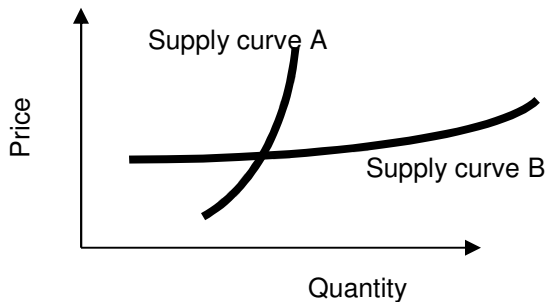


EXAMINATION 2 VERSION B
"Applications of Supply and Demand"
March 13, 2013

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 supply curve below is *more* elastic?
- Supply curve A.
 - Supply curve B.
 - Both have the same elasticity because they pass through the same point.
 - Cannot be determined from the information given.



- (2) Assume that California consumers are similar to Iowa consumers. California has about thirteen times as many people as Iowa. Therefore the price elasticity of demand for housing in California should be about
- one-thirteenth the elasticity of demand in Iowa.
 - the same as the elasticity of demand in Iowa.
 - thirteen times the elasticity of demand in Iowa.
 - Cannot be determined from information given.
- (3) Assuming that hotel rooms and air travel are complements, then the cross-price elasticity of demand for hotel rooms 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 *in equilibrium* if the price of pears in Omaha is
- \$0.20 per pound.
 - \$0.70 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
- 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.
 - raise the price of gold today and lower it 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
- rise.
 - fall.
 - rise or fall, depending on the shapes of the demand and supply curves.
 - remain constant.

- (7) Suppose the price elasticity of supply for items sold on the internet in Iowa is 8.0 and the price elasticity of demand is -1.0. If Iowa imposes a tax on internet sales,
- Sellers will pay most of the tax.
 - Buyers 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 \$0.07 per kilowatt-hour, the average household uses 1800 kilowatt-hours per month. If the price is \$0.13 per kilowatt-hour, the average household uses 1200 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 -0.4.

- 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?

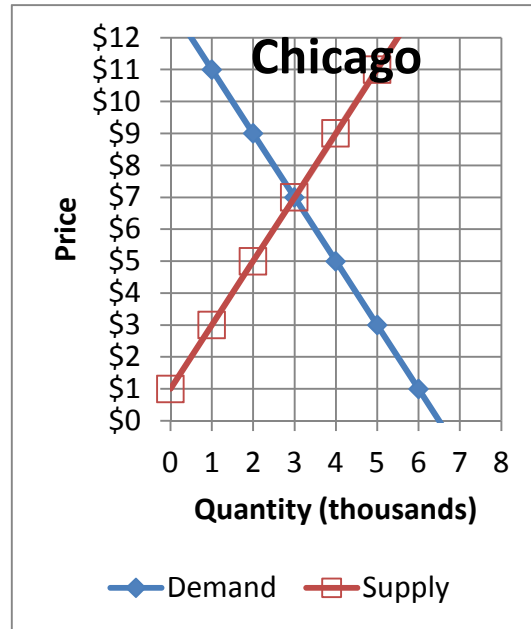
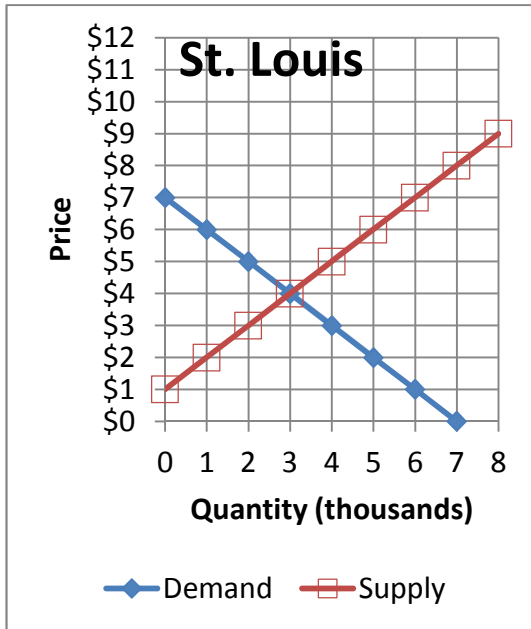
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(3) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for automobiles is 1.6. Now suppose income *rises* by 5%. Assume the price of automobiles does not change.

- 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.



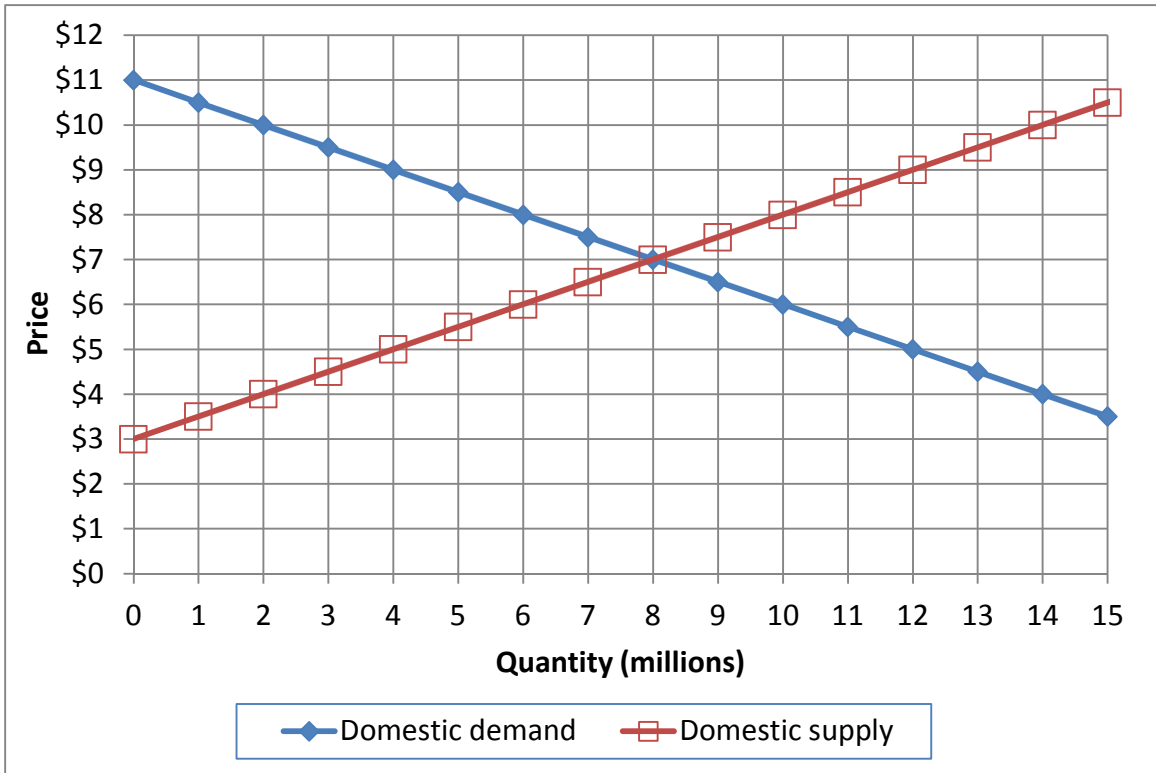
- Will arbitrage shift the demand curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the demand curve in Chicago *left*, or *right*, or leave it *unchanged* ?
- Will arbitrage shift the supply curve in St. Louis *left*, or *right*, or leave it *unchanged* ?
- Will 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 \$5.

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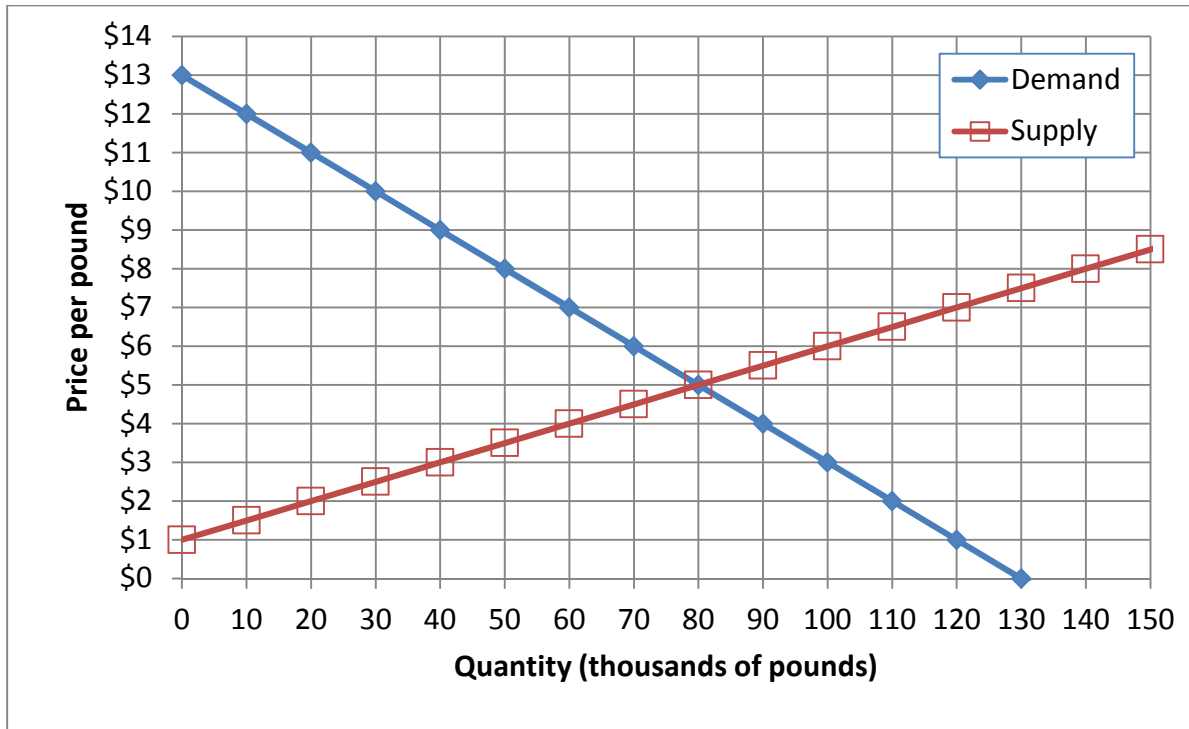
h. Does total social welfare in this country *increase* or *decrease* from international trade in natural gas?

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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 **quota on sellers of 40 thousand pounds**. Sellers are not permitted to sell more than this amount.

b. What will be the new equilibrium price with the quota?

\$

c. Does producer surplus *increase, decrease, or remain constant* because of the quota, as compared to the market without government intervention? (Assume optimistically that quota permits are given to those producers with the lowest cost of production.)

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d. By how much?

\$	thousand
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e. Does consumer surplus *increase, decrease, or remain constant* because of the quota, as compared to the market without government intervention?

\$	thousand
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f. By how much?

\$	thousand
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g. Compute the deadweight social loss caused by the quota.

\$	thousand
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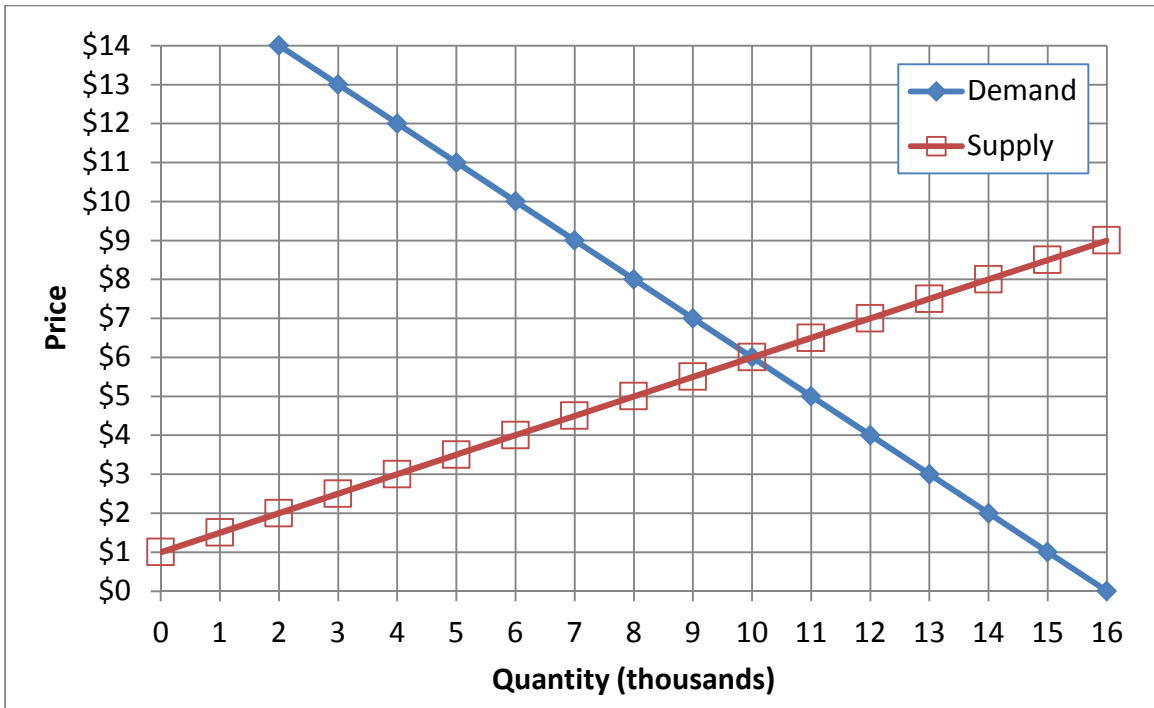
h. Suppose the government sells the quota permits at auction to producers. What will be the equilibrium price of a **quota permit** to sell one pound?

\$

i. How much revenue will the government receive from selling quota permits at auction?

\$	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 gives a **subsidy of \$3** per cap.

b. Compute the new equilibrium quantity sold.

thousand

c. Compute the equilibrium total price received by sellers (including the subsidy).

\$	per cap
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d. Compute the equilibrium net price paid by buyers (excluding the subsidy).

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

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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 subsidy?

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h. By how much?

\$	thousand
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i. Compute the total direct cost of the subsidy program. Put differently, how much money should the government budget for subsidy payments?

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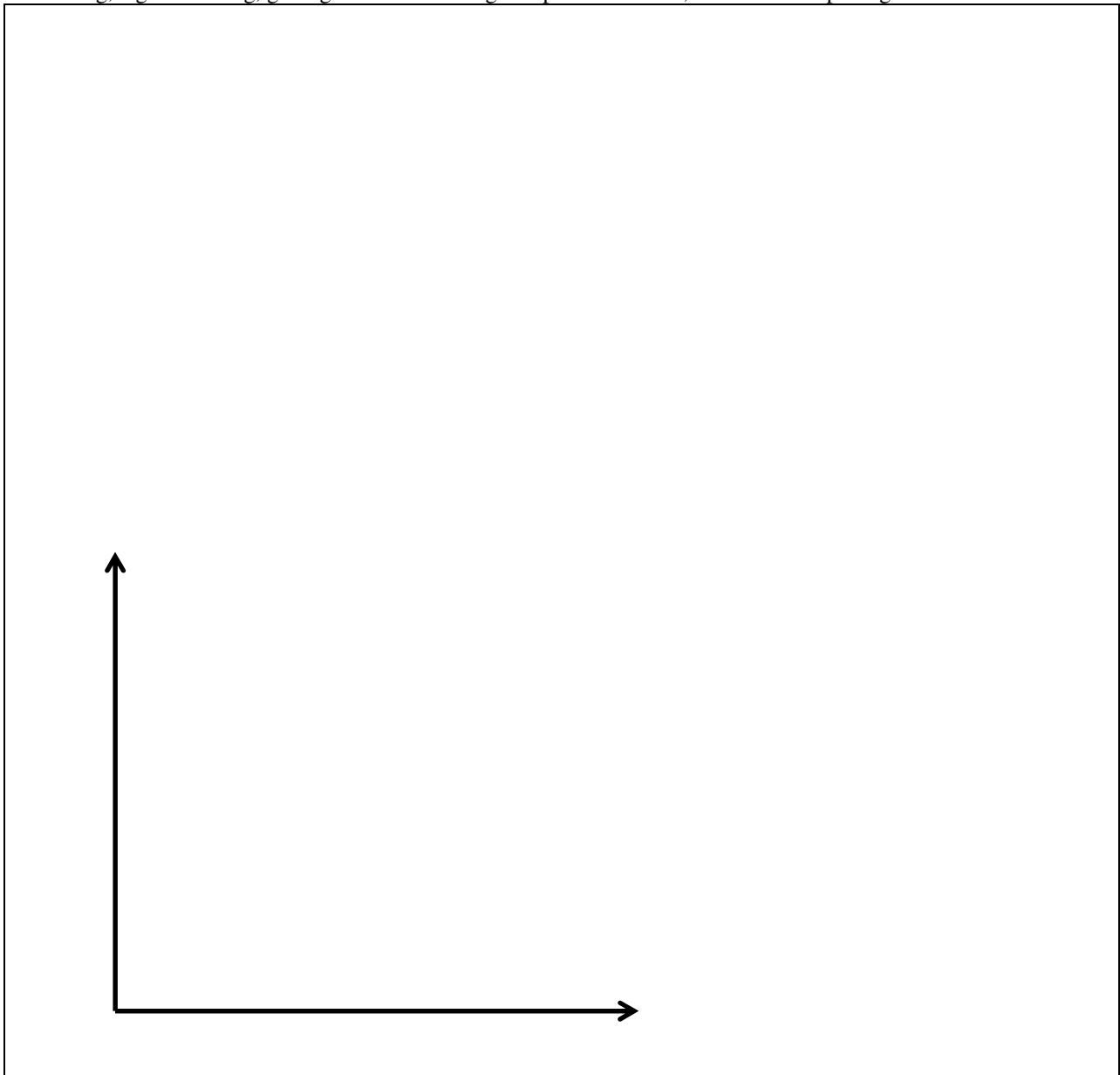
j. Compute the deadweight social loss caused by the subsidy.

\$	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]