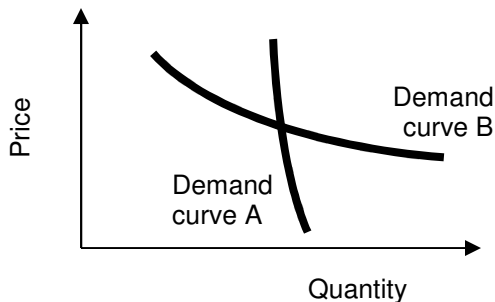


EXAMINATION 2 VERSION A
"Applications of Supply and Demand"
March 13, 2013

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, 7 pts total]

- (1) Which demand curve below is *less* elastic?
- Demand curve A.
 - Demand curve B.
 - Both have the same elasticity because they pass through the same point.
 - Cannot be determined from information given.



- (2) Assume that Canadian consumers are similar to U.S. consumers. However, gasoline in Canada is sold by the liter, not by the gallon, and there are approximately 3.8 liters in a gallon. Therefore, in absolute value, the price elasticity of demand for gasoline in Canada is
- greater than the elasticity in the U.S.
 - the same as the elasticity in the U.S.
 - less than the elasticity in the U.S.
 - zero.

- (3) Assuming that train travel and air travel are substitutes, then the cross-price elasticity of demand for train travel with respect to the price of air travel must be
- positive
 - negative.
 - zero.
 - cannot be determined from information given.

- (4) Suppose the price of pears in Des Moines is \$1.60 per pound and the cost of shipping pears between Des Moines and Omaha is \$0.50 per pound. Markets are *out of equilibrium* if the price of pears in Omaha is
- \$1.20 per pound.
 - \$1.70 per pound.
 - \$2.00 per pound.
 - \$2.20 per pound.

- (5) Suppose the supply of gold is plentiful today but is expected to be very scarce in the future. Speculation through buying and holding inventories will tend to
- raise the price of gold today and in the future.
 - lower the price of gold today and in the future.
 - raise the price of gold today and lower it in the future.
 - lower the price of gold today and raise it in the future.
 - have no effect on prices because speculators want a price difference to make money.

- (6) A quota on *selling* rosewood would cause the price of rosewood to
- rise.
 - fall.
 - rise or fall, depending on the shapes of the demand and supply curves.
 - remain constant.

- (7) Suppose the price elasticity of demand for hotel rooms in a small city is -5.0 and the price elasticity of supply is 1.5. If hotel rooms are taxed,
- Sellers (hotel operators) will pay most of the tax.
 - Buyers (guests) will pay most of the tax.
 - Sellers and buyers will each pay half of the tax.
 - Answer depends on which side is legally required to remit the tax to the government.

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) [Calculating elasticities: 2 pts] Suppose that if the price of electricity is \$0.04 per kilowatt-hour, the average household uses 1600 kilowatt-hours per month. If the price is \$0.20 per kilowatt-hour, the average household uses 800 kilowatt-hours per month. Compute the price elasticity of demand for electricity using the “arc-elasticity” formula.

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(2) [Using price elasticity of demand: 10 pts] Suppose the government wants consumers to use 15% less water and it wants to use price as an incentive to conserve. Suppose the price elasticity of demand for water is -0.6.

- a. According to the information above, is demand for water *elastic*, *inelastic*, or *unitary-elastic*?
- b. To decrease water consumption by this much, must the price of water *increase*, *decrease*, or remain *constant*?
- c. ... by about how much?
- d. Will consumers’ total spending on water *increase*, *decrease*, or remain *constant*?
- e. ... by about how much?

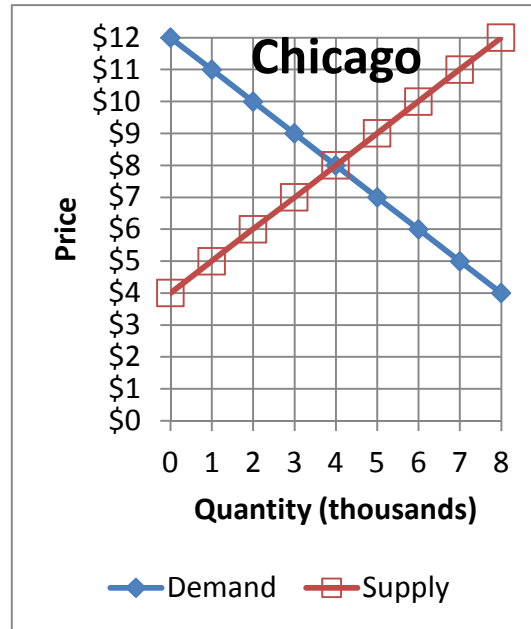
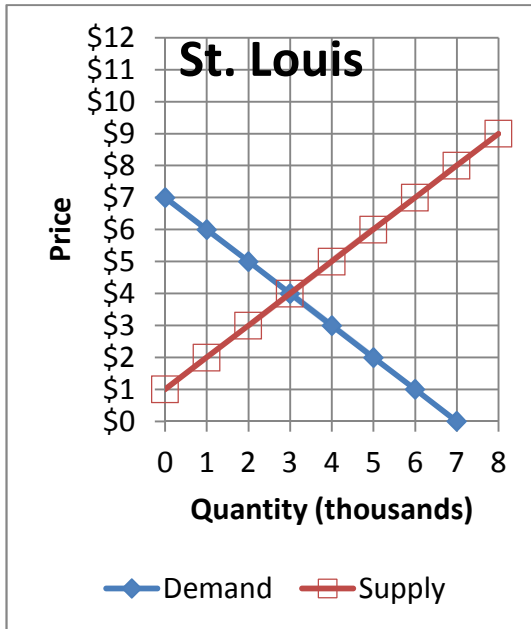
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(3) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for automobiles is 1.5. Now suppose income *rises* by 4%. Assume the price of automobiles does not change.

- a. According to the information above, are automobiles a *necessary good*, an *inferior good*, or a *luxury (or superior) good*?
- b. As income rises, will the quantity of automobiles demanded *increase*, *decrease*, or remain *constant*?
- c. ... by about how much?
- d. Will consumer spending on automobiles, as a fraction of a consumer's total budget, *increase*, *decrease*, or remain *constant*?
- e. ... by about how much?

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(4) [Arbitrage: 12 pts] The following graphs show markets for flashdrives in St. Louis and Chicago, in the absence of any arbitrage activity. Assume flashdrives are very easy to transport.



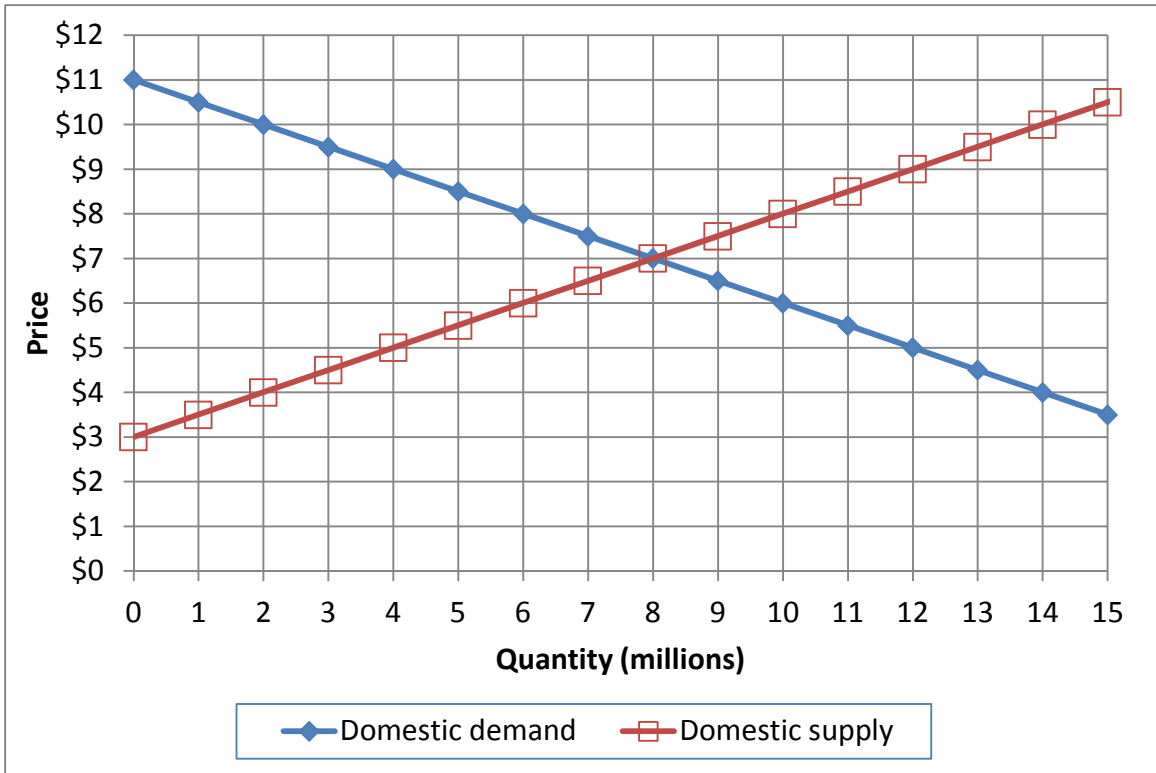
- Will arbitrage shift the demand curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the demand curve in Chicago *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the supply curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the supply curve in Chicago *left*, or *right*, or leave it *unchanged* ?

Suppose there are no costs of arbitrage. That is, the cost of shipping flashdrives between St. Louis and Chicago (in either direction) is *zero*.

- What will be the final price of the item in St. Louis, in equilibrium?
- What will be the final price of the item in Chicago, in equilibrium?

\$
\$

(5) [Welfare effects of international trade: 18 pts] Domestic supply and demand for natural gas in a particular country are given by the following diagram.



a. At first, international trade in natural gas is not permitted. Find the equilibrium price without international trade.

\$	
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Then this industry is opened to international trade and the international price of natural gas turns out to be \$9.

b. Will this country now *export* or *import* natural gas?

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c. How many units?

million

d. Does consumer surplus in this country *increase* or *decrease* from international trade in natural gas?

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e. By how much?

\$	million
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f. Does producer surplus in this country *increase* or *decrease* from international trade in natural gas?

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g. By how much?

\$	million
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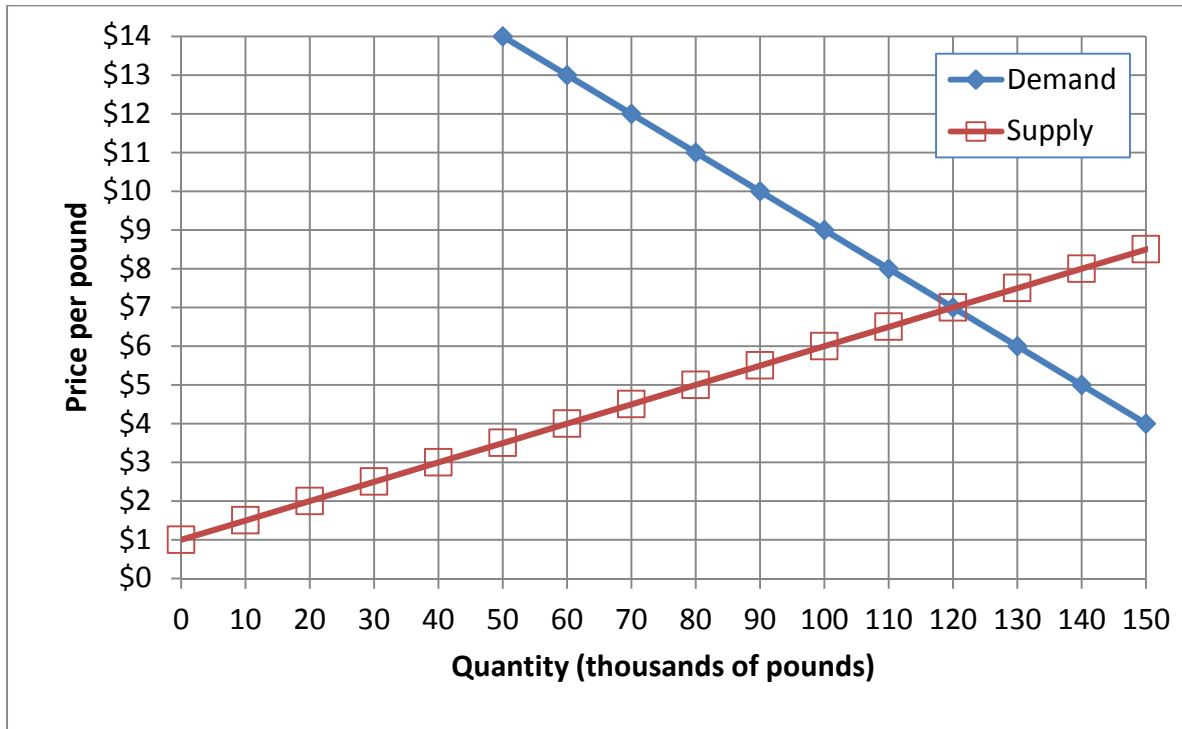
h. Does total social welfare in this country *increase* or *decrease* from international trade in natural gas?

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i. By how much?

\$	million
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(6) [Welfare analysis of price controls or quotas: 18 pts] The following graph shows the market for artichokes.



a. Find the equilibrium price without government intervention.

\$

Suppose the government imposes a price ceiling (or legal maximum price) of \$5 per pound. No artichokes may be sold for a price greater than the price ceiling.

b. How many pounds of artichokes will actually be sold?

thousand pounds

c. Will there be *excess demand*, *excess supply*, or *neither*?

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d. How much?

thousand pounds

e. Does producer surplus *increase*, *decrease*, or *remain constant* because of the price ceiling, as compared to the market without government intervention?

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f. By how much?

\$	thousand
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g. Does consumer surplus *increase*, *decrease*, or *remain constant* because of the price ceiling, as compared to the market without government intervention? (Assume optimistically that artichokes are bought by those consumers who value artichokes the most.)

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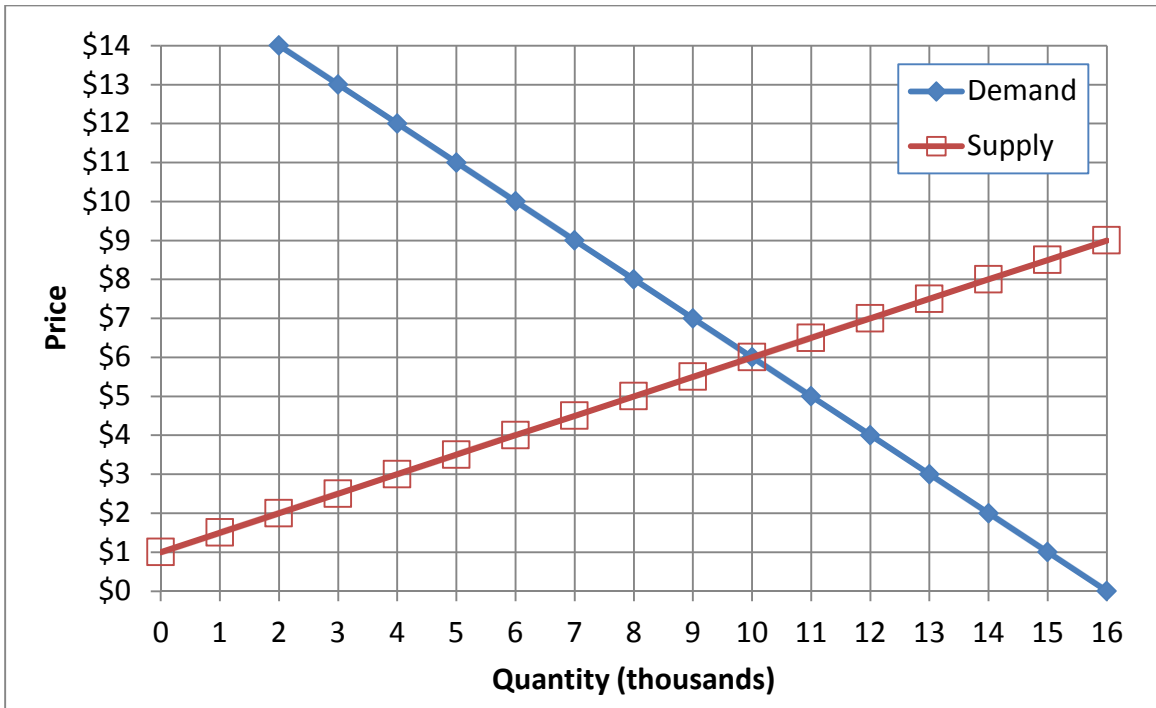
h. By how much?

\$	thousand
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i. Compute the deadweight social loss caused by the price ceiling.

\$	thousand
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(7) [Welfare effects of taxes or subsidies: 20 pts] The following graph shows the market for ball caps.



a. Find the equilibrium price without government intervention.

\$

Suppose the government imposes an excise **tax of \$ 3** per cap.

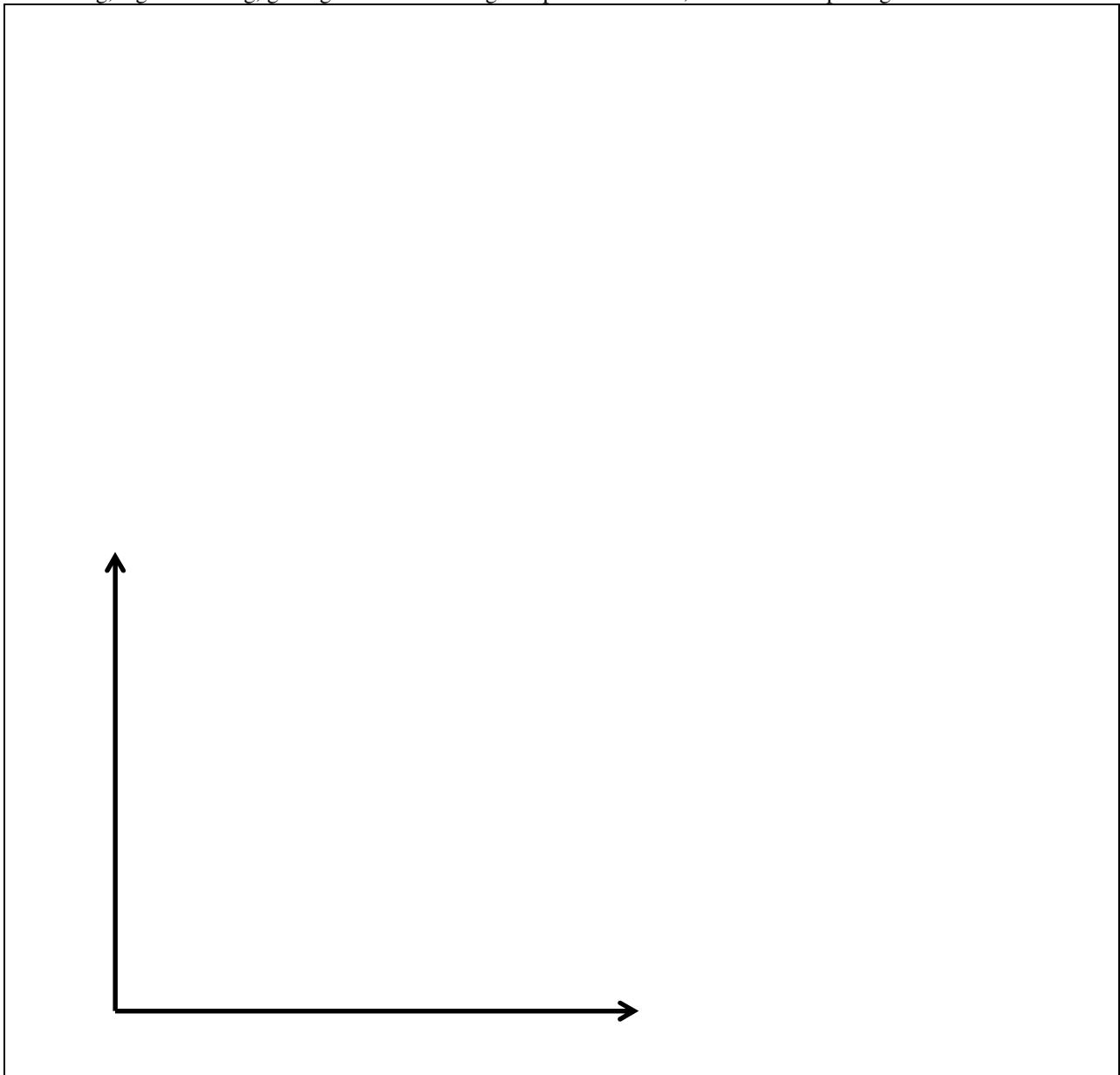
- b. Compute the new equilibrium quantity sold.
- c. Compute the equilibrium net price received by sellers (excluding the tax).
- d. Compute the equilibrium total price paid by buyers (including the tax).
- e. Does producer surplus *increase, decrease, or remain constant* because of the tax?
- f. By how much?
- g. Does consumer surplus *increase, decrease, or remain constant* because of the tax?
- h. By how much?
- i. Compute the total tax revenue collected by the government.
- j. Compute the deadweight social loss caused by the tax.

	thousand
\$	per cap
\$	per cap
\$	thousand
\$	thousand
\$	thousand
\$	thousand

III. Critical thinking: Write a one-paragraph essay answering *one* question below (your choice). [3 pts]

- (1) Suppose a tax of \$3 is placed on calculators, and as a consequence, the number of calculators sold falls from 20 million to 16 million. Does the country's overall welfare *increase* or *decrease* as a result of this change? By how much? Sketch a graph, show your work and circle your final answer.
- (2) Suppose a country opens its tee-shirt industry to international trade. As a consequence, the price of tee-shirts falls from \$10 to \$6, and 15 million tee-shirts are imported. Does the country's overall welfare *increase* or *decrease* as a result of this change? By how much? Sketch a graph, show your work and circle your final answer.

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]