ECON 002 - Principles of Microeconomics
Drake University, Fall 2022
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Signature: _____

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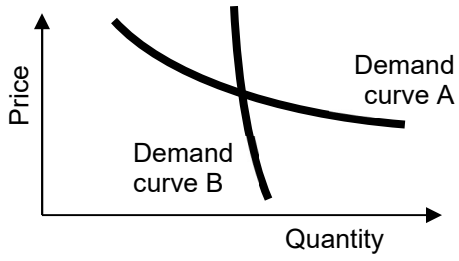
EXAMINATION 2 VERSION A
"Applications of Supply and Demand"
October 12, 2022

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 write your name and "Version A" on your answer sheet. Then mark the one best answer to each question on the answer sheet. [1 pt each, 30 pts total]

(1) Which demand curve below is *more* 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) Assume that Canadian consumers are similar to U.S. consumers in their behavior. However, gasoline in Canada is sold by the liter, not by the gallon, and there are approximately 3.8 liters in a gallon. Therefore, the price elasticity of demand for gasoline in Canada must be
a. greater in absolute value than the elasticity in the U.S.
b. the same as the elasticity in the U.S.
c. less in absolute value than the elasticity in the U.S.
d. zero.

(3) 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. cannot be determined.

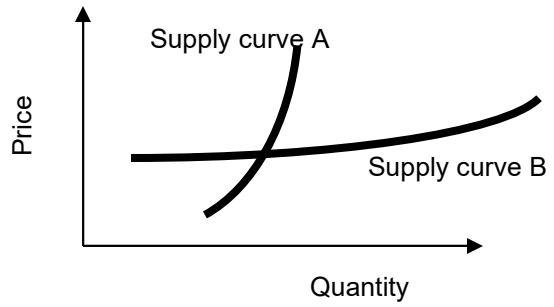
(4) It takes time for consumers to adjust their lifestyles to changes in electricity prices. Therefore, the long-run demand for electricity is
a. more elastic than the short-run demand.
b. less elastic than the short-run demand.
c. just as elastic as the short-run demand.
d. Elasticity of demand is not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

(5) Assuming that train travel and air travel are substitutes, then the cross-price elasticity of demand for train travel with respect to the price of air travel 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) Some estimates show that rich people spend a *greater fraction* of their income on new automobiles than poor people do. If this is true, then the income elasticity of demand for new automobiles must be
a. negative.
b. exactly zero.
c. between zero and one.
d. exactly one.
e. greater than one.

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



(9) Compare the supply of apples when producers are given one month to adjust to a new price, with the supply when producers are given ten years to adjust to the new price.
a. The one-month supply is more elastic.
b. The ten-year supply is more elastic.
c. Time for adjustment does not affect elasticity.
d. Cannot be determined from information given.

(10) If the quantity supplied of some good, such as paintings by Andy Warhol (1928-1987), is exactly the same, regardless of the price, then the supply 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 wheat in two countries.

	Country X		Country Y	
Price	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

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

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

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

(14) Who in Country X benefits from international trade in wheat?
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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(15) In recent years, the demand for petroleum in Asia has shifted right due to rising incomes. Because petroleum is traded internationally, this should cause the price of petroleum in the United States to
a. rise.
b. fall.
c. rise or fall, depending on the shapes of the demand and supply curves.
d. remain constant.

(16) The price of sugar is higher in the United States than in the Caribbean. If the United States ends its restrictions on international trade in sugar, this change will benefit
a. Caribbean sugar producers and Caribbean sugar consumers.
b. Caribbean sugar producers and U.S. sugar consumers.
c. U.S. sugar producers and Caribbean sugar consumers.
d. U.S. sugar producers and U.S. sugar consumers.

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

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

(19) Arbitrageurs buy low and sell high because they *want to*
a. ensure that all consumers face a fair price.
b. make a profit.
c. enforce the Law of One Price.
d. keep markets orderly.
e. All of the above.

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

(21) Suppose the price of a pumpkin in Des Moines is $7 and the cost of shipping a pumpkin between Des Moines and Omaha is $3. Markets are *out of equilibrium* if the price of pumpkins in Omaha is
a. $2.
b. $5.
c. $6.
d. $9.

(22) Arbitrage *cannot* guarantee that people in Denver and Chicago pay similar prices for
a. U.S. government bonds.
b. gold.
c. houses.
d. euro currency.

(23) 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.

(24) A price floor (or legal minimum 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.

(25) 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.

(26) Which of the following government controls on a competitive market cause the quantity traded to *increase?*
a. price ceiling (legal maximum price).
b. quota (or legal maximum quantity) on sellers.
c. quota (or legal maximum quantity) on buyers.
d. all of the above.
e. none of the above.

(27) The federal tax on gasoline is 18.4 cents per gallon. This is an example of
a. an *ad valorem* tax.
b. an excise or per-unit tax.
c. a price control.
d. a subsidy.

(28) 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.

(29) Suppose the price elasticity of supply for items sold on the internet in Iowa is 8.0 and the price elasticity of demand is -1.0 . If Iowa imposes a tax on internet sales,

a. sellers will pay most of the tax.
b. buyers 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.

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

a. a quota (or legal maximum quantity) on sellers of pedometers.
b. a subsidy for pedometers.
c. a price ceiling (or legal maximum price) for pedometers.
d. all of the above.
e. 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 gasoline is $5 per gallon, the typical driver uses 25 gallons per month; but if the price is 3 dollars per gallon, the typical driver uses 35 gallons per month. Compute the price elasticity of demand for gasoline using the "arc-elasticity" formula.

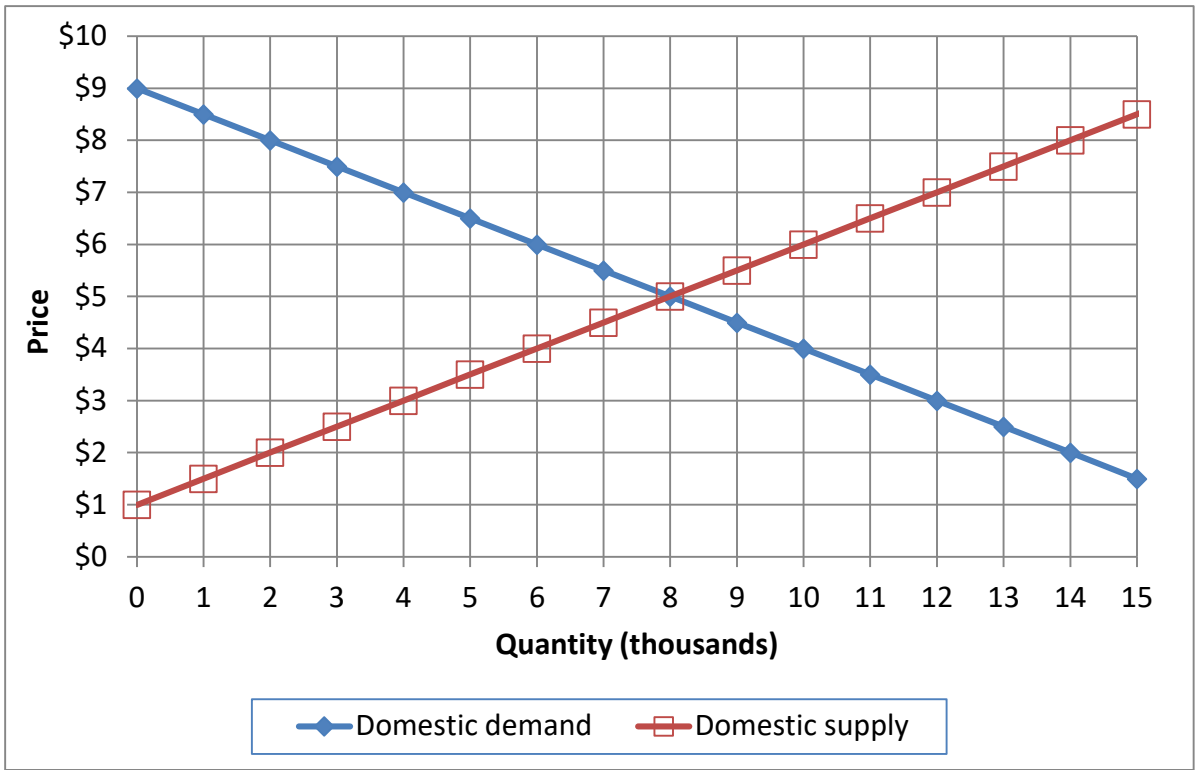
(2) [Cross-price elasticity of demand: 4 pts] Suppose that when the price of peanut butter rises by 20 percent, the quantity of sunflower-seed butter purchased rises by 8 percent.

a. From the information above, are peanut butter and sunflower-seed butter *substitutes* or *complements* ?
b. Compute the cross-price elasticity of demand. (Full credit requires correct sign.)

(3) [Using price elasticity of demand: 10 pts] Suppose the electric utility *raises* its price by 5%. Suppose the price elasticity of demand for electricity is -0.8. Assume everything else affecting demand for electricity remains constant.

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

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

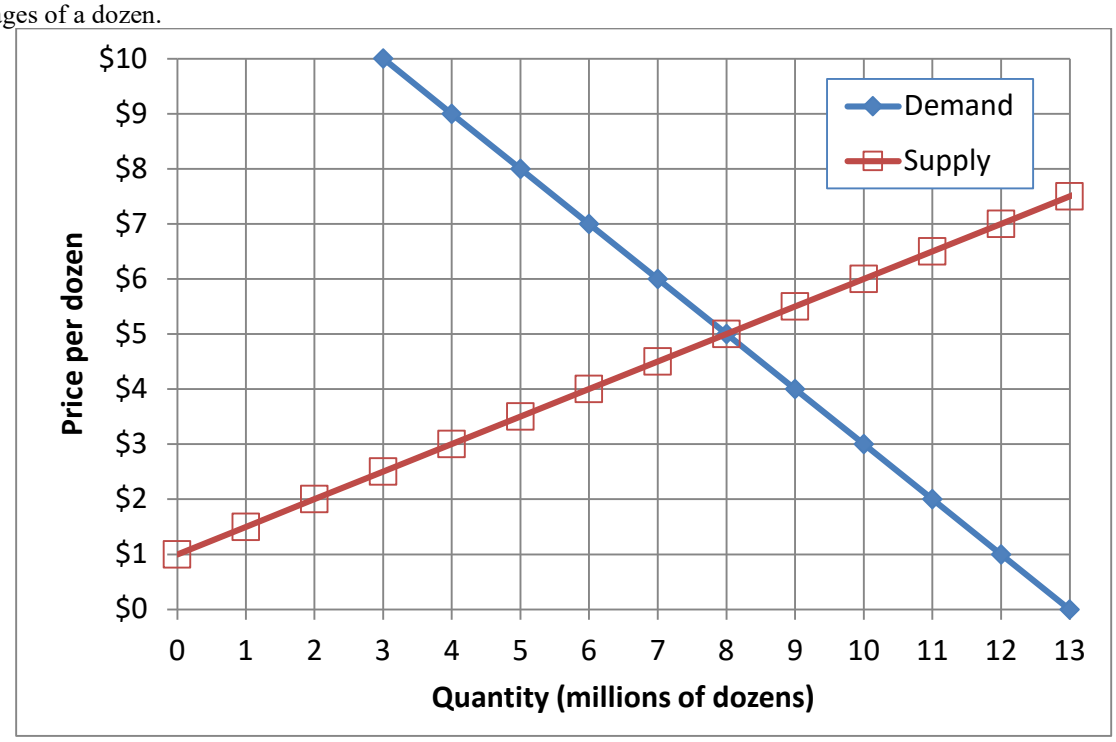


a. At first, international trade in ball caps is not permitted. Find the equilibrium price without international trade. | $ |

Then this industry is opened to international trade and the international price of ball caps turns out to be **$ 7.**

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

(5) [Welfare analysis of market controls: 18 pts] The following graph shows the market for eggs, which are sold in packages of a dozen.



a. Find the equilibrium price without government intervention. $

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

b. How many eggs will actually be sold? millions of dozens

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

d. How much? millions of dozens

e. Does producer surplus *increase, decrease,* or *remain constant* because of the price ceiling, as compared to the market without government intervention?

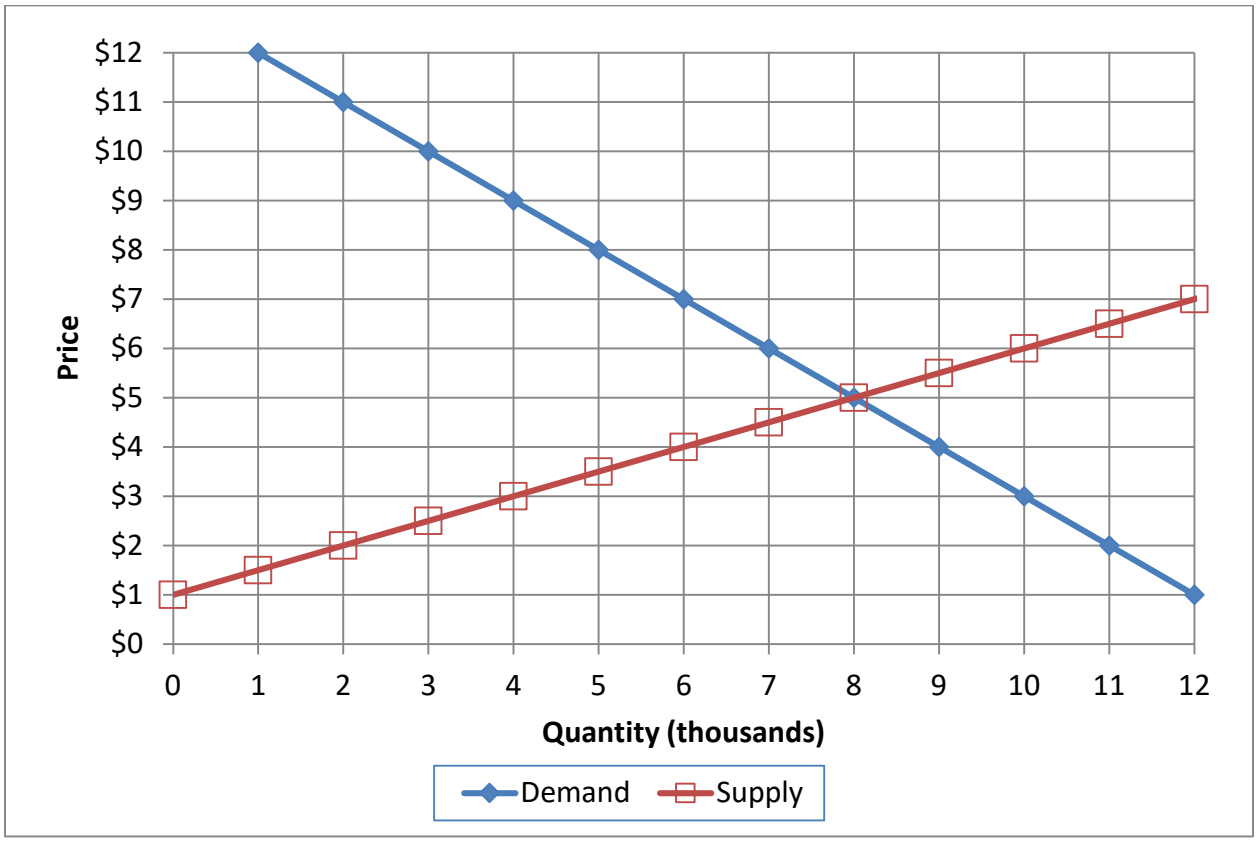
f. By how much? $ million

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 eggs are 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

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



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

a. Compute the equilibrium quantity sold.	thousand
b. Compute the equilibrium net price received by sellers (excluding the tax).	$ per pumpkin
c. Compute the equilibrium total price paid by buyers (including the tax).	$ per pumpkin
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

[end of exam]