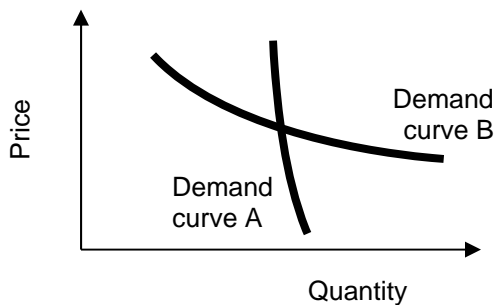


**EXAMINATION 2 VERSION B**  
**"Applications of Supply and Demand"**  
**March 9, 2015**

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 pt each, 12 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) Suppose the price elasticity of demand for bacon is about  $-2$ . If the price of bacon rises, then the amount of money consumers spend on bacon will
- increase.
  - decrease.
  - remain constant.
  - cannot be determined from information given.
- (3) 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.

- (4) Some estimates show that rich people spend the *same fraction* of their income on housing that poor people do. If this is true, then the income elasticity of demand for housing must be
- negative.
  - exactly zero.
  - between zero and one.
  - exactly one.
  - greater than one.

- (5) To pass the compensation test of Kaldor and Hicks, a change in the economy must result in
- cost savings for the government.
  - a rise in wages, salaries, and other compensation.
  - winners but no losers.
  - gains to winners that exceed any losses to losers.
  - at least some winners.

- (6) Suppose the price of gold were higher in New York than in Los Angeles, initially. Arbitrage would then *tend to*
- raise the price of gold in Los Angeles and lower the price in New York.
  - raise the price of gold in both cities.
  - lower the price of gold in both cities.
  - raise the price of gold in New York and lower the price in Los Angeles.

- (7) Speculators buy when the price is low and resell later when the price is high because they *want to*
- keep markets orderly.
  - encourage society to conserve scarce resources.
  - prevent prices from rising too rapidly.
  - make a profit.
  - All of the above.

(8) Suppose the futures price of wheat for delivery next June is \$20, but you believe that the spot price will be \$15 next June. If you are correct, you can make money by

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

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

- a. a price floor (or legal minimum price) of \$2.
- b. a price ceiling (or legal maximum price) of \$2.
- c. Both of the above would be binding.
- d. None of the above would be binding.

(10) A quota on *selling* 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.

(11) The Federal tax on cigarettes is \$1.01 per pack. This is an example of

- a. a subsidy.
- b. an *ad valorem* tax.
- c. an excise or per-unit tax.
- d. a price control.

(12) 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 a tax is imposed on hotel rooms in this city,

- a. Sellers (hotel operators) 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.

**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 movie admissions is \$6, the average person goes to the movies 11 times per year. If the price is \$10, the average person goes 5 times per year. Compute the price elasticity of demand movie admissions using the “arc-elasticity” formula.

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(2) [Using price elasticity of demand: 10 pts] Suppose the water utility *lowers* its price by 5%. Suppose the price elasticity of demand for water is -0.4. Assume everything else affecting demand for water remains constant.

- a. According to the information above, is demand for water *elastic*, *inelastic*, or *unitary-elastic*?
- b. As the price falls, will the amount of water consumed *increase*, *decrease*, or remain *constant*?
- c. ... by approximately how much?
- d. Will the total revenue received by the water utility *increase*, *decrease*, or remain *constant*?
- e. ... by approximately how much?

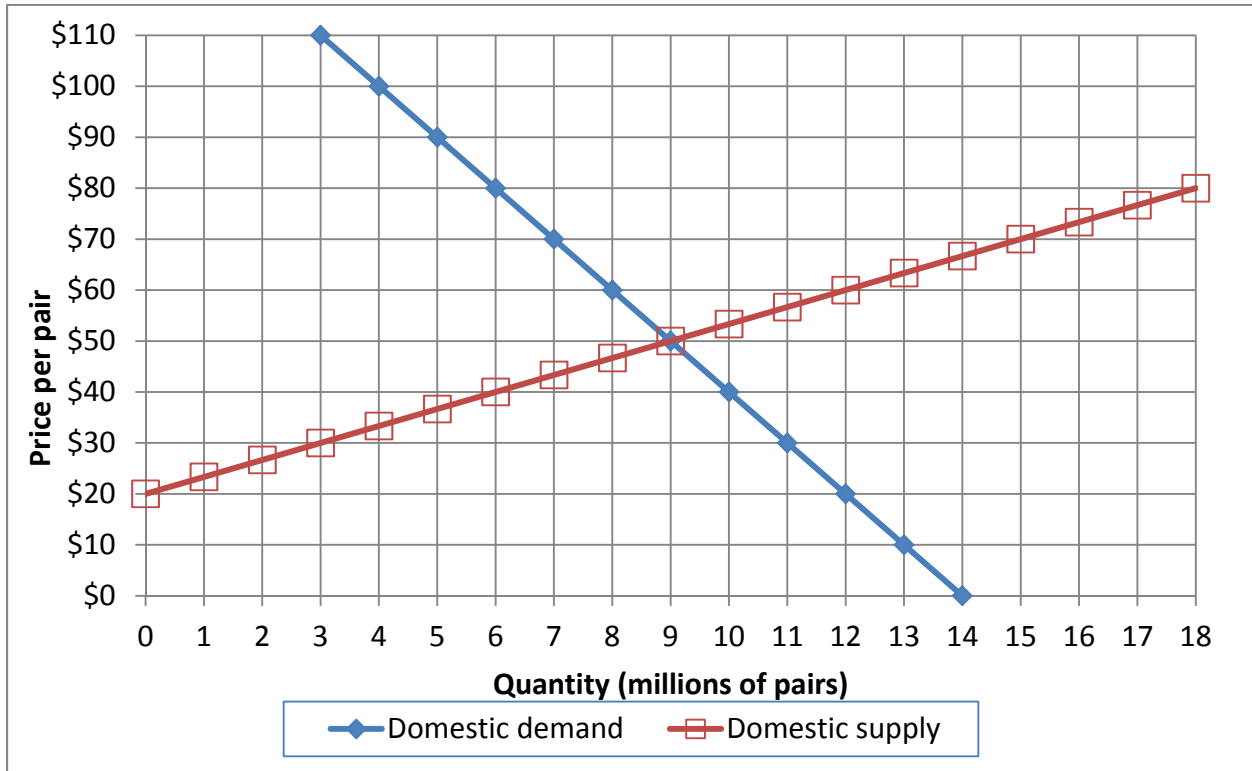
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(3) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for gasoline is 0.6. Now suppose consumer income *rises* by 5%. Assume the price of gasoline does not change.

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

%
%

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



a. At first, international trade in shoes 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 shoes turns out to be **\$ 60**.

b. Will this country now *export* or *import* shoes?

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c. How many pairs?

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

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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 shoes?

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g. By how much?

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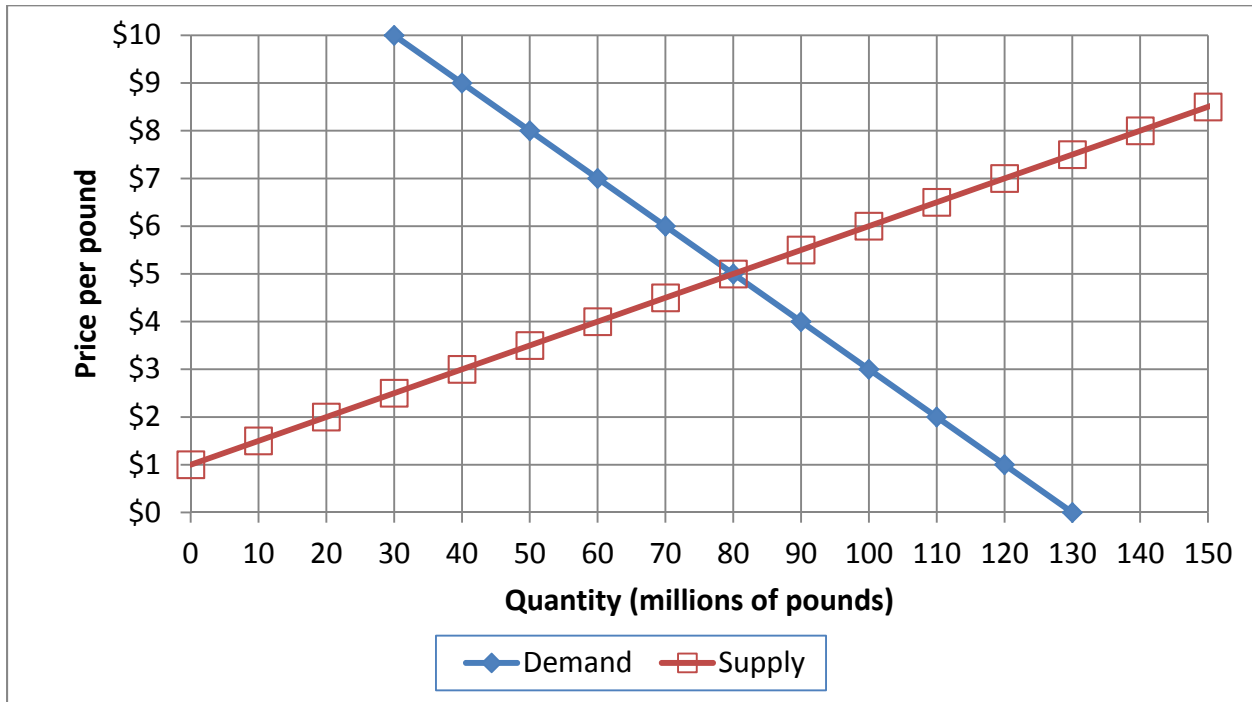
h. Does total social welfare in this country *increase* or *decrease* from international trade in shoes?

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i. By how much?

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



a. Find the equilibrium price without government intervention.

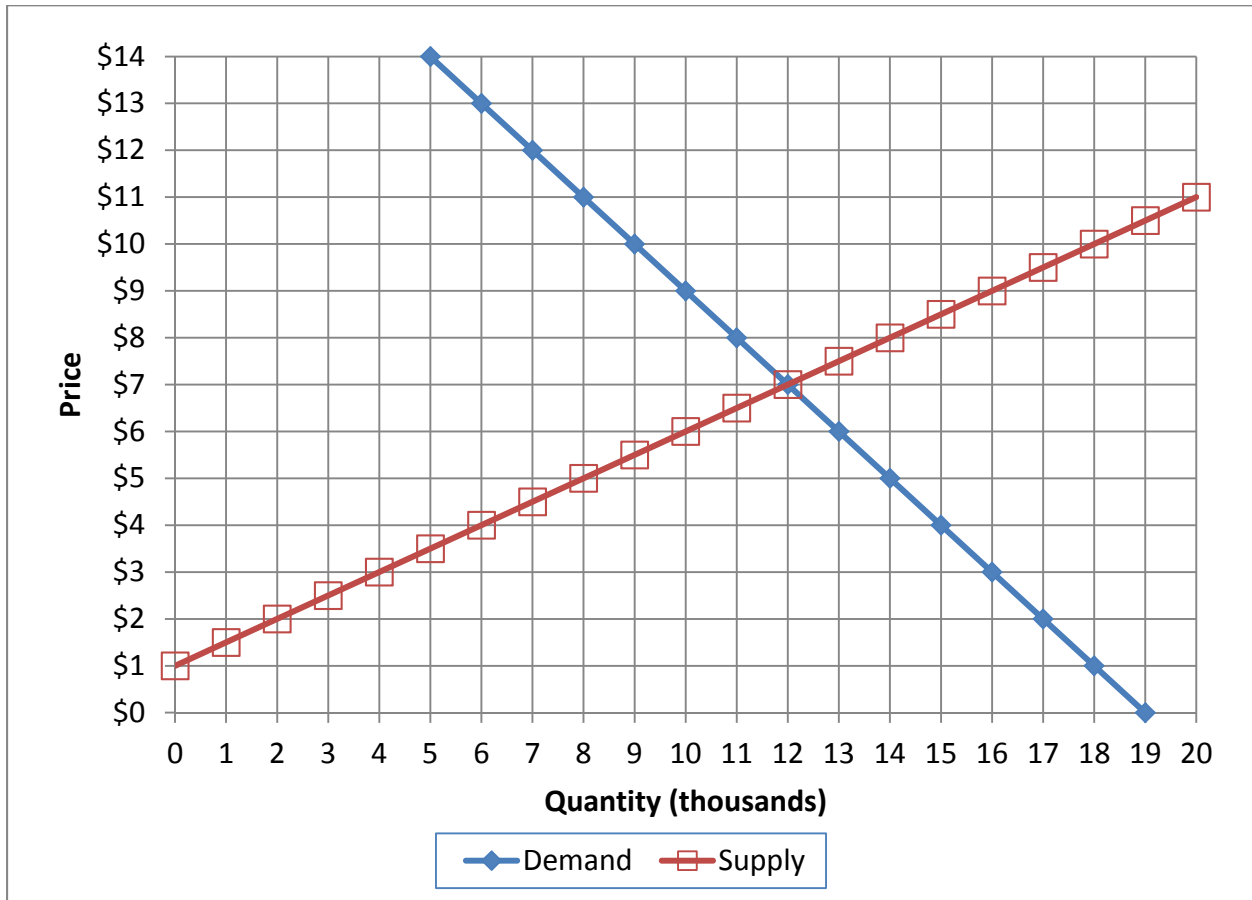
\$
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Suppose the government imposes a *quota on sellers*. No more than 40 million pounds of butter may be sold. Quota rights or permits to sell 40 million pounds of butter are distributed to sellers for free, but no one may sell butter without a permit.

- b. Would this quota on sellers cause the price of butter to *increase, decrease, or remain constant* ?
- c. Compute the new equilibrium price of butter with the quota system on sellers.
- d. Does producer surplus *increase, decrease, or remain constant* because of the quota system, as compared to the market without government intervention? (Assume optimistically that quota rights to sell butter are given to those butter producers with the lowest cost.)
- e. By how much?
- f. Does consumer surplus *increase, decrease, or remain constant* because of the quota system, as compared to the market without government intervention?
- g. By how much?
- h. If the government sold the quota rights or permits at auction, what would be the equilibrium **price of a permit** to sell one pound of butter?
- i. Compute the deadweight social loss caused by the quota system.

\$	
\$	million
\$	million
\$	
\$	million

(6) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for restaurant meals.

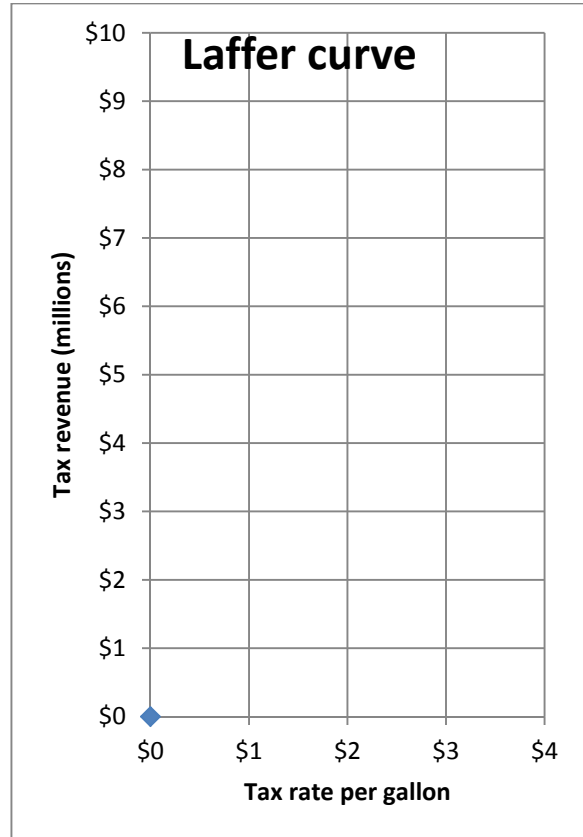
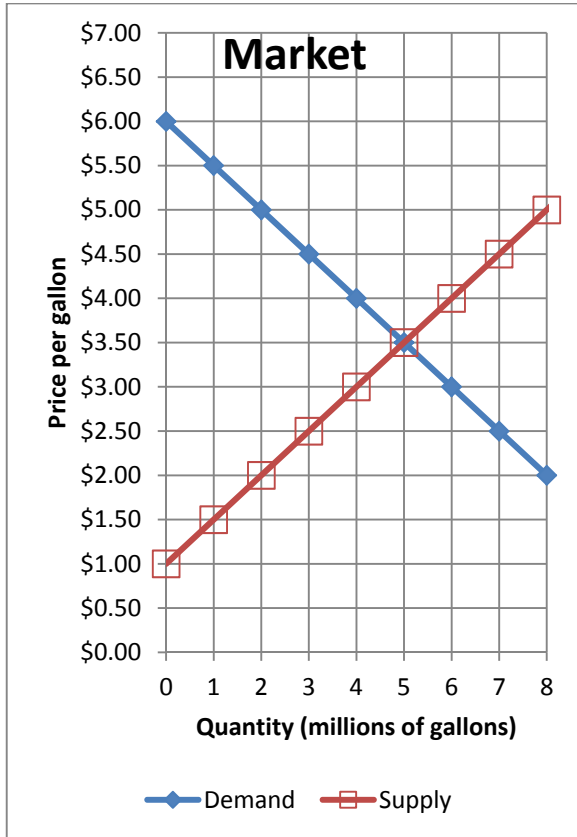


Suppose the government offers a **subsidy of \$ 3** per restaurant meal.

- Compute the equilibrium quantity sold.
- Compute the equilibrium net price paid by buyers (excluding the subsidy).
- Compute the equilibrium total price received by sellers (including the subsidy).
- Does producer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Does consumer surplus *increase, decrease, or remain constant* because of the subsidy?
- By how much?
- Compute the direct cost of the subsidy to the government—that is, the amount that the government will have to pay buyers and sellers.
- Compute the deadweight social loss caused by the subsidy.

	thousand
\$	per meal
\$	per meal
\$	thousand
\$	thousand
\$	thousand
\$	thousand

(7) [Taxes, Laffer curve: 9 pts] The graph below at left shows the market for gasoline.



a. [6 pts] For each excise tax rate below, find the quantity traded in the market and compute the tax revenue received by the government.

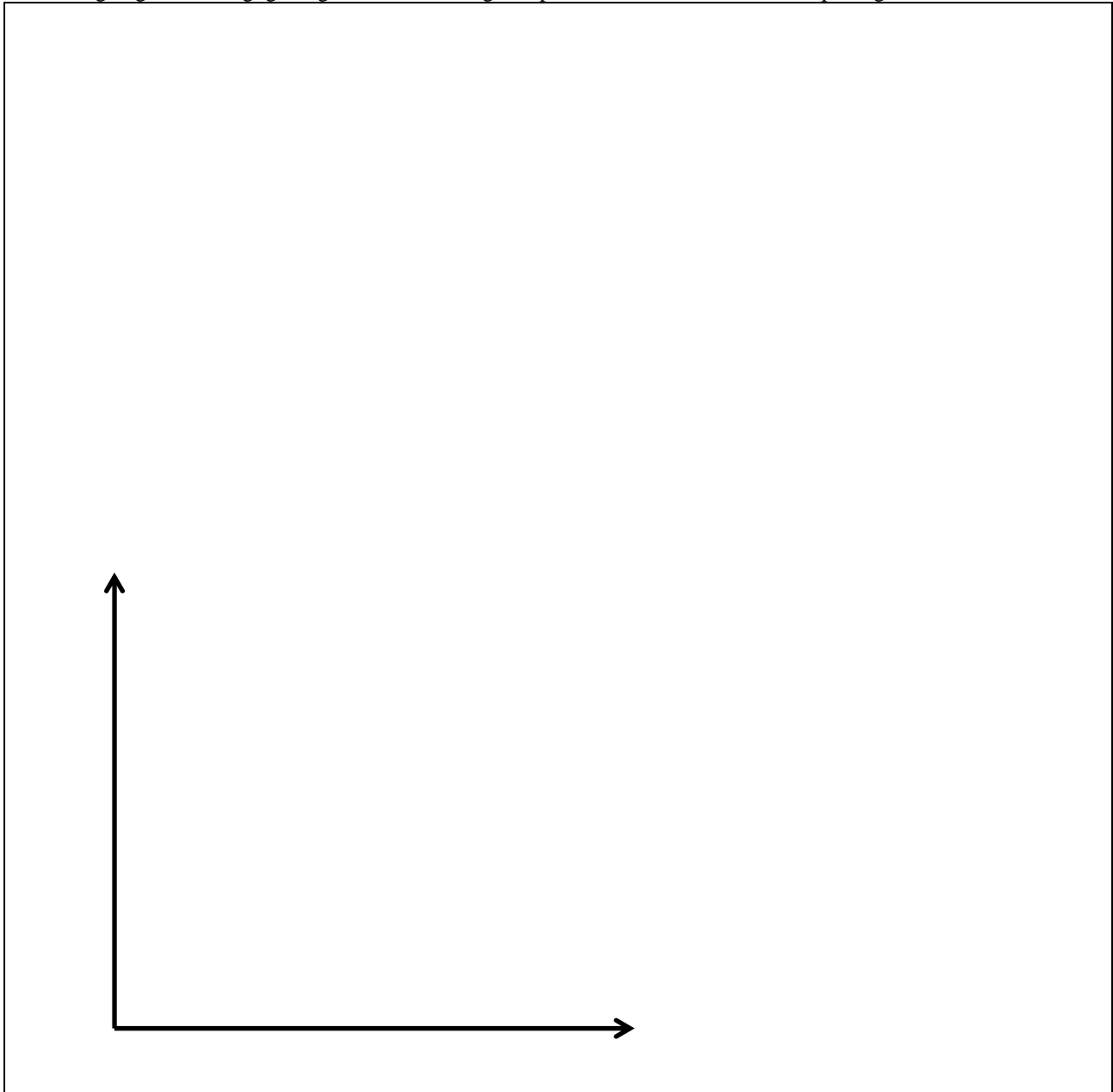
Tax rate per gallon	Quantity traded in market	Tax revenue received by the government
\$1	million	\$ million
\$2	million	\$ million
\$3	million	\$ million

b. [3 pts] Plot your answers from the last column clearly in the graph above at right. If I cannot see your dots, I cannot give credit.

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

- (1) Suppose that when the *price* of gasoline falls by 10 percent, consumer *spending* on gasoline falls by 6 percent. Compute the price elasticity of demand for gasoline. 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]