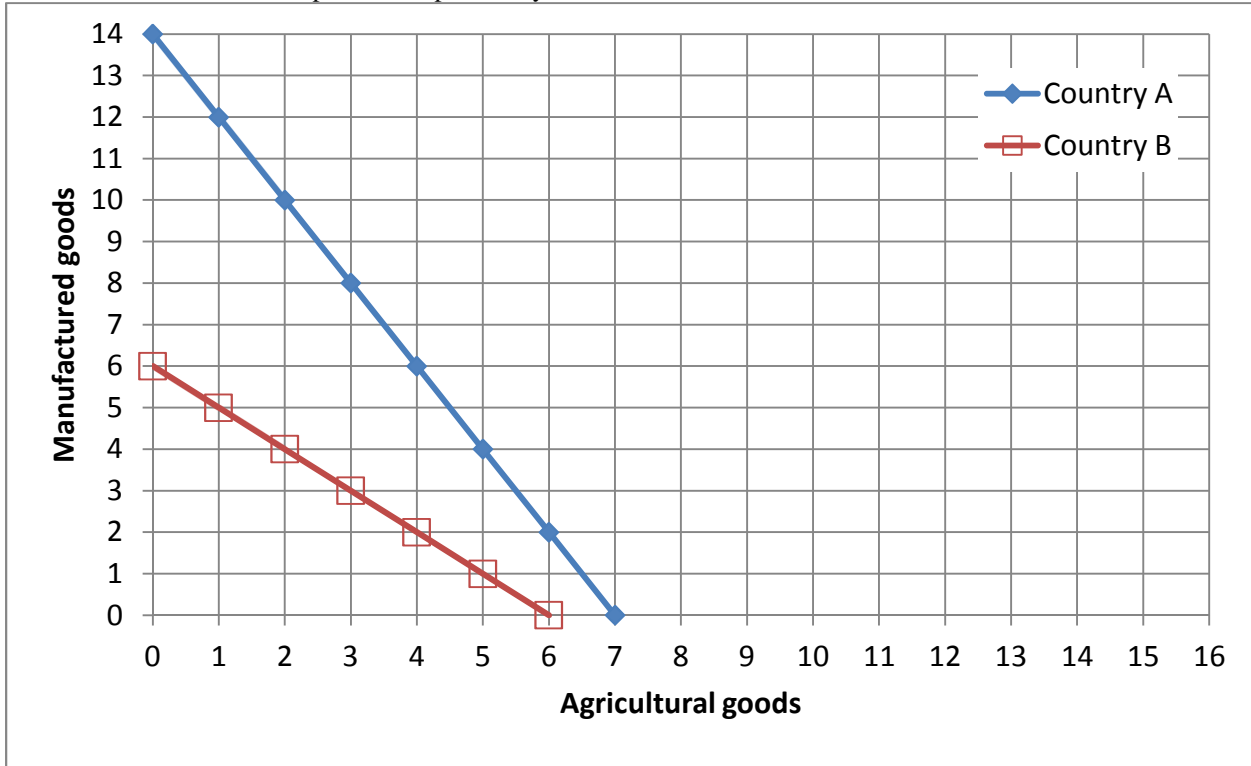
<i>Number of workers</i>	<i>Number of parking lots plowed</i>	<i>Average Product</i>	<i>Marginal Product</i>
0 workers	0 parking lots		
			parking lots per worker
4 workers	8 parking lots	parking lots per worker	
			parking lots per worker
8 workers	24 parking lots	parking lots per worker	
			parking lots per worker
12 workers	48 parking lots	parking lots per worker	

Is the work crew's production function characterized by *diminishing returns* to their labor input? Answer "yes" or "no."

(2) [Production possibility curve: 6 pts] A dishwasher can wash two plates per minute or one pot per minute. Plot the dishwasher's production possibility curve, given five minutes total time. Plot both intercepts and one other point on the curve. Then sketch the entire production possibility curve.



(3) [Comparative advantage, gains from trade: 17 pts] Country A and Country B each produce manufactured goods and agricultural goods. They each face a tradeoff between these two products because their workforces and other resources are limited. Their production possibility curves are shown below.



- [2 pts] What is Country A's opportunity cost of a unit of manufactured goods?
- [2 pts] What is Country B's opportunity cost of a unit of manufactured goods?
- [2 pts] What is Country A's opportunity cost of a unit of agricultural goods?
- [2 pts] What is Country B's opportunity cost of a unit of agricultural goods?
- [2 pts] Which country has a comparative advantage in producing manufactured goods?
- [2 pts] Which country has a comparative advantage in producing agricultural goods?
- [3 pts] Fill in the blanks: *Both* countries can consume combinations of manufactured goods and agricultural

	units of agricultural goods
	units of agricultural goods
	units of manufactured goods
	units of manufactured goods

goods *outside* their individual production possibility curves if \_\_\_\_\_ produces and

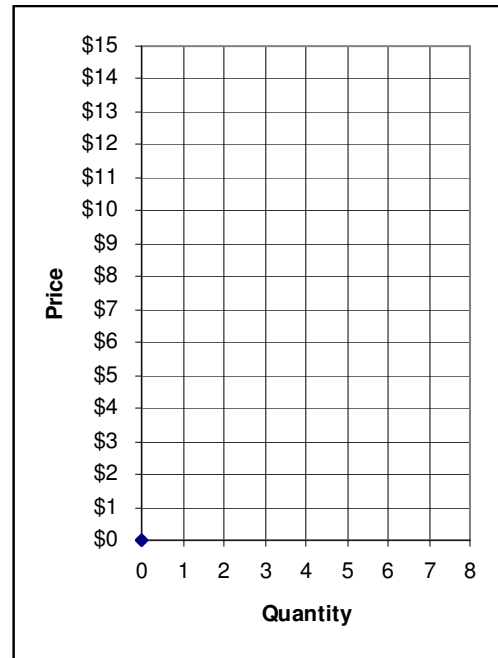
exports **three** units of manufactured goods for \_\_\_\_\_, which produces

\_\_\_\_\_ units of agricultural goods in return.

- [2 pts] **Plot** the trade that you propose in part (g) on the graph above. For each producer, plot the starting point representing **production before trade**, and the ending point representing **consumption after trade**.

(4) [Market equilibrium: 12 pts] Suppose six buyers and six sellers engage in a market similar to the exercise we did in class. Each buyer may buy at most one unit and each seller may sell at most one unit, but no one is forced to trade. Assume that buyers and sellers are each trying to maximize their personal surplus (or “gains from trade”). Surplus for each buyer equals the buyer's value of the good minus the price paid. Surplus for each seller equals the price received minus the seller's cost of the good. Surplus of persons who do not trade are zero. Buyers’ values and sellers’ costs are given in the following table.

Buyer	Value	Seller	Cost
Bob	\$15	Sue	\$ 1
Barb	\$14	Steve	\$ 2
Ben	\$14	Sam	\$ 3
Bailey	\$13	Sven	\$ 4
Brian	\$13	Sarina	\$ 5
Brittney	\$11	Sam	\$13



Suppose with some experience, the market settles on a single price. All trades are made at that price. (You can use the graph at right for scratch work.)

- If the price were \$3, would there be *excess demand*, *excess supply*, or *neither*?
- What is the equilibrium price? Give an answer to the nearest whole dollar.
- How many units of the good will be sold in this market?
- Compute the total revenue received by sellers (which equals the total spending by buyers).
- Compute the combined total surplus (or gains from trade) of all buyers and sellers. (Check your answer carefully! No partial credit for being "close"!)
- Who enjoys higher surplus in this particular market, the *buyers* or the *sellers*? Or is buyers’ total surplus *equal* to sellers’ total surplus?

\$
units
\$
\$

(5) [Shifts in demand and supply: 15 pts] Analyze each of the following markets according to the accompanying imaginary scenario.

a. Consider the market for **hybrid cars**. Suppose the price of gasoline rises. (Hybrid cars use very little gasoline.)

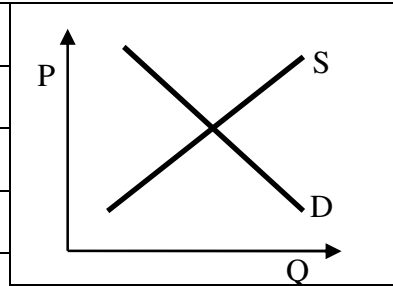
Does demand shift *left*, shift *right*, or remain *unchanged* ?

Does supply shift *left*, shift *right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).

b. Consider the market for **wooden furniture**. Suppose the price of wood rises.

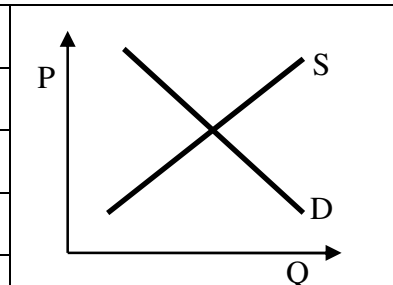
Does demand shift *left*, shift *right*, or remain *unchanged* ?

Does supply shift *left*, shift *right*, or remain *unchanged* ?

Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).

c. Consider the market for **electricity**. Suppose government regulations raise the cost of producing electricity. Simultaneously, consumer's incomes fall due to a recession.

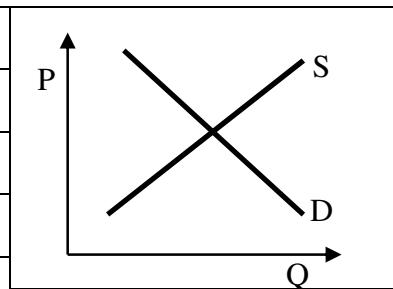
Does demand shift *left*, shift *right*, or remain *unchanged* ?

Does supply shift *left*, shift *right*, or remain *unchanged* ?

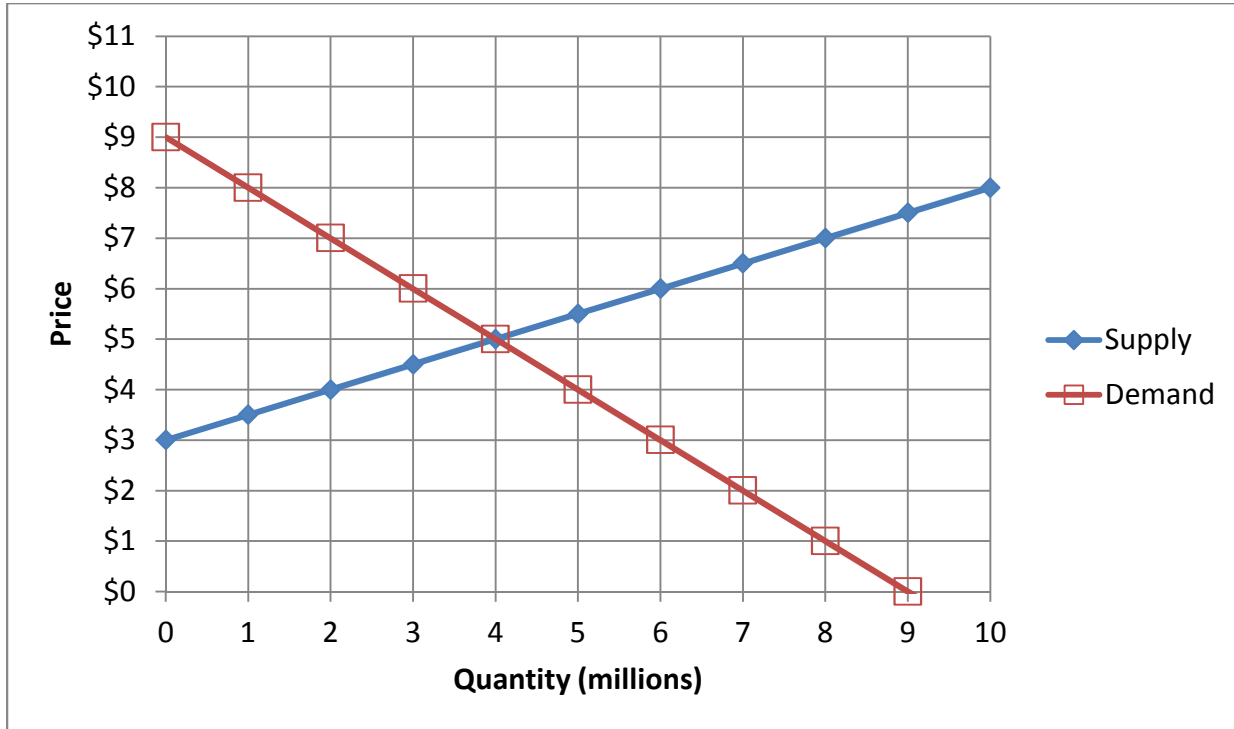
Does the equilibrium price *increase*, *decrease*, or *cannot be determined* ?

Does the equilibrium quantity *increase*, *decrease*, or *cannot be determined* ?

Sketch a graph of this scenario at right, showing which curve(s) shift(s).

(6) [Consumer surplus, producer surplus: 22 pts] The market for watermelons is depicted in the graph below.



Suppose the price in this market were \$6 for some reason.

- a. Would there be *excess demand*, *excess supply*, or *neither*?
- b. How much?
- c. Would the price tend to *rise*, *fall*, or remain *constant*?

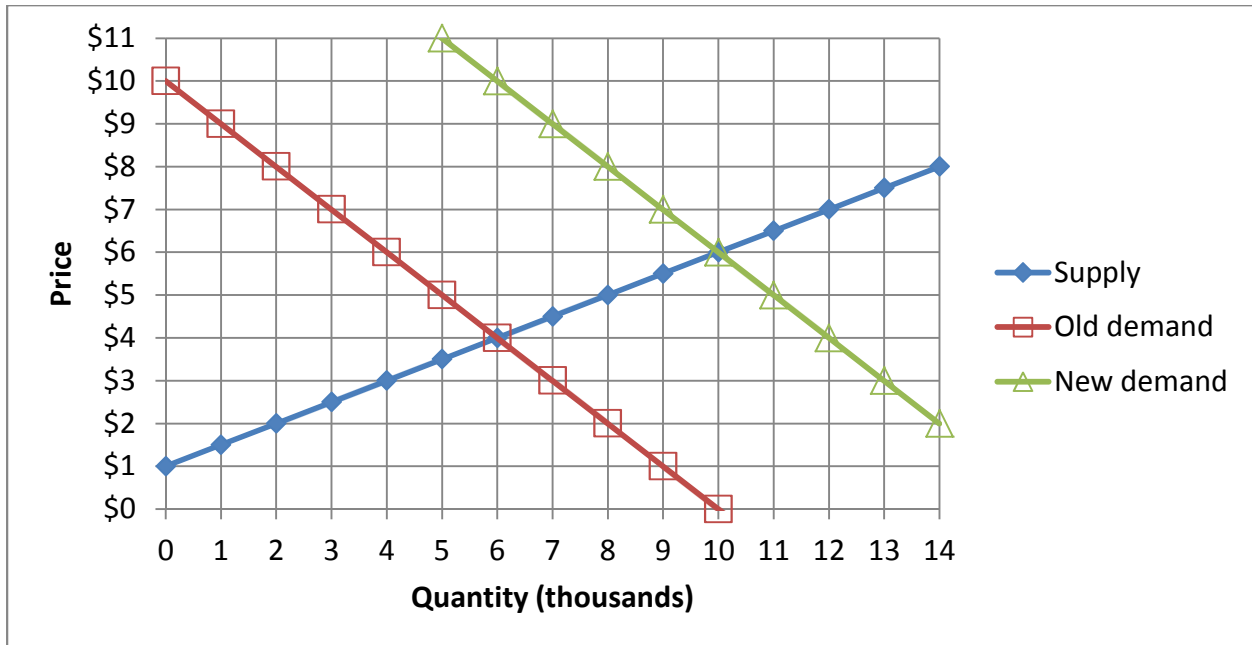
million

Now suppose the market is in equilibrium.

- d. Give the equilibrium price.
- e. Give the equilibrium quantity.
- f. How much are consumers willing to pay for the 1 millionth watermelon?
- g. How much consumer surplus do they enjoy for the 1 millionth watermelon?
- h. What is the marginal cost to producers of the 2 millionth watermelon?
- i. How much producer surplus do they enjoy for the 2 millionth watermelon?
- j. Compute total consumer surplus.
- k. Compute total producer surplus.

\$
million
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million
million

(7) [Consumer surplus, producer surplus: 4 pts] Consider the market for teeshirts as depicted in the graph below.



Suppose demand shifts from the “old demand” curve to the “new demand” curve.

- a. Are producers *better* off or *worse* off as a result of the demand shift?
- b. By how much? (Compute the change in producer surplus.)

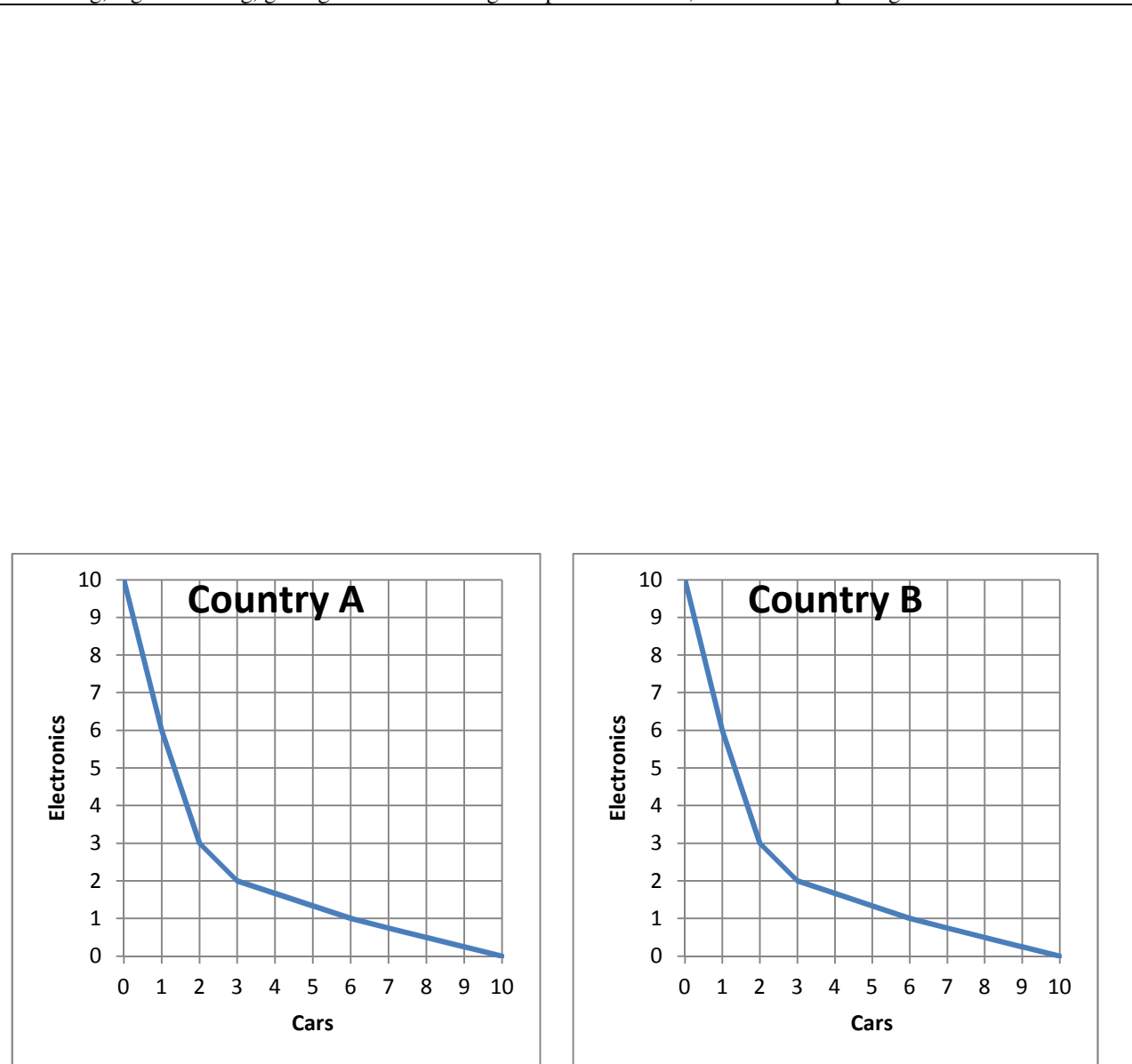
\$                      thousand



**III. Critical thinking:** Write a one-paragraph essay answering one question below (your choice). [5 pts]

- (1) Consider the following statement. "Every trade has a winner and a loser." Do you agree or disagree? Justify your answer with an example, using the concepts of consumer (or buyer) surplus and producer (or seller) surplus. (Ignore the graphs below.)
- (2) In this course, we have emphasized gains from trade based on *differences* in production possibility curves. Now consider the PP curves of two countries shown below, which are *identical*. Can both countries enjoy combinations of goods outside their individual PP curves through trade? If you answer NO, explain why not. If you answer YES, give an example of a trade that puts both countries outside their individual PP curves, and plot the trade on the graphs.

Please circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.



[end of exam]