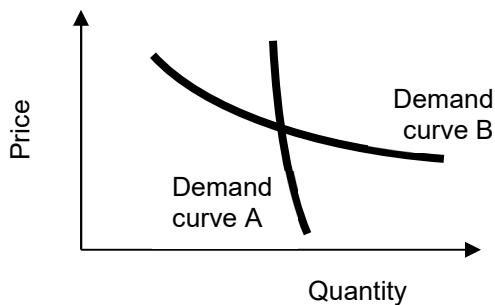


EXAMINATION 2 VERSION A
"Applications of Supply and Demand"
March 9, 2023

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, 22 pts total]

- (1) Which demand curve below is *less* elastic?
a. Demand curve A.
b. Demand curve B.
c. Both have the same elasticity because they pass through the same point.
d. Cannot be determined from information given.



- (2) A good that has close substitutes will likely have a price elasticity of demand that is
a. small, in absolute value.
b. large, in absolute value.
c. zero.
d. infinite.
e. cannot be determined.

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

- (4) Suppose the price elasticity of demand for food is about -0.2 . If the price of food rises, then the amount of money consumers spend on food will
a. increase.
b. decrease.
c. remain constant.
d. cannot be determined from information given.

- (5) Assuming that orange juice and grapefruit juice are substitutes, then the cross-price elasticity of demand for grapefruit juice with respect to the price of orange juice must be
a. positive
b. negative.
c. zero.
d. cannot be determined from information given.

- (6) Assuming that medical care is a *necessary good*, the income elasticity of demand for medical care must be
a. negative.
b. exactly zero.
c. between zero and one.
d. exactly one.
e. greater than one.

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



The next four questions refer to the following demand and supply schedules for wheat in two countries.

Price	Country X		Country Y	
	Q _D	Q _S	Q _D	Q _S
\$1	65	15	50	10
\$2	60	20	40	20
\$3	55	25	30	30
\$4	50	30	20	40
\$5	45	35	10	50
\$6	40	40	0	60
\$7	35	45	0	70

- (8) In the absence of international trade, Country X's equilibrium price of wheat would be

- \$2.
- \$3.
- \$4.
- \$5.
- \$6.

- (9) In the absence of international trade, Country Y's equilibrium price of wheat would be

- \$2.
- \$3.
- \$4.
- \$5.
- \$6.

- (10) With international trade, the equilibrium price of wheat in both countries would be

- \$2.
- \$3.
- \$4.
- \$5.
- \$6.

- (11) Who in Country X benefits from international trade in wheat?

- Buyers in Country X.
- Sellers in Country X.
- Both buyers and sellers in Country X.
- Neither buyers nor sellers in Country X.

- (12) Suppose a hurricane forces oil refineries in Texas and Louisiana to shut down for a while. Oil is traded internationally, so this would cause the price of oil in Europe to

- remain constant.
- rise.
- fall.
- Cannot be determined from information given.

- (13) To pass the *compensation test of Kaldor and Hicks*, a change in the economy must result in

- winners but no losers.
- gains to winners that exceed any losses to losers.
- at least some winners.
- cost savings for the government.
- a rise in wages, salaries, and other compensation.

- (14) To be a *Pareto improvement*, a change in the economy must result in

- winners but no losers.
- gains to winners that exceed any losses to losers.
- at least some winners.
- cost savings for the government.
- a rise in wages, salaries, and other compensation.

- (15) Suppose the price of watermelons is \$5 in Kansas City and the cost of shipping a watermelon between Des Moines and Kansas City is \$2. Markets are *in equilibrium* if the price of melons in Des Moines is

- \$1.
- \$4.
- \$8.
- \$10.

- (16) Arbitrage *cannot* guarantee that people in Denver and Chicago pay similar prices for

- U.S. government bonds.
- gold.
- houses.
- euro currency.

(17) 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 \$2.
- b. A price floor (or legal minimum price) of \$2.
- c. Both of the above would be binding.
- d. None of the above would be binding.

(18) A quota (or legal maximum quantity) on *selling* ivory would cause its price to

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

(19) Which would *increase* the quantity sold of infant car seats?

- a. A tax on infant car seats.
- b. A subsidy for infant car seats.
- c. Both of the above.
- d. None of the above.

(20) Suppose the price elasticity of supply for apartment rentals is 0.3 and the price elasticity of demand is -1.0. If the city imposes a tax on apartment rentals,

- a. sellers (landlords) will pay most of the tax.
- b. buyers (renters) 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.

(21) A Laffer curve shows the relationship between

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

(22) If the government provides a subsidy to parents who send their children to private preschools, who will likely enjoy the benefit of the subsidy?

- a. Parents.
- b. Preschools.
- c. Both of the above.
- d. 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) [Calculating elasticities: 2 pts] Suppose that if the price of movie tickets is \$12, the average person goes to the movies 6 times per year; but if the price is \$8, the average person goes 10 times per year. Compute the price elasticity of demand for movie tickets using the “arc-elasticity” formula.

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(2) [Cross-price elasticity of demand: 4 pts] Suppose that when the price of chips rises by 20 percent, the quantity of salsa purchased falls by 4 percent.

- a. From the information above, are chips and salsa *substitutes* or *complements* ?
- b. Compute the cross-price elasticity of demand for salsa with respect to the price of chips. (Full credit requires correct sign.)

(3) [Income elasticity of demand: 4 pts] Suppose that when consumers’ income rises by 10 percent, the quantity of potatoes purchased rises by 3 percent.

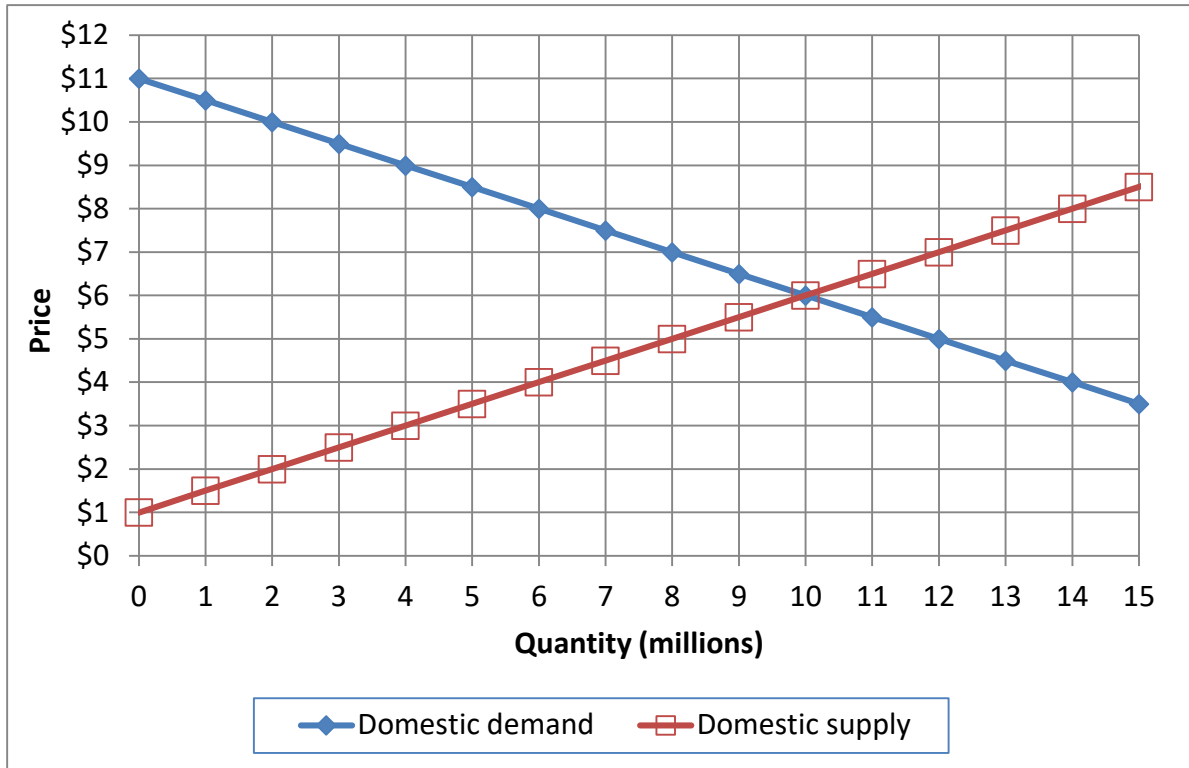
- a. From the information above, are potatoes an *inferior good*, a *necessary good*, or a *luxury (or superior) good* ?
- b. Compute the income elasticity of demand for potatoes. (Full credit requires correct sign.)

(4) [Using price elasticity of demand: 10 pts] Suppose the water utility *raises* its price by 8%. Suppose the price elasticity of demand for water is -0.75. 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 rises, will the amount of water consumed *increase*, *decrease*, or remain *constant*?
- c. ... by approximately how much?
- d. Will consumers’ spending on water *increase*, *decrease*, or remain *constant*?
- e. ... by approximately how much?

%
%

(5) [Welfare analysis of international trade: 18 pts] Domestic supply and demand for tee shirts in a particular country are given by the following diagram.



a. At first, international trade in tee shirts 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 tee shirts turns out to be **\$ 8**.

b. Will this country now *export* or *import* tee shirts?

c. How many?

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

e. By how much?

f. Does producer surplus in this country *increase* or *decrease* from international trade in tee shirts?

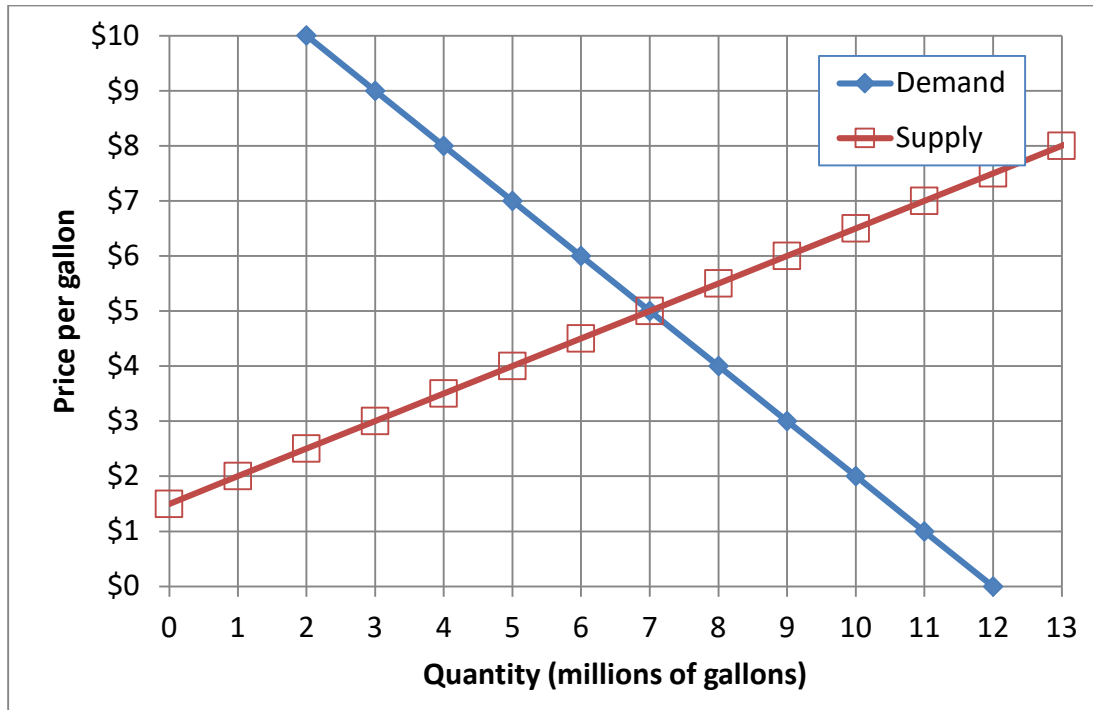
g. By how much?

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

i. By how much?

	million
\$	million
\$	million
\$	million

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



a. Find the equilibrium price without government intervention.

\$

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

b. How much milk will actually be sold?

million gallons

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

d. How much?

million gallons

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?

\$	million
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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 milk is purchased by those consumers who have the highest willingness-to-pay.)

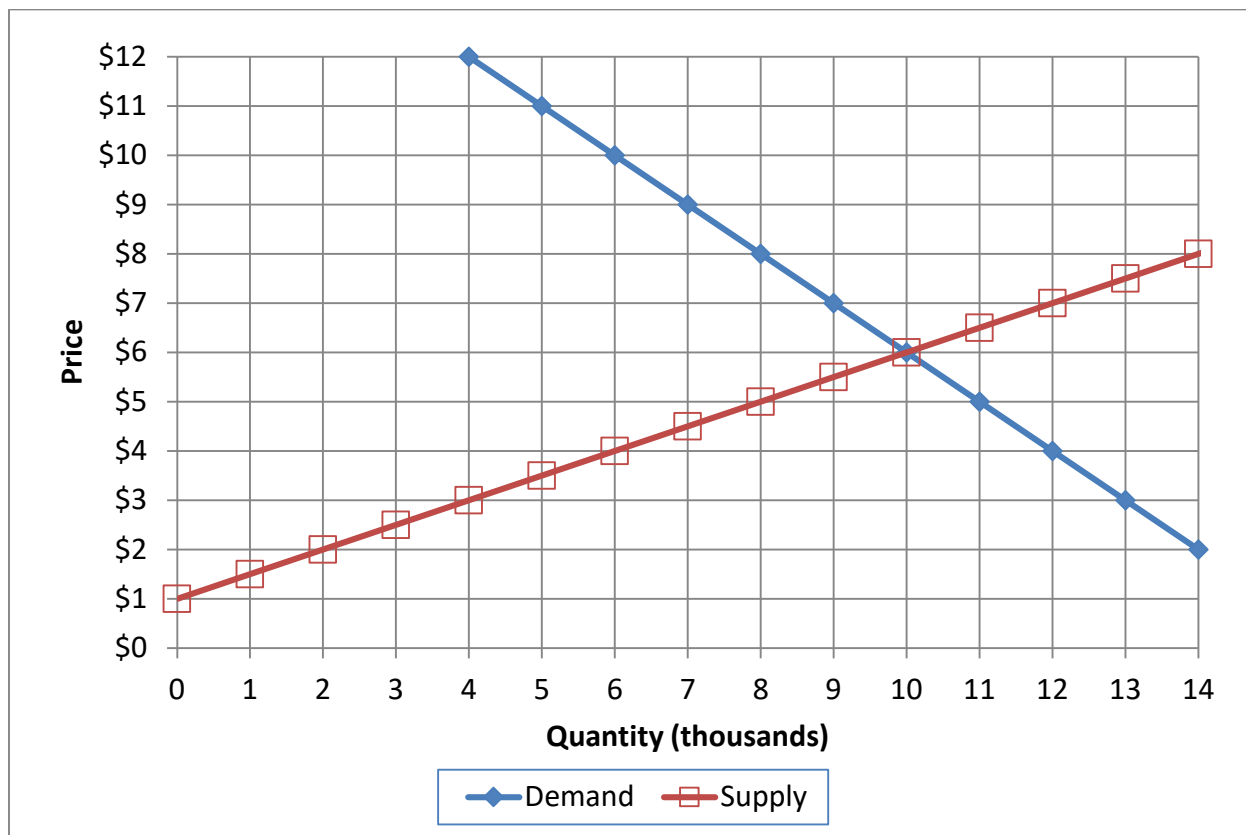
h. By how much?

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

\$	million
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(7) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for snow shovels.



Suppose the government imposes an excise tax of \$3 per snow shovel.

- 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.

	thousand
\$	per snow shovel
\$	per snow shovel
\$	thousand
\$	thousand
\$	thousand
\$	thousand

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

- (1) Consider the following statement. "Limiting the number of barbers is good for consumers, because if there were too many barbers, each barber would have few customers and would have to raise the price of a haircut to stay in business. So limiting the number of barbers keeps the price of a haircut reasonable for consumers." Do you agree or disagree? Explain why. Justify your answer with a supply-and-demand graph. Label both axes and all curves.

- (2) You want to boost your company's revenue. A company statistician estimates that demand for your main product has a price elasticity of -0.6 . Marketing Consultant A argues that 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 cut the price. "The best way to boost revenue is to build market share," says Consultant B. Who is right? Why? (Ignore the 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]