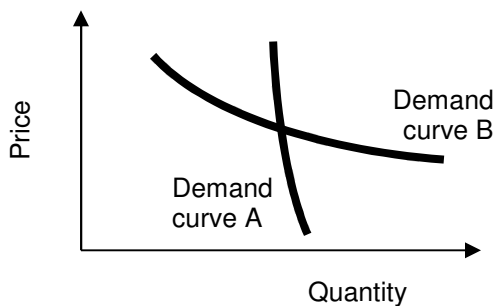


EXAMINATION 2 VERSION C
"Applications of Supply and Demand"
March 13, 2013

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 *more* 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 German consumers are similar to U.S. consumers. However, electricity in Germany is priced in euros, not in dollars, and at current exchange rates one euro is worth about \$1.30. Therefore, in absolute value, the price elasticity of demand for electricity in Germany is
- less than the elasticity in the U.S.
 - greater than the elasticity in the U.S.
 - the same as the elasticity in the U.S.
 - zero.
- (3) Assuming that hybrid-engine cars and gasoline are substitutes, then the cross-price elasticity of demand for hybrid cars with respect to the price of gasoline must be
- positive
 - negative.
 - zero.
 - cannot be determined from information given.

- (4) Suppose the price of plums in Des Moines is \$1.90 per pound and the cost of shipping plums between Des Moines and Omaha is \$0.50 per pound. Markets are *out of equilibrium* if the price of plums 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 lower it in the future.
 - lower the price of gold today and raise it in the future.
 - raise the price of gold today and in the future.
 - lower the price of gold today and in the future.
 - have no effect on prices because speculators want a price difference to make money.

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

- (7) Suppose the price elasticity of demand for baby food is -0.2 and the price elasticity of supply is 5.0. If a subsidy is given for baby food,
- Producers will enjoy most of the subsidy.
 - Consumers will enjoy most of the subsidy.
 - Producers and consumers will each enjoy half of the subsidy.
 - Answer depends on whether the government sends payments to consumers or producers.

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 \$0.06 per kilowatt-hour, the average household uses 1300 kilowatt-hours per month. If the price is \$0.14 per kilowatt-hour, the average household uses 700 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 6% less water and it wants to use price as an incentive to conserve. Suppose the price elasticity of demand for water is -1.2.

- 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?

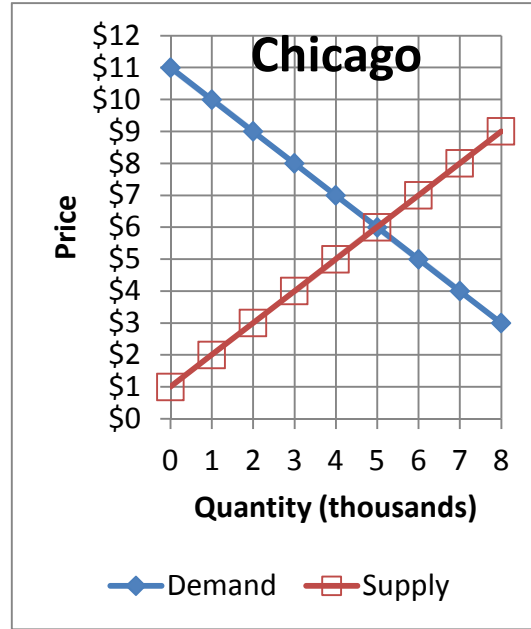
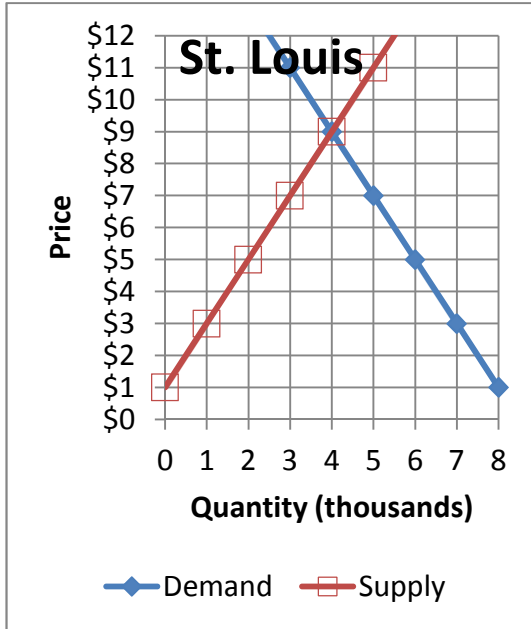
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(3) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for food is 0.2. Now suppose income *rises* by 15%. Assume the price of food does not change.

- a. According to the information above, is food a *necessary good*, an *inferior good*, or a *luxury (or superior) good*?
- b. As income rises, will the quantity of food demanded *increase*, *decrease*, or remain *constant*?
- c. ... by about how much?
- d. Will consumer spending on food, 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.



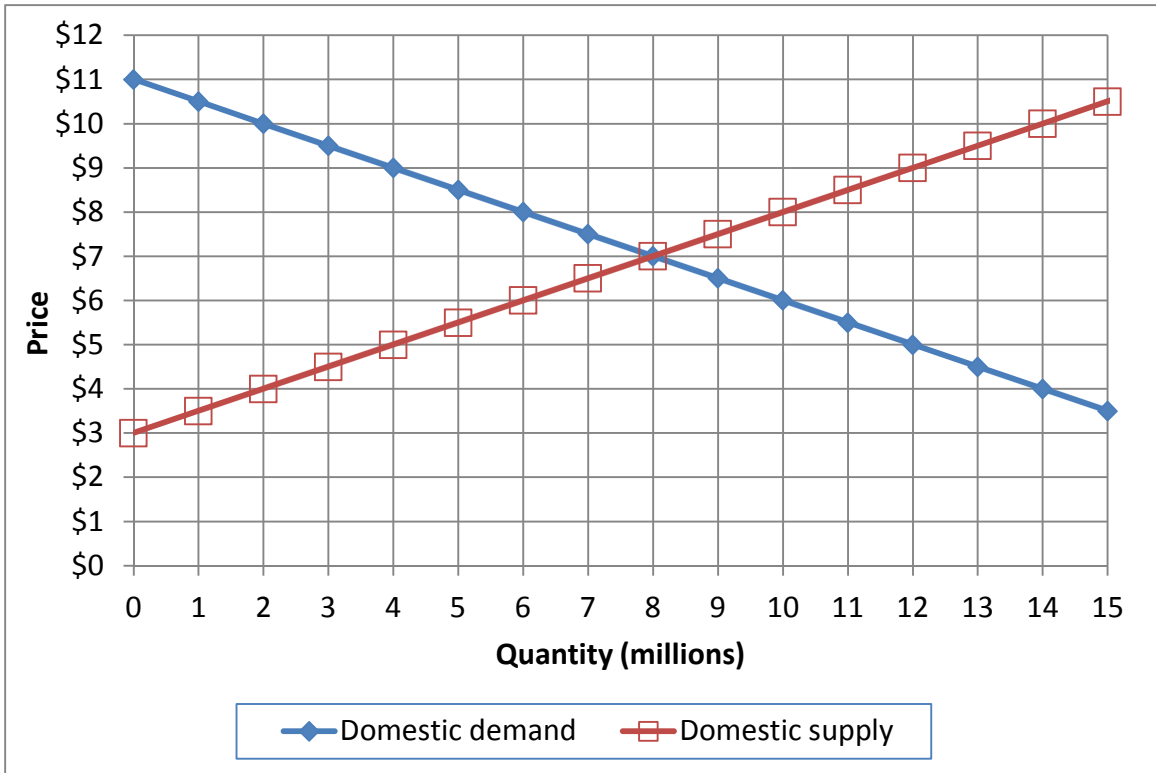
- Will arbitrage shift the demand curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the demand curve in Chicago *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the supply curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will 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 \$ 8.

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?

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?

g. By how much?

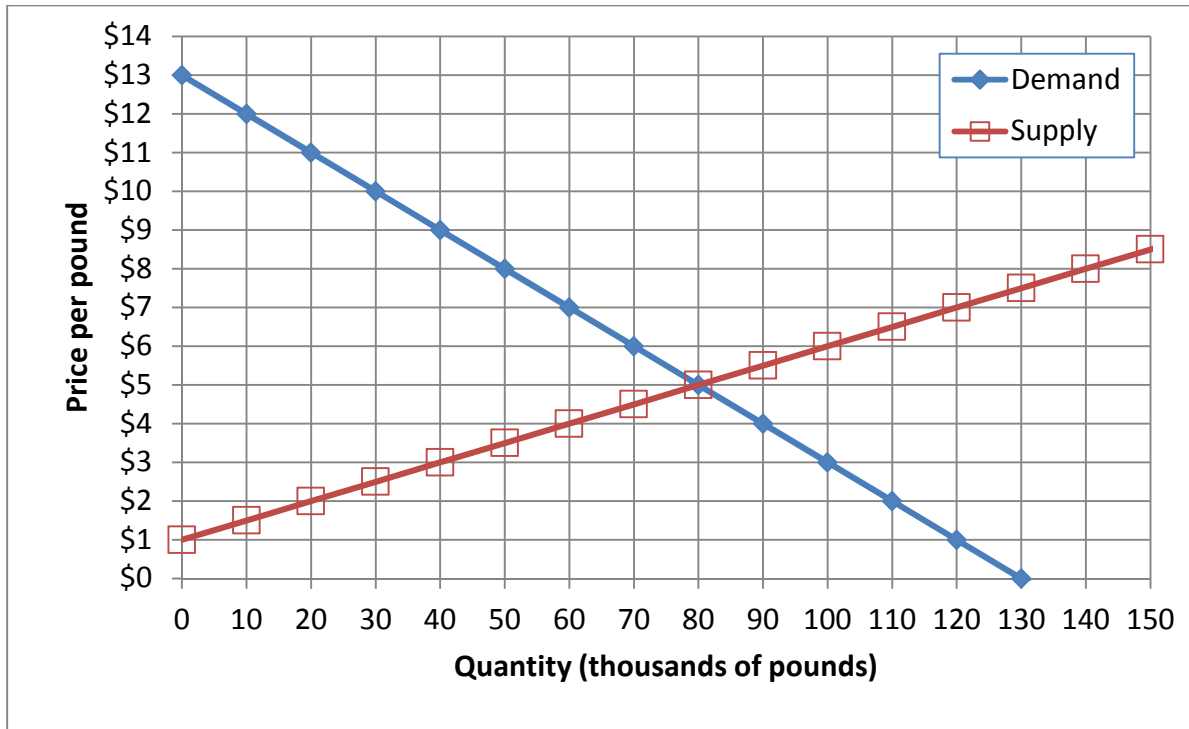
\$	million
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h. Does total social welfare in this country *increase* or *decrease* from international trade in natural gas?

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 floor (or legal minimum price) of \$7 per pound. No artichokes may be sold for a price less than the price floor.

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 floor, as compared to the market without government intervention? (Assume optimistically that artichokes are sold by those producers with the lowest cost.)

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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 floor, as compared to the market without government intervention?

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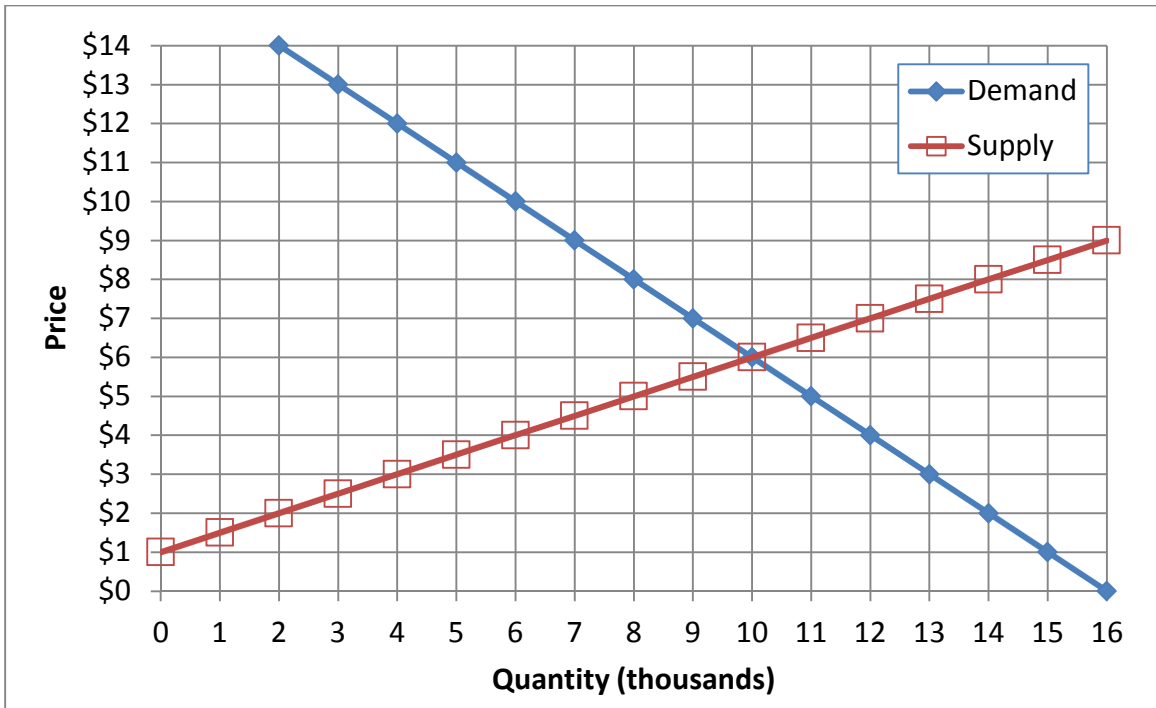
h. By how much?

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

\$	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 \$ 6** per cap.

b. Compute the new equilibrium quantity sold.

thousand

c. Compute the equilibrium net price received by sellers (excluding the tax).

\$	per cap
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d. Compute the equilibrium total price paid by buyers (including the tax).

\$	per cap
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e. Does producer surplus *increase, decrease, or remain constant* because of the tax?

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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 tax?

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h. By how much?

\$	thousand
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i. Compute the total tax revenue collected by the government.

\$	thousand
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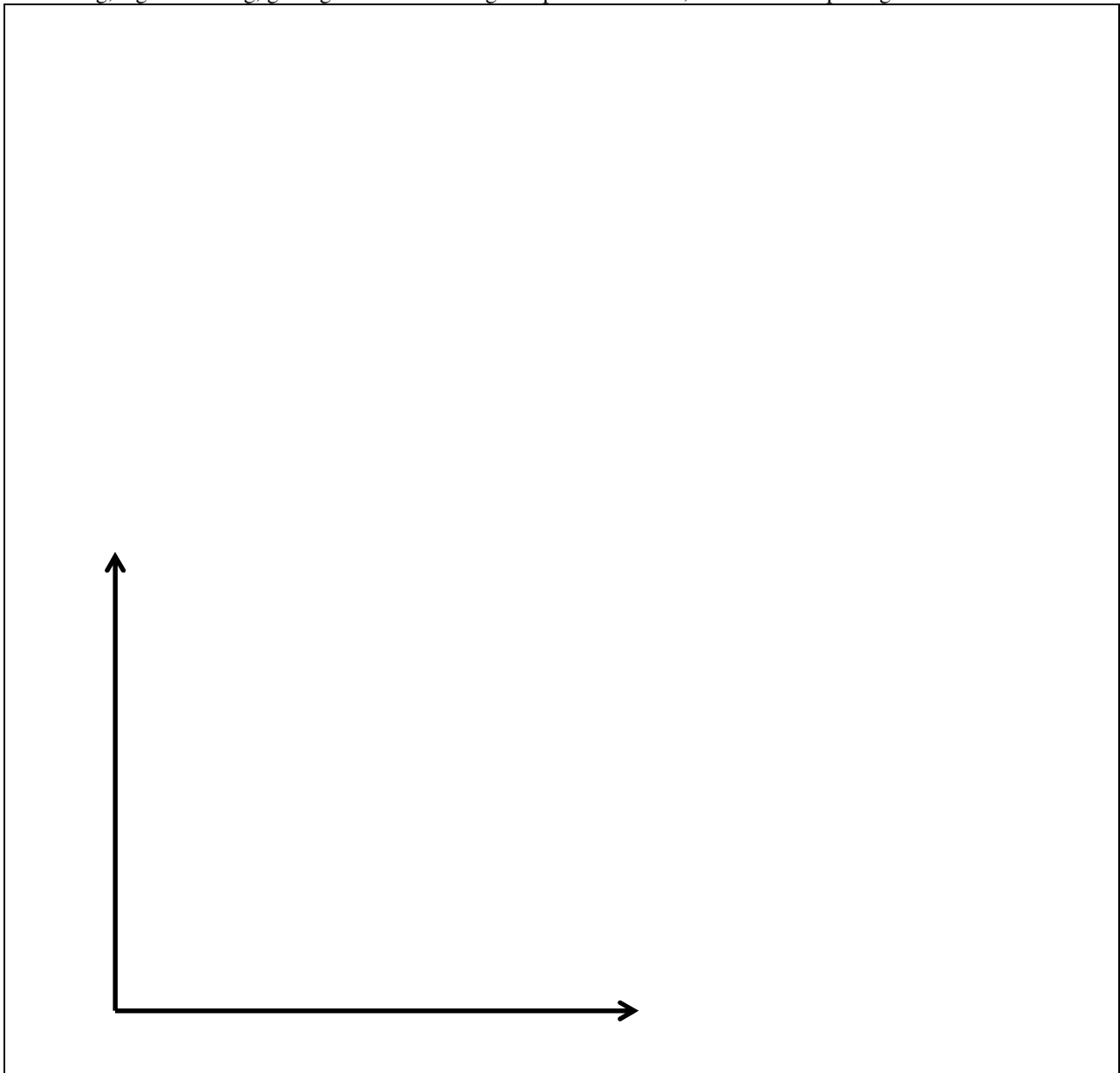
j. Compute the deadweight social loss caused by the tax.

\$	thousand
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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]