

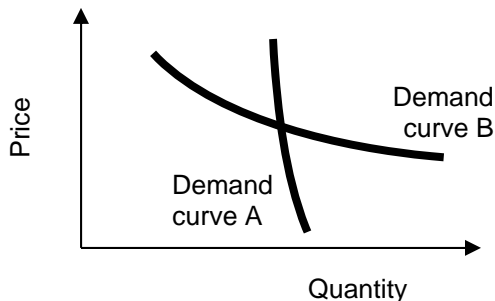
EXAMINATION 2 VERSION B
"Applications of Supply and Demand"
March 12, 2014

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, 13 pts total]

- (1) The units of measure for the price elasticity of demand for potatoes are
- The elasticity is a pure number and has no units of measure.
 - percent.
 - pounds per dollar.
 - dollars per pound.

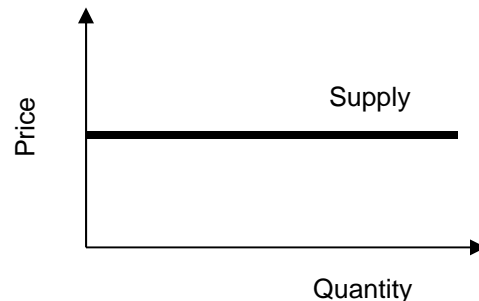
- (2) Which demand curve below is *more* elastic?
- Demand curve A.
 - Demand curve B.
 - Both have the same elasticity because they pass through the same point.
 - Cannot be determined from information given.



- (3) It takes time for consumers to adjust their lifestyles to changes in prices. Therefore, the long-run demand for electricity is
- more elastic than the short-run demand.
 - less elastic than the short-run demand.
 - just as elastic as the short-run demand.
 - Elasticity of demand is not related to time for adjustment.

- (4) 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.

- (5) The supply curve in the graph below is
- unitary elastic.
 - perfectly elastic.
 - perfectly inelastic.
 - Cannot be determined from information given.



- (6) To pass the compensation test of Kaldor and Hicks, a change in the economy must result in
- 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.
 - cost savings for the government.

(7) The price of peanuts is higher in the United States than in Africa. If the United States ends its restrictions on international trade in peanuts, this change will benefit

- a. U.S. peanut producers and U.S. peanut consumers.
- b. African peanut producers and African peanut consumers.
- c. African peanut producers and U.S. peanut consumers.
- d. U.S. peanut producers and African peanut consumers.

(8) Arbitrageurs buy low and sell high because they want to

- a. keep markets orderly.
- b. ensure that all consumers face a fair price.
- c. make a profit.
- d. enforce the Law of One Price.
- e. All of the above.

(9) Suppose the price of apples in Des Moines is \$2.00 per pound and the cost of shipping apples between Des Moines and Omaha is \$0.20 per pound. Markets are *in equilibrium* if the price of apples in Omaha is

- a. \$1.10 per pound.
- b. \$1.50 per pound.
- c. \$1.90 per pound.
- d. \$2.30 per pound.

(10) Suppose the price of a share of stock in ABC Corporation today is \$200. 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 ABC Corporation tomorrow will be

- a. greater than \$200.
- b. less than \$200.
- c. about \$200.
- d. cannot be determined from information given.

(11) 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.

(12) Suppose the price elasticity of demand for motel rooms in a small town is -5.0 and the price elasticity of supply is 1.5. If a tax is imposed on motel rooms in this town,

- a. Sellers (motel 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.

(13) 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.

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 ice cream is \$2 per gallon, the average household buys 14 gallons per year. If the price is \$4 per gallon, the average household buys 10 gallons per year. Compute the price elasticity of demand for ice cream using the “arc-elasticity” formula.

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(2) [Using price of demand: 10 pts] Suppose we want to reduce energy consumption by 12 percent. Also suppose that the price elasticity of demand for energy is -0.75.

- a. According to the information above, is demand for energy *elastic*, *inelastic*, or *unitary-elastic*?
- b. To reduce energy consumption by the targeted amount, should the price *increase*, *decrease*, or remain *constant*?
- c. ... by approximately how much?
- d. Will total spending by consumers on energy *increase*, *decrease*, or remain *constant*?
- e. ... by approximately how much?

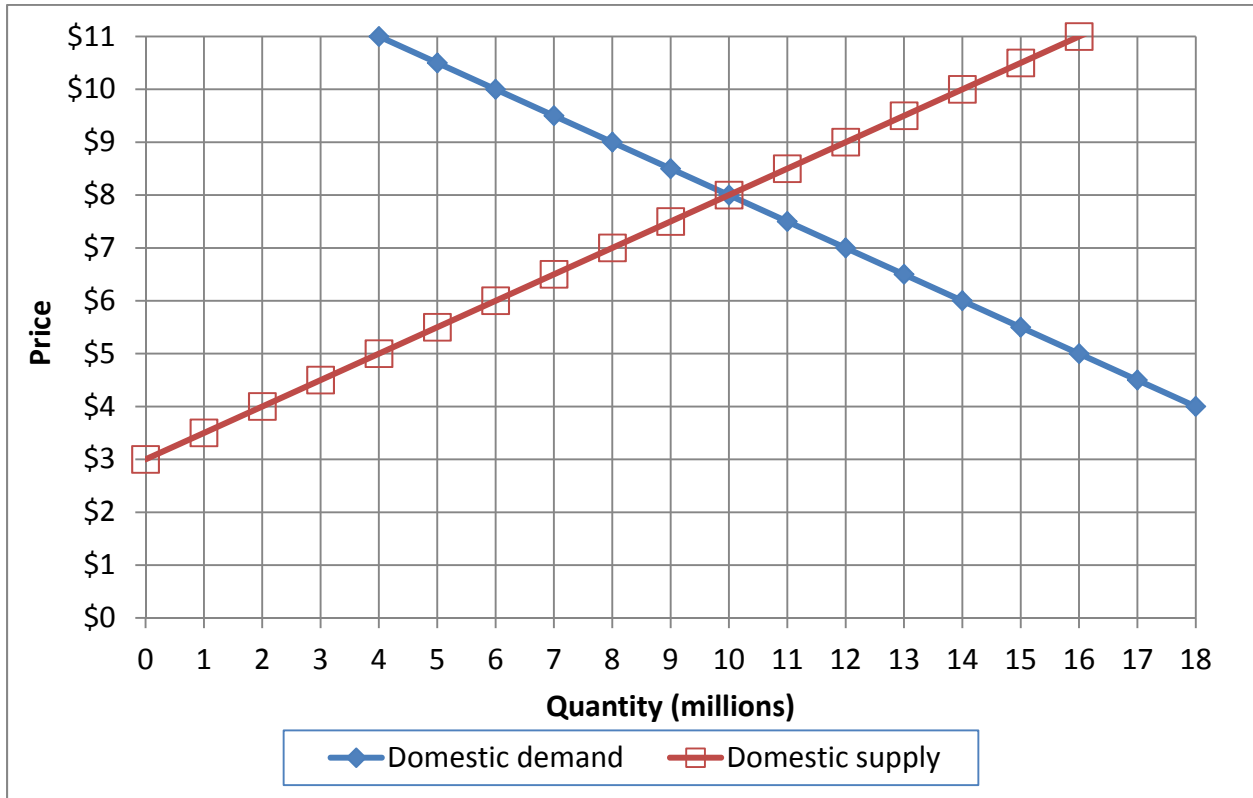
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(3) [Using income elasticities: 10 pts] Suppose the income elasticity of demand for televisions is 1.4. Now suppose consumers’ income *rises* by 5%. Assume the price of televisions does not change.

- a. According to the information above, are televisions a *necessary good*, an *inferior good*, or a *luxury (or superior) good*?
- b. As income rises, will the quantity of televisions demanded *increase*, *decrease*, or remain *constant*?
- c. ... by about how much?
- d. Will consumer spending on televisions, 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 hammers in a particular country are given by the following diagram.



a. At first, international trade in hammers 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 hammers turns out to be **\$ 10**.

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

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c. How many?

million

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

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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 hammers?

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g. By how much?

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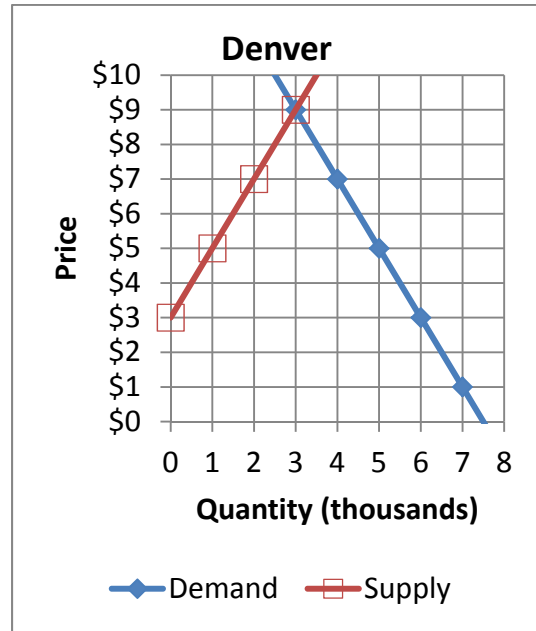
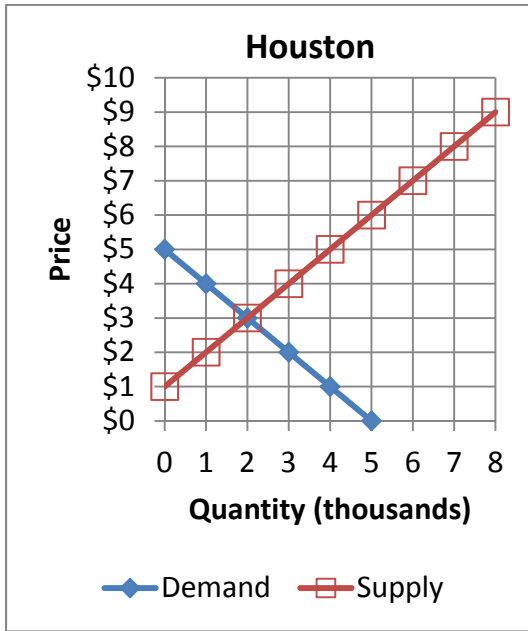
h. Does total social welfare in this country *increase* or *decrease* from international trade in hammers?

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i. By how much?

\$	million
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(5) [Arbitrage: 8 pts] The following graphs show markets for clock-radios in Houston and Denver, in the absence of any arbitrage activity.



Consider the effects of arbitrage.

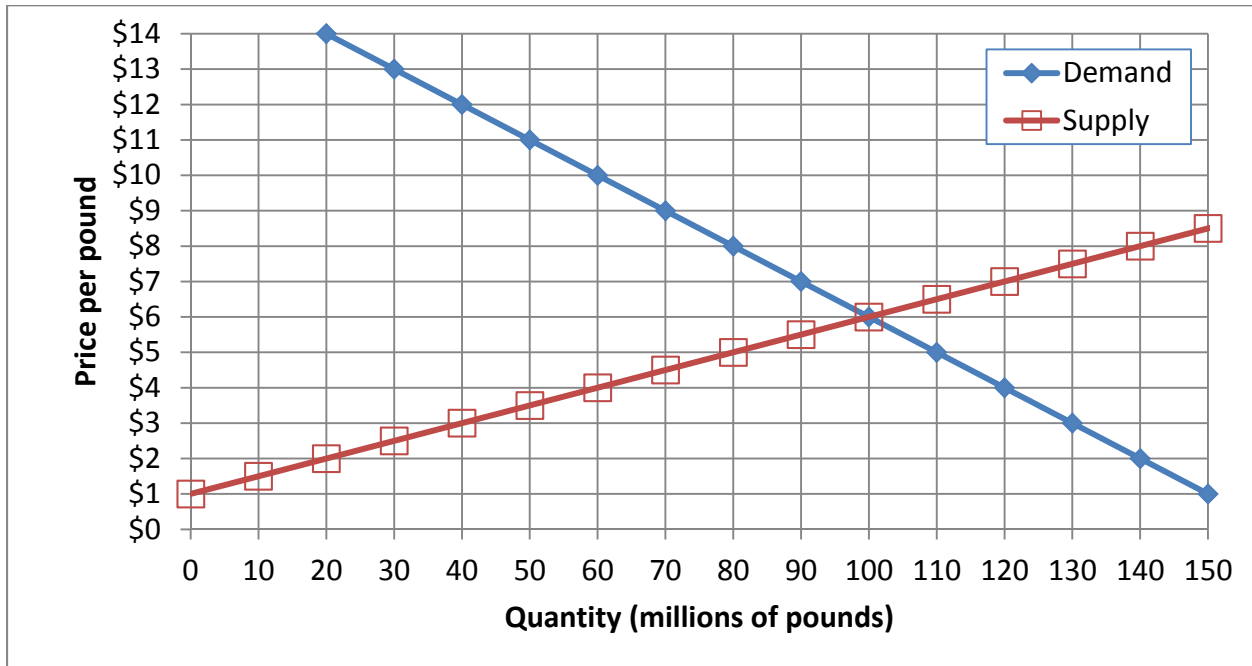
- a. [1 pt] In which city will the demand curve shift right—*Houston, Denver, both cities, or neither city*?
- b. [1 pt] In which city will the supply curve shift right—*Houston, Denver, both cities, or neither city*?

Suppose there are no costs of arbitrage. That is, the cost of moving clock-radios between these two cities is zero.

- c. [2 pts] By how much will these curves shift?
- e. [2 pts] In equilibrium, what will be the price of clock-radios in Houston?
- f. [2 pts] In equilibrium, what will be the price of clock-radios in Denver?

thousand
\$
\$

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



a. Find the equilibrium price without government intervention.

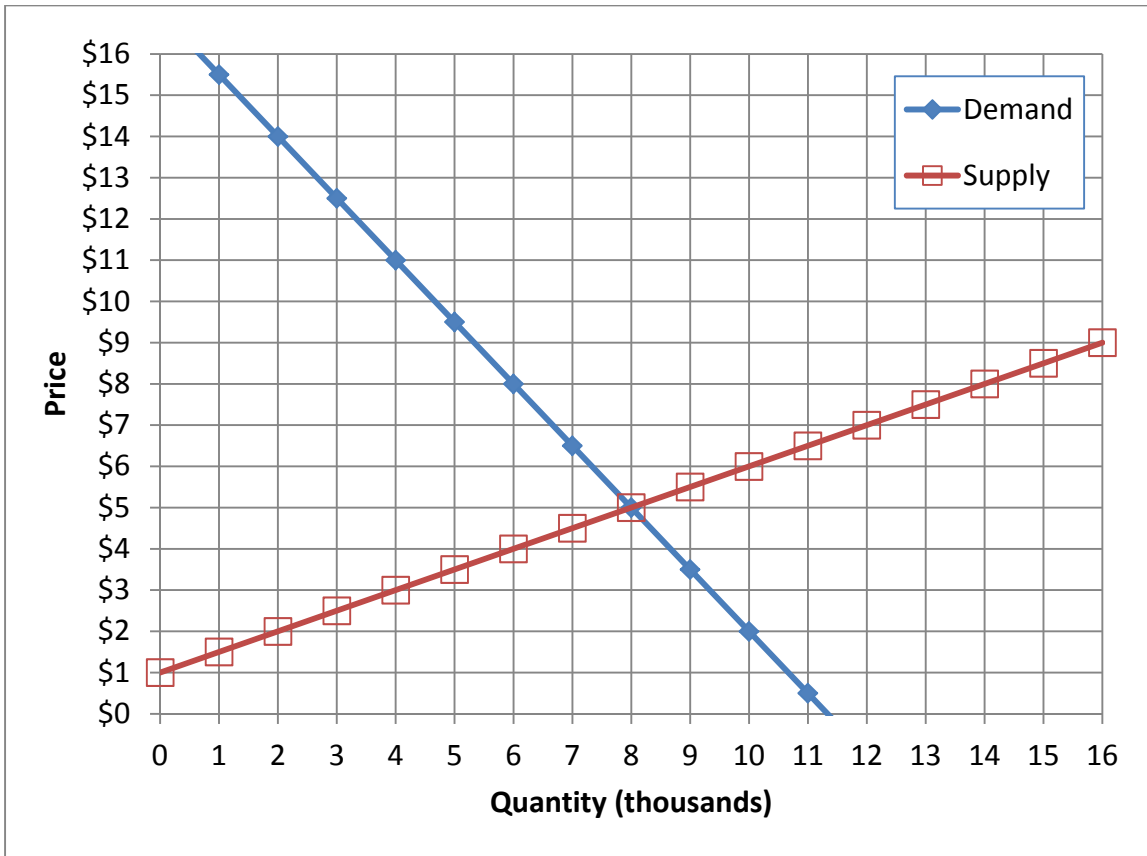
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Suppose the government imposes a price ceiling (or legal maximum price) of \$4 per pound. No cheese may be sold for a price more than the price ceiling.

- b. How many pounds of cheese will actually be sold?
- c. Will there be *excess demand*, *excess supply*, or *neither*?
- d. How much?
- e. Does producer surplus *increase*, *decrease*, or *remain constant* because of the price ceiling, as compared to the market without government intervention?
- f. By how much?
- 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 cheese is purchased by those consumers who value cheese the most.)
- h. By how much?
- i. Compute the deadweight social loss caused by the price ceiling.

	million pounds
	million pounds
\$	million
\$	million
\$	million

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



Suppose the government wants to promote tee-shirts, and gives a **subsidy of \$ 4** per teeshirt.

- Compute the equilibrium quantity sold.
- Compute the equilibrium total price received by sellers (including the subsidy).
- Compute the equilibrium net price paid by buyers (excluding 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 total direct cost of the subsidy program to the government. In other words, how much should the government budget for subsidy payments to tee-shirt consumers and producers?
- Compute the deadweight social loss caused by the subsidy.

	thousand
\$	per teeshirt
\$	per teeshirt
\$	thousand
\$	thousand
\$	thousand
\$	thousand

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

(1) A study¹ found that when tobacco cigarette prices increased by 10 percent, use of marijuana by young people *decreased* by about 12 percent. Does this indicate that marijuana and tobacco cigarettes are *substitutes* or *complements*? Why? Compute the cross-price elasticity of demand for marijuana with respect to the price of cigarettes for young people (note: the sign is important).

(2) Suppose a price ceiling were placed on infant formula. Would this help ensure that more babies had access to infant formula? Justify your answer with a supply-and-demand graph.

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]

¹ Frank J. Chaloupka, Rosalie L Riccardo Pacula, Matthew C. Farrelly, Lloyd D. Johnston, Patrick M. O'Malley, "Do Higher Cigarette Prices Encourage Youth to Use Marijuana?" NBER Working Paper No. 6939, February 1999.