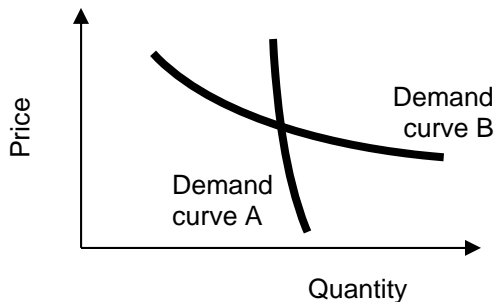


**EXAMINATION 2 VERSION B**  
**"Applications of Supply and Demand"**  
**October 11, 2017**

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, cell phones, and wireless devices 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 pt each, 16 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) Assuming that coffee and doughnuts are complements, then the cross-price elasticity of demand for coffee with respect to the price of doughnuts must be
- positive
  - negative.
  - zero.
  - cannot be determined from information given.
- (3) Suppose producers of pencils are willing to sell any number of pencils for 10 cents, so that the supply curve is a horizontal line. Then the supply of pencils is
- elastic.
  - perfectly elastic.
  - inelastic.
  - perfectly inelastic.
  - cannot be determined from information given.

- (4) In recent years, the supply of soybeans in Latin America has shifted right due to expansion of agriculture there. Because soybeans are traded internationally, this should cause the price of soybeans in the United States to
- rise.
  - fall.
  - rise or fall, depending on the shapes of the demand and supply curves.
  - remain constant.

- (5) Suppose there is a change in government policy affecting the automobile industry. Which of the following outcomes would be a *Pareto improvement*?
- Producers gain \$5 billion while consumers lose \$10 billion.
  - Producers gain \$10 billion while consumers lose \$5 billion.
  - Producers gain \$5 billion while consumers are unaffected.
  - Both (b) and (c).
  - All of the above.

- (6) Suppose the price of euros were higher in Chicago than in Houston, initially. Arbitrage would then tend to
- raise the price of euros in Chicago and lower the price in Houston.
  - raise the price of euros in Houston and lower the price in Chicago.
  - raise the price of euros in both cities.
  - lower the price of euros in both cities.

(7) Suppose the price of apples in Des Moines is \$0.80 per pound and the cost of shipping apples between Des Moines and Omaha is \$0.50 per pound. Markets are *in equilibrium* if the price of apples in Omaha is

- a. \$0.20 per pound.
- b. \$1.20 per pound.
- c. \$2.00 per pound.
- d. \$2.50 per pound.

(8) Arbitrage will *not* guarantee that people in Iowa and New York pay similar prices for

- a. gold.
- b. government or corporate bonds.
- c. foreign currency.
- d. houses.

(9) Speculators buy when the price is low and resell later when the price is high because they *want to*

- a. make a profit.
- b. keep markets orderly.
- c. encourage society to conserve scarce resources.
- d. prevent prices from rising too rapidly.
- e. All of the above.

(10) Suppose the futures price of wheat for delivery next June is \$15, but you believe that the spot price will be \$10 next June. If you are correct, you can make money by

- a. selling wheat futures now and selling wheat on the spot market in June.
- b. buying wheat futures now and selling wheat on the spot market in June.
- c. selling wheat futures now and buying wheat on the spot market in June.
- d. buying wheat futures now and buying wheat on the spot market in June.

(11) Suppose the price of a share of stock in XYZ Corporation today is \$50. Assume that speculators are already active in the stock market, and that the market is *in equilibrium*. Then speculators must believe that the price of a share of stock in XYZ Corporation tomorrow will be

- a. greater than \$50.
- b. less than \$50.
- c. about \$50.
- d. cannot be determined from information given.

(12) If the free-market equilibrium price of gasoline is \$3, which government price control would be *binding* on the market?

- a. a price ceiling (or legal maximum price) of \$5.
- b. a price floor (or legal minimum price) of \$5.
- c. Both of the above would be binding.
- d. None of the above would be binding.

(13) A quota on *buying* ivory would cause the price of ivory to

- a. rise.
- b. fall.
- c. rise or fall, depending on the shapes of the demand and supply curves.
- d. remain constant.

(14) Suppose the price elasticity of supply for hotel rooms is 0.3 and the price elasticity of demand is -5.0. If a tax is imposed on hotel rooms,

- a. Sellers (hotel owners) will pay most of the tax.
- b. Buyers (guests) will pay most of the tax.
- c. Sellers and buyers will each pay half of the tax.
- d. Answer depends on which side is legally required to remit the tax to the government.

(15) A Laffer curve shows the relationship between

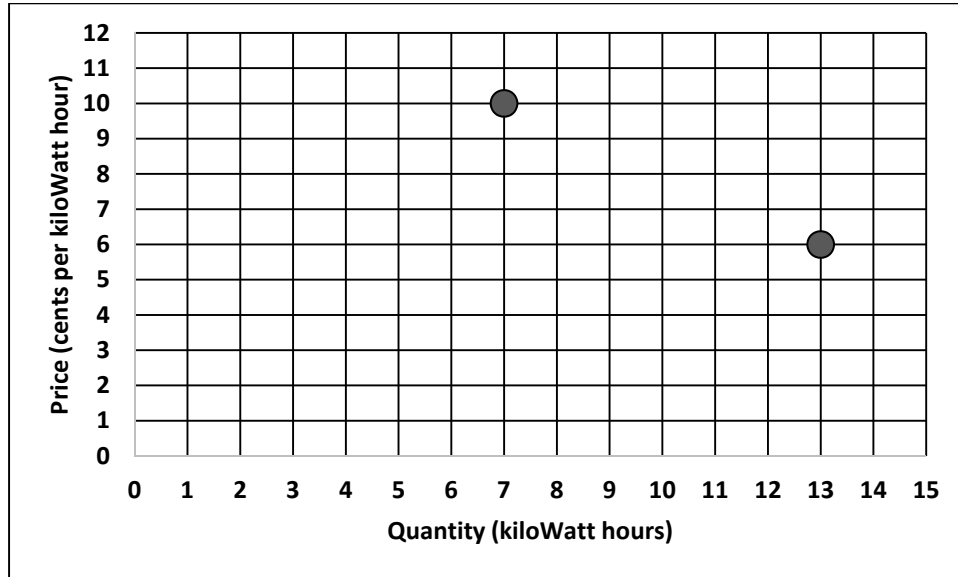
- a. deadweight loss and tax rates.
- b. quantity and price.
- c. consumer surplus and price.
- d. tax rates and tax revenues.
- e. quota quantities and quota price.

(16) The number of pedometers actually sold would increase if the government enacted a

- a. a subsidy for pedometers.
- b. a price floor (or legal minimum price) for pedometers.
- c. a tax on pedometers.
- d. a quota on sellers of pedometers.
- e. all of the above.
- f. none of the above.

**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) [Computing price elasticity of demand: 6 pts] The graph below shows two points on the daily demand curve for electricity by a typical household.



- Use the data displayed in the graph above to compute the price elasticity of demand for electricity using the so-called arc-elasticity formula.
- Is demand for electricity *elastic*, *inelastic*, or *unitary elastic* ?
- Now suppose the price and quantity of electricity were measured in megawatt-hours instead of kilowatt-hours. (There are 1000 kilowatt-hours in a megawatt-hour.) Recompute the price elasticity of demand for electricity using the so-called arc-elasticity formula, when electricity is measured in megawatt-hours.


(2) [Price elasticity of demand: 10 pts] Suppose the price elasticity of demand for milk is  $-0.4$ , and the price of milk falls by 10 %.

- a. Is the demand for milk *elastic*, *inelastic*, or *unitary-elastic* ?
- b. Will the quantity demanded of milk *increase*, *decrease*, or *remain constant*?
- c. By about how much?
- d. Will consumers' total spending on milk *increase*, *decrease*, or *remain constant*?
- e. By about how much?

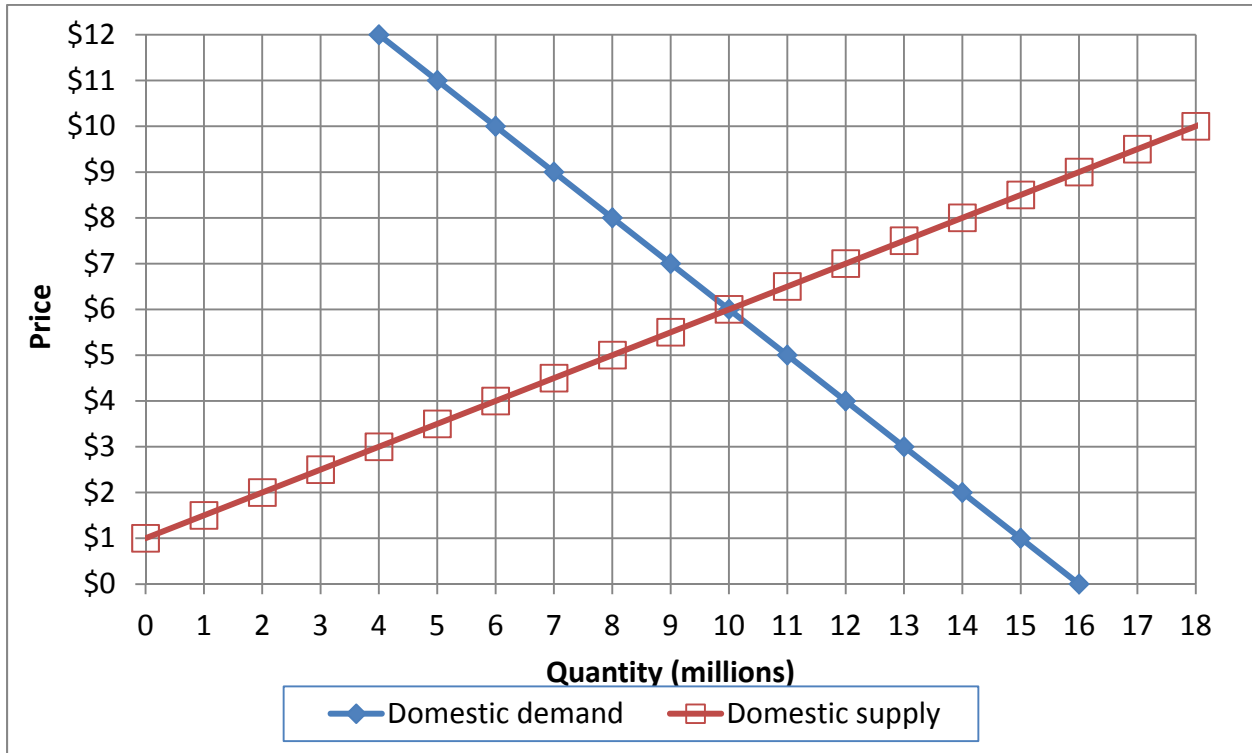
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(3) [Income elasticity of demand: 10 pts] Suppose that a consumer's income rises by 5%, and the income elasticity of demand for energy is  $0.8$ .

- a. Does the income elasticity indicate that energy is an *inferior* good, a *necessary* good, or a *luxury or superior* good?
- b. Will the quantity demanded of energy *increase*, *decrease*, or *remain constant*?
- c. By about how much?
- d. Will the share of the consumer's budget devoted to energy *increase*, *decrease*, or *remain constant*?
- e. By about how much?

%
%

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



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

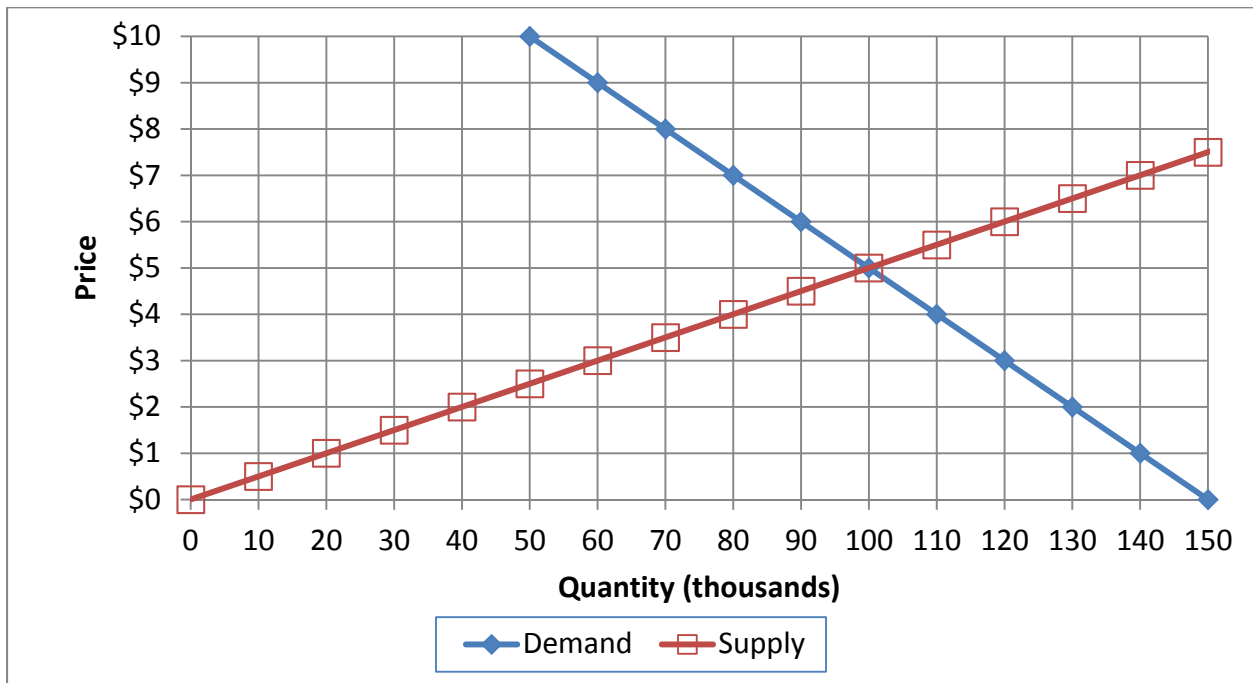
\$	
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Then this industry is opened to international trade and the international price of wristwatches turns out to be \$5.

- b. Will this country now *export* or *import* wristwatches?
- c. How many?
- d. Does consumer surplus in this country *increase* or *decrease* from international trade in wristwatches?
- e. By how much?
- f. Does producer surplus in this country *increase* or *decrease* from international trade in wristwatches?
- g. By how much?
- h. Does total social welfare in this country *increase* or *decrease* from international trade in wristwatches?
- i. By how much?

million	
\$ million	
\$ million	
\$ million	

(5) [Welfare analysis of market controls: 18 pts] The following graph shows the market for pumpkins.



a. Find the equilibrium price without government intervention.

\$		per pound
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Suppose the government imposes a price ceiling (or legal maximum price) of \$4. No pumpkins may be sold for a price more than the price ceiling.

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

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

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d. How much?

	thousand
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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 pumpkins are purchased by those consumers who value pumpkins the most.)

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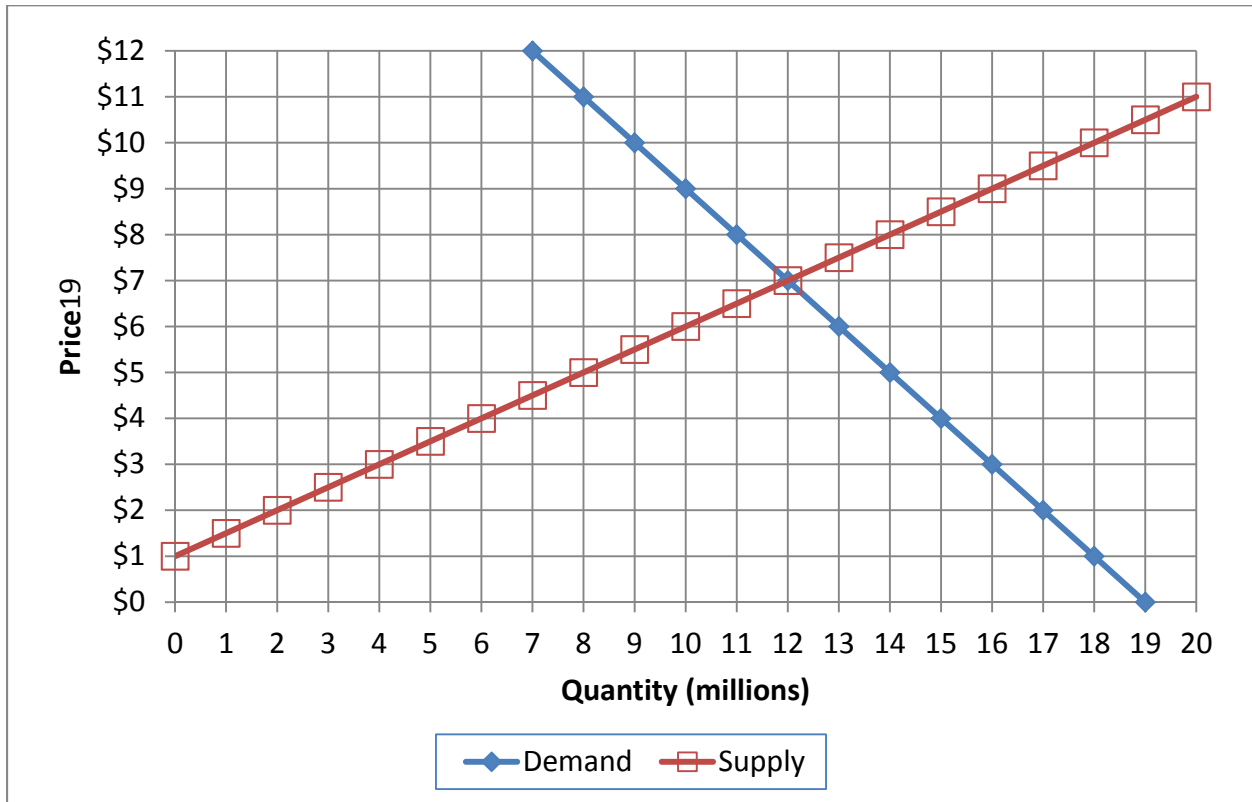
h. By how much?

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

\$		thousand
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(6) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for tee-shirts.



Suppose the government imposes an excise **tax of \$ 3** per tee-shirt.

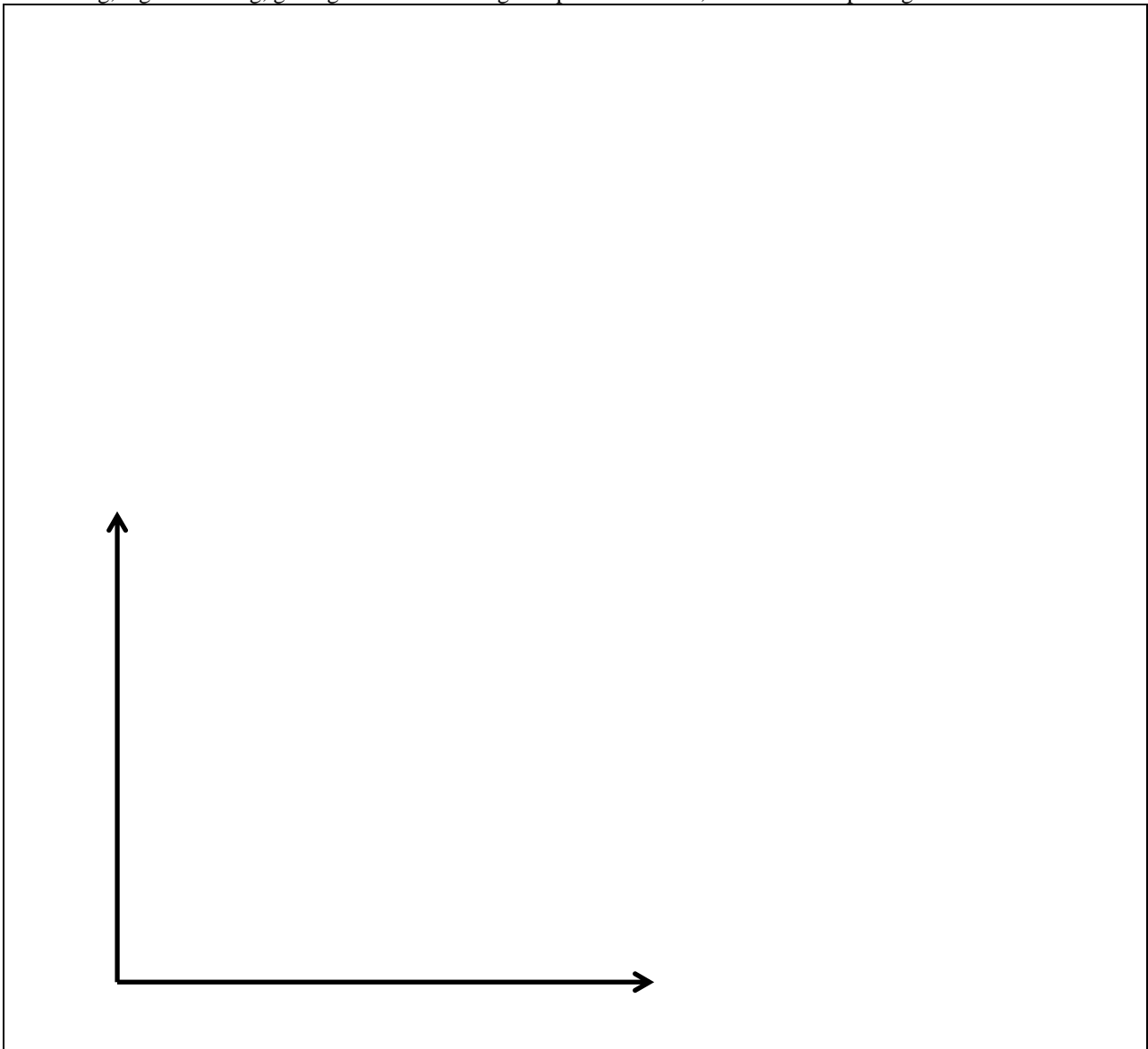
- Compute the equilibrium quantity sold.
- Compute the equilibrium net price received by sellers (excluding the tax).
- Compute the equilibrium total price paid by buyers (including the tax).
- Does producer surplus *increase, decrease, or remain constant* because of the tax?
- By how much?
- Does consumer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

	million
\$	per tee-shirt
\$	per tee-shirt
\$	million
\$	million
\$	million
\$	million

**III. Critical thinking:** Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

- (1) Assume that you want to increase your company's revenue. A company statistician estimates that demand for your main product has a price elasticity of  $-1.5$ . Marketing Consultant A argues that to increase revenue, you should *raise* the price of your product. "Your customers are willing to pay more, so this is clearly the right way to boost revenue," says Consultant A. Marketing Consultant B argues that you should *lower* the price. "The best way to increase revenue is to build your customer base," says Consultant B. Which consultant is right? Why? (Ignore the graph below.)
- (2) Consider the following statement. "American international trade policy should put American workers and American businesses first. Imports should be banned if they are priced lower than the same products made by Americans." Who will win and who will lose from this policy? Is this a good policy for America as a whole? Justify your answer with a supply-and-demand diagram, using the concepts of consumer and producer surplus.

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]