ECON 002 - Principles of Microeconomics
Drake University, Fall 2023
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Signature: _____

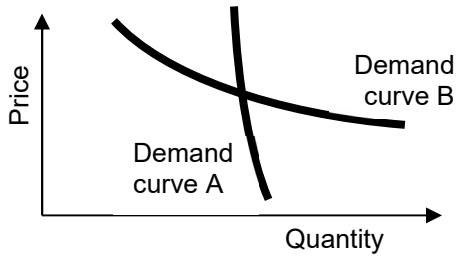
Printed name: _____

EXAMINATION 2 VERSION B
"Applications of Supply and Demand"
October 11, 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, 20 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) The units of measure for the price elasticity of demand for electricity are
a. kilowatt-hours per dollar.
b. dollars per kilowatt-hour.
c. The elasticity is a pure number and has no units of measure.
d. percent.

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

(4) The price elasticity of demand for tomatoes has been estimated to be about – 0.4. If the price of tomatoes rises, then the amount of money consumers spend on tomatoes will
a. increase.
b. decrease.
c. remain constant.
d. cannot be determined from information given.

(5) 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
a. positive
b. negative.
c. zero.
d. cannot be determined from information given.

(6) 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
a. elastic.
b. perfectly elastic.
c. inelastic.
d. perfectly inelastic.
e. cannot be determined from information given.

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

	Country X		Country Y	
Price	Q_D	Q_S	Q_D	Q_S
\$1	60	30	60	10
\$2	50	50	55	15
\$3	40	70	50	20
\$4	30	90	45	25
\$5	20	110	40	30
\$6	10	130	35	35
\$7	0	150	30	40

(7) In the absence of international trade, Country X's equilibrium price of corn would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(8) In the absence of international trade, Country Y's equilibrium price of corn would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(9) With international trade, the equilibrium price of corn in both countries would be
a. \$2.
b. \$3.
c. \$4.
d. \$5.
e. \$6.

(10) Who in Country X benefits from international trade in corn?
a. Buyers in Country X.
b. Sellers in Country X.
c. Both buyers and sellers in Country X.
d. Neither buyers nor sellers in Country X.

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(11) Suppose there were problems with the corn harvest in South America. Because corn is traded internationally, this would cause the price of corn in the U.S. to
a. rise.
b. fall.
c. remain constant.
d. Cannot be determined from information given.

(12) Suppose there is a change in government policy affecting the health care industry. Which of the following outcomes would pass the *compensation test of Kaldor and Hicks*?
a. Producers gain \$20 billion while consumers lose \$10 billion.
b. Producers gain \$10 billion while consumers gain \$20 billion.
c. Producers gain \$10 billion while consumers lose \$20 billion.
d. Both (a) and (b).
e. All of the above.

(13) 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.

(14) Suppose the price of silver were lower in Paris than in London, initially. Arbitrage would then *tend to*
a. raise the price of silver in both cities.
b. lower the price of silver in both cities.
c. raise the price of silver in Paris and lower the price in London.
d. raise the price of silver in London and lower the price in Paris.

(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
a. \$1.
b. \$4.
c. \$8.
d. \$10.

(16) A price ceiling (or legal maximum price) on bananas, if it were binding, would create
a. excess demand for bananas.
b. excess supply of bananas.
c. neither excess demand nor excess supply.
d. Cannot be determined from information given.

(17) A quota (or legal maximum quantity) on *buying* mahogany 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.

(18) Which would *decrease* 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.

(19) If the government provides a subsidy for hearing aids, who will likely enjoy the benefit of the subsidy?
a. Hearing aid consumers.
b. Hearing aid producers.
c. Both of the above.
d. None of the above.

(20) Suppose the price elasticity of demand for baby food is -0.2 and the price elasticity of supply is 5.0. If a subsidy is given for baby food,
a. producers will enjoy most of the subsidy.
b. consumers will enjoy most of the subsidy.
c. producers and consumers will each enjoy half of the subsidy.
d. Answer depends on which side receives the check from the government.

II. Problems: Please 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 13 cents per kilowatt-hour, the typical household uses 400 kilowatt-hours per month; but if the price is 7 cents per kilowatt-hour, the typical household uses 600 kilowatt-hours per month. Compute the price elasticity of demand for electricity using the "arc-elasticity" formula.

(2) [Cross-price elasticity of demand: 4 pts] Suppose that when the price of ice cream rises by 10 percent, the quantity of chocolate sauce purchased falls by 4 percent.
a. From the information above, are ice cream and chocolate sauce *substitutes* or *complements* ?
b. Compute the cross-price elasticity of demand for chocolate sauce with respect to the price of ice cream. (Full credit requires correct sign.)

(3) [Income elasticity of demand: 4 pts] Suppose that when consumers' income rises by 5 percent, the quantity of spaghetti sauce purchased rises by 2 percent.

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

(4) [Income elasticity of demand. 8 pts] According to the Consumer Expenditure Survey, the following are budget shares for low-income and high-income households. For each good, indicate whether it is a necessary good or a luxury good (sometimes called a "superior good"). Also indicate whether the income elasticity of demand is greater or less than one.

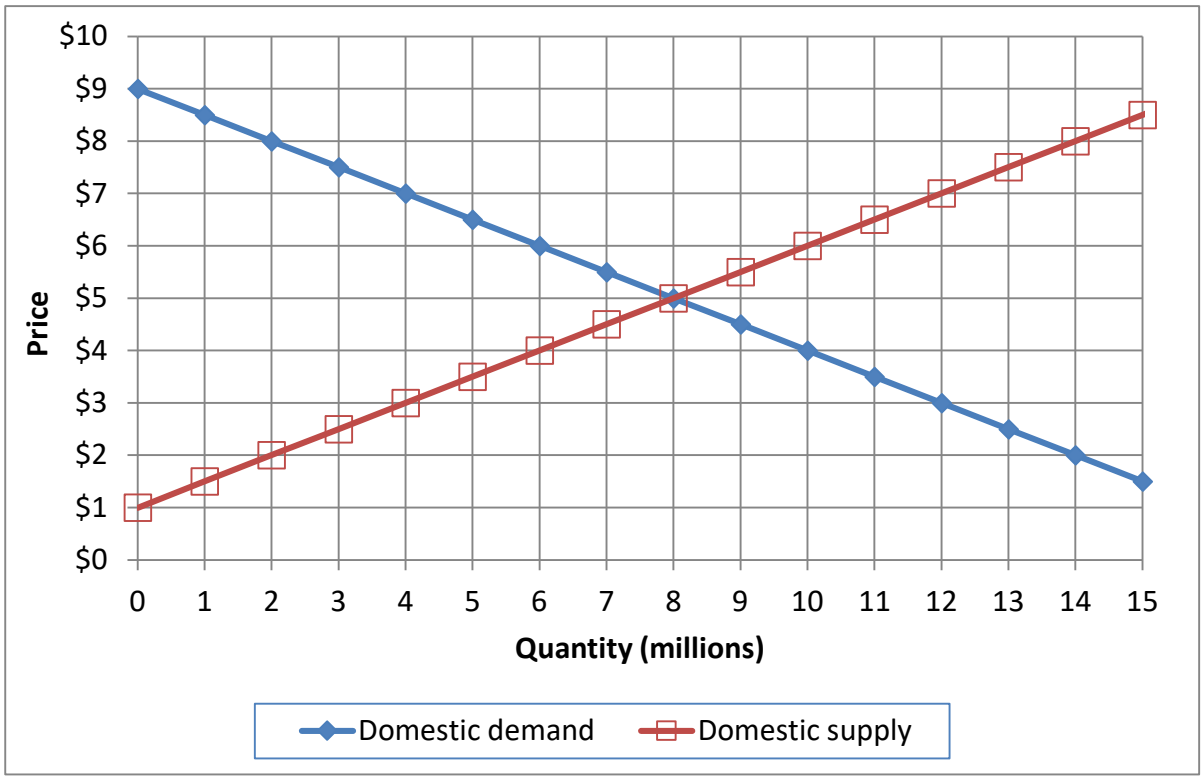
Good	Budget share, low income	Budget share, high income	*Necessary good* or *luxury good?*	Income elasticity of demand *greater than one* or *less than one?*
a. Transportation	13.8%	15.0%		
b. Food at home	11.4%	6.3%		

(5) [Using price elasticity of demand: 10 pts] Suppose the cable TV company *raises* its prices by 4%. Suppose the price elasticity of demand for cable TV service is -1.5. Assume everything else affecting demand for cable TV service remains constant.

a. According to the information above, is demand for cable TV service *elastic, inelastic,* or *unitary-elastic*?
b. As the price rises, will number of cable TV customers *increase*, *decrease*, or remain *constant*?
c. ... by approximately how much?
d. Will the total revenue received by the cable TV company *increase*, *decrease*, or remain *constant*?
e. ... by approximately how much?

%
%

(6) [Welfare analysis of international trade: 18 pts] Domestic supply and demand for wristwatches in a particular country are shown in the following graph.



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

Then this industry is opened to international trade and the international price of wristwatches turns out to be **$ 4.**

b. Will this country now *export* or *import* wristwatches? |

c. How many? | million

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

e. By how much? | $ million

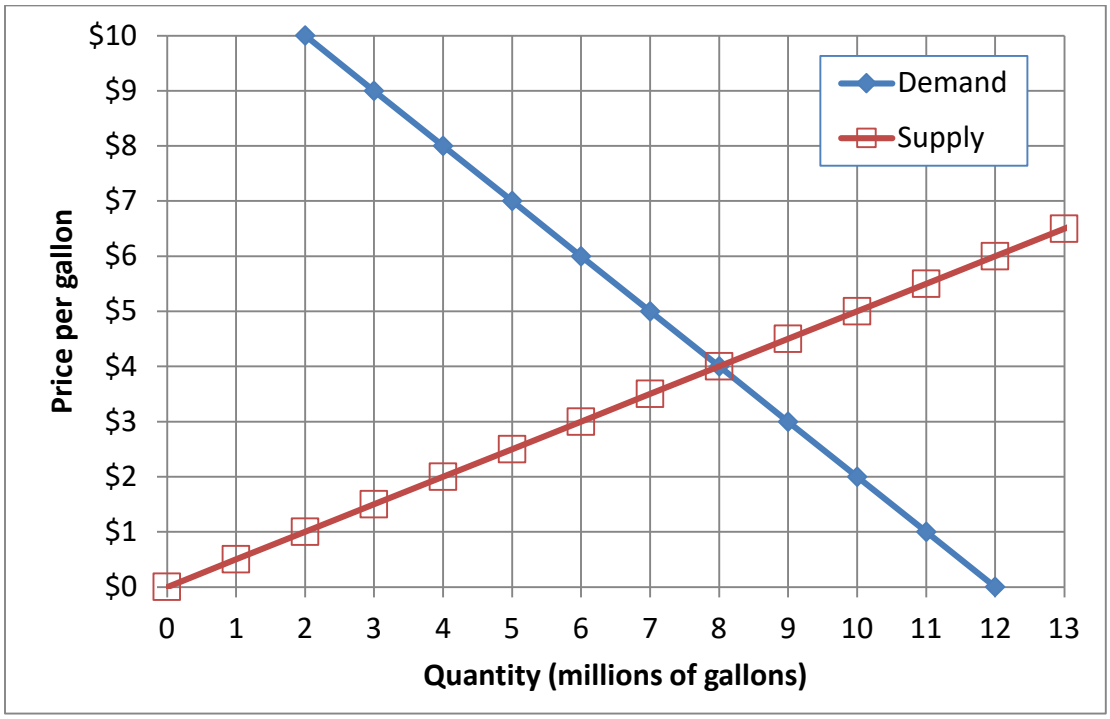
f. Does producer surplus in this country *increase or decrease* from international trade in wristwatches? |

g. By how much? | $ million

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

i. By how much? | $ million

(7) [Welfare analysis of market controls: 18 pts] The graph below shows the market for gasoline.



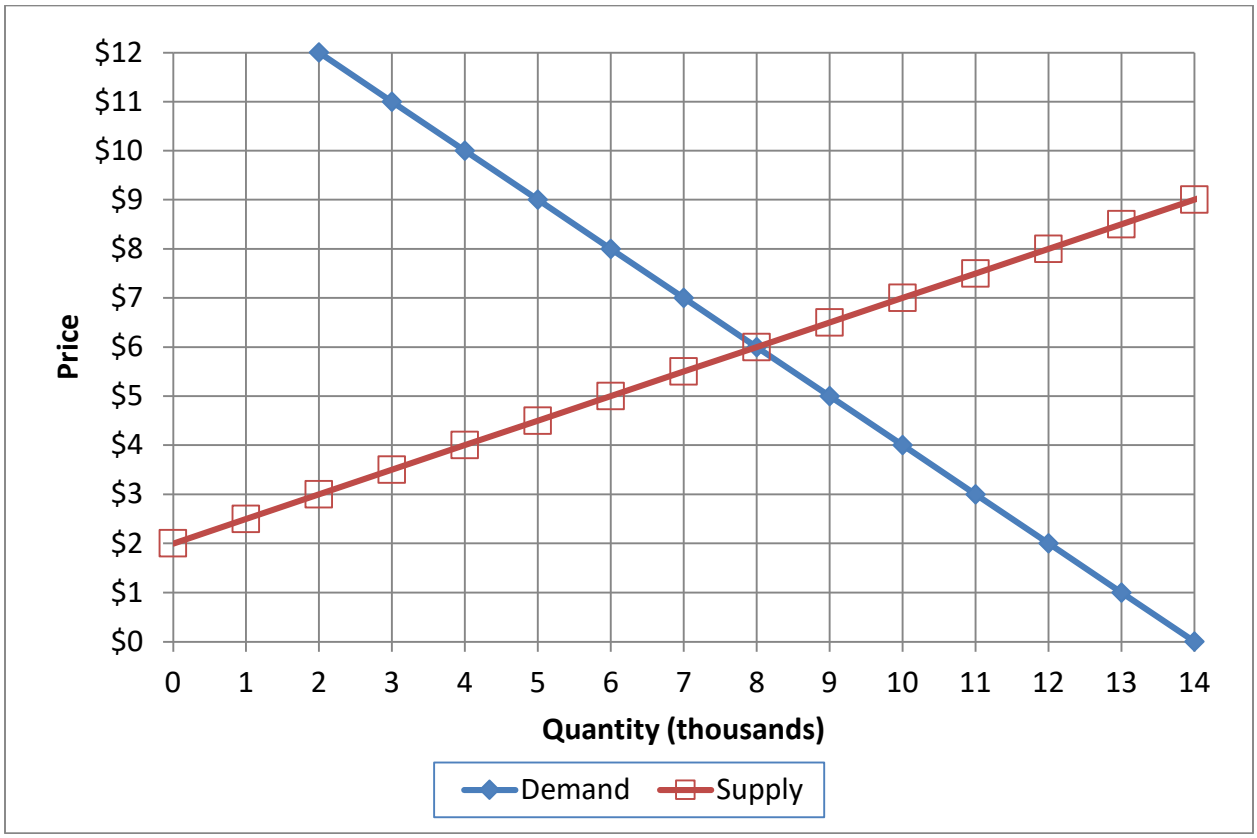
a. Find the equilibrium price without government intervention.

$

Suppose the government imposes a price ceiling (or legal maximum price) of **$ 3 per gallon**. No gasoline may be sold for a price higher than the price ceiling.

b. How much gasoline 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
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 gasoline is purchased by those consumers who have the highest willingness-to-pay.)	
h. By how much?	$ million
i. Compute the deadweight social loss caused by the price ceiling.	$ million

(8) [Welfare analysis of tax or subsidy: 18 pts] The graph below shows the market for leaf rakes.



Suppose the government imposes an excise **tax of $ 3** per leaf rake.

a. Compute the equilibrium quantity sold.	thousand
b. Compute the equilibrium net price received by sellers (excluding the tax).	$ per rake
c. Compute the equilibrium total price paid by buyers (including the tax).	$ per rake
d. Does producer surplus *increase, decrease,* or *remain constant* because of the tax?	
e. By how much?	$ thousand
f. Does consumer surplus *increase, decrease,* or *remain constant* because of the tax?	
g. By how much?	$ thousand
h. Compute the total tax revenue collected by the government.	$ thousand
i. Compute the deadweight social loss caused by the tax.	$ thousand

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

(1) Consider the following proposal. "American international trade policy should put American workers and American businesses first. Imports of steel should be banned if they are priced lower than steel 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 of the market for steel, using the concepts of consumer and producer surplus.

(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. Label both axes and all curves.

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]