EXAMINATION 4 VERSION A
"Perfect and Imperfect Competition"
April 27, 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, 12 pts total]

(1) The assumption that firms take the market price as given makes more sense if
a.   there are a large number of firms in the market.
b.   market demand is inelastic.
c.   the owners of the firms are personal friends.
d.   the necessary inputs to production are scarce.

(2) If consumers view the products of different firms as *perfect substitutes*, they will
a.   buy some of each.
b.   choose whichever is cheaper.
c.   stay with their current brand, even if it is a little more expensive.
d.   flip a coin to decide which brand to buy.

(3) Suppose that the bread industry is producing 3 million loaves of bread per month for some reason, and that at this level of output, the marginal benefit to consumers of a loaf of bread is $3, but the marginal cost of producing a loaf of bread is only $2. Society would be better off if
a.   fewer loaves of bread were produced.
b.   more loaves of bread were produced.
c.   None of the above.
d.   Cannot be determined from information given.

(4) Suppose the market for hammers is perfectly competitive and that Firm A produces 3 thousand hammers per day while Firm B produces 1 thousand hammers per day. Which firm has higher marginal cost?
a.   Firm A has higher marginal cost.
b.   Firm B has higher marginal cost.
c.   The firms' marginal costs are equal.
d.   Cannot be determined.

(5) If all markets in the economy are perfectly competitive, then the slope of the economy's production possibility curve is
a.   greater than the slope of every consumer's budget line.
b.   less than the slope of every consumer's budget line.
c.   equal to the slope of every consumer's budget line.
d.   zero.

(6) Suppose a hotdog vendor sells 20 hotdogs per hour if the price is $2, and sells 21 hotdogs if the price is $1.95. The vendor's marginal revenue of the 21st hotdog is therefore
a. $0.05 .
b. $0.95 .
c. $1.00 .
d. $1.95 .
e. $2.00 .
f. $20.00 .

(7) A monopolist always sets price
a.   equal to marginal cost.
b.   above marginal cost.
c.   below marginal cost.
d.   cannot be determined from the information given.

(8) A monopoly causes social deadweight loss because
a.   it creates a concentration of power.
b.   some buyers, willing to pay the marginal cost, do not get served.
c.   it redistributes income from the poor to the rich.
d.   big corporations are bad for society.

(9) Cartels are organizations of firms that try to increase their members' profits by
a. boosting output.
b. increasing advertising.
c. offering discounts and promotional pricing.
d. reducing output.
e. sharing technology.

(10) Antitrust laws prohibit
a. dishonest accounting practices.
b. deceptive advertising
c. anticompetitive practices.
d. all of the above.

(11) The Cournot model of oligopoly predicts that as the number of firms increases in an industry, the market price
a. approaches zero.
b. approaches marginal cost.
c. approaches the monopoly price.
d. remains constant.

(12) Products are said to be "differentiated" if
a. one can buy them in fractional amounts.
b. consumers do not view them as perfect substitutes.
c. they are sold through different retail channels (stores, online, catalogs, etc.)
d. different consumers buy different quantities of them.

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) [Efficiency of competition: 16 pts] The following graph shows the market for toasters.
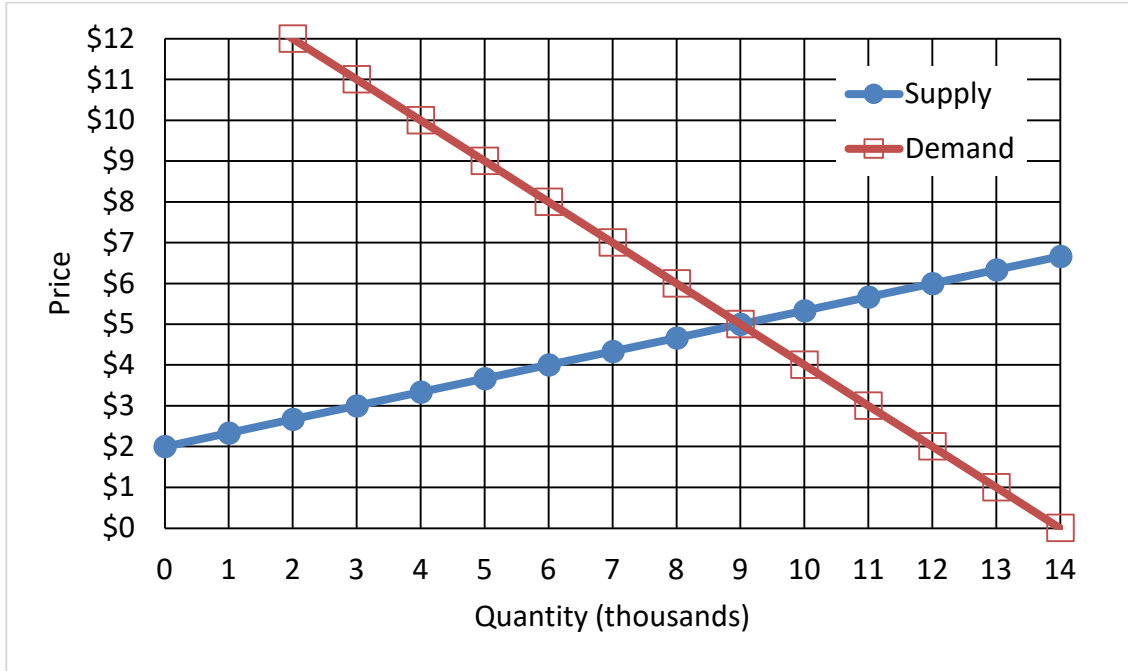
Suppose only 3000 toasters were produced for some unknown reason.
  a. How much would consumers be willing to pay for a 3001st toaster? $

  b. By how much would the toaster industry's total costs increase from producing a 3001st toaster? $

  c. If the 3001st toaster were produced, would total surplus *increase*, *decrease*, or *remain constant*?

  d. By how much? $

Alternatively, suppose 12,000 toasters were produced for some unknown reason.
  e. How much were consumers willing to pay for the 12,000th toaster? $

  f. How much would the toaster industry's total cost decrease from NOT producing the 12,000th toaster? $

  g. If the 12,000th toaster were NOT produced, would total surplus *increase*, *decrease*, or *remain constant*?

  h. By how much? $

(2) [Economy-wide efficiency: 16 pts] The graph below shows a country's production possibility curve. The country is currently at point A, where the slope equals **-1/2**.
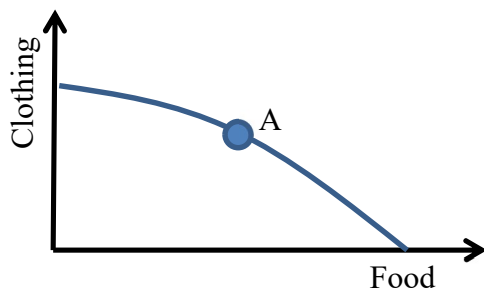
a. What is this **country's** opportunity cost of a unit of food?

units of clothing
units of food

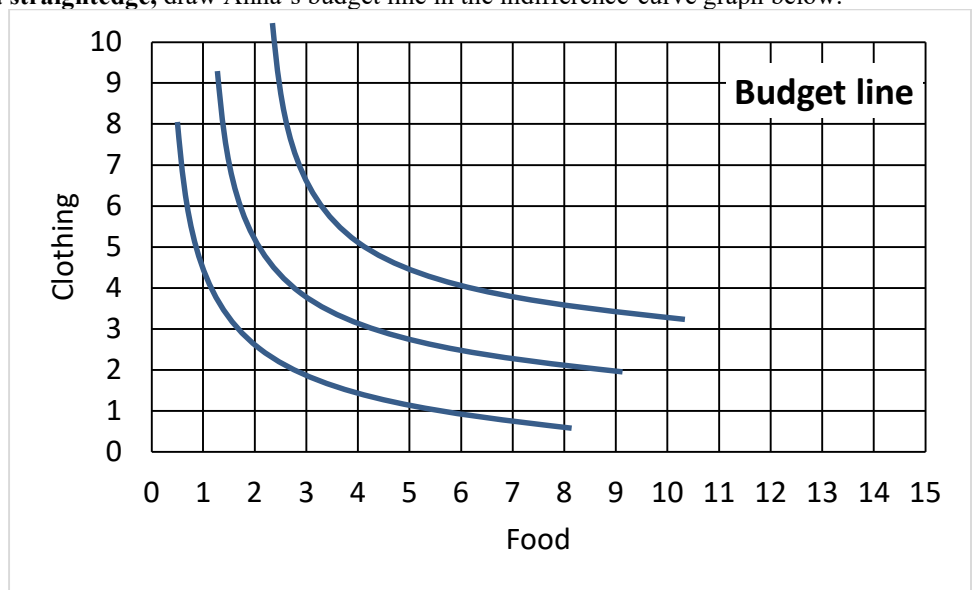b. What is this **country's** opportunity cost of a unit of clothing?

Assume this country's economy is in competitive equilibrium in all markets and the price of a unit of clothing is **$12.**

c. What must be the price of a unit of food?

$

Anna is a consumer in this economy. She has an income of **$ 60**.

d. **Using a straightedge,** draw Anna's budget line in the indifference-curve graph below.

e. What is **Anna's** opportunity cost of a unit of food?

units of clothing
units of food
units of clothing

f. What is **Anna's** opportunity cost of a unit of clothing?

g. How many units of clothing will Anna choose to purchase?

h. At **Anna's** chosen bundle, what is her marginal rate of substitution—that is, the |slope| of her indifference curve? (Give a number.)

(3) [Monopoly: 12 pts] Splish Splash Water Park is the only water park in the county, so it enjoys a local monopoly. Its marginal cost, average cost, and demand curves are shown below.
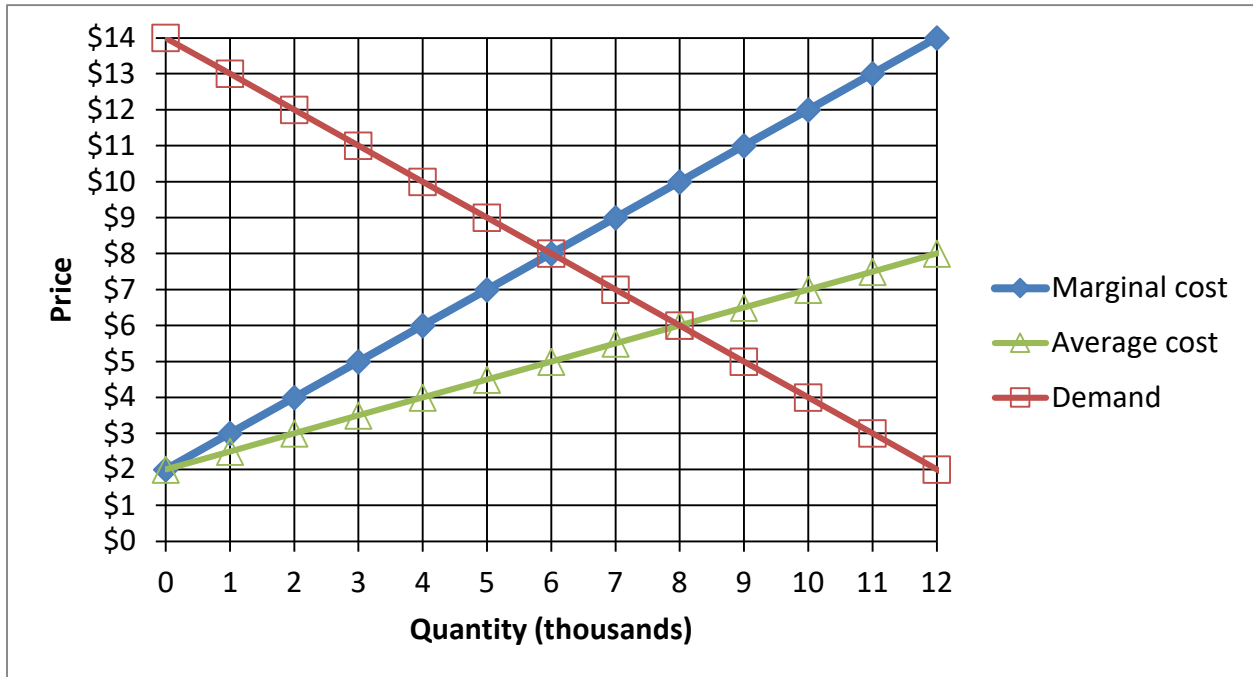
Assume that Splish Splash must charge the same price on every admission sold.

a. *Using a straightedge*, draw and label Splish Splash's marginal revenue curve.

b. Compute Splish Splash's profit-maximizing quantity.

c. Compute the price that Splish Splash would charge.

d. Compute Splish Splash's profits.

e. Compute consumer surplus

f. Compute the social deadweight loss from Splish Splash's monopoly pricing.

	thousand
$	
$	thousand
$	thousand
$	thousand

(4) [Monopoly price discrimination: 6 pts] Suppose the local orchestra sells tickets to both students and the general public. The orchestra manager believes the elasticity of demand by students is **–5**, and the elasticity of demand by the general public is **–1.5**. Assume the theatre's marginal cost of providing a ticket is **$12**.

a. To maximize profit, which group should get the **higher** price?

b. Compute the profit-maximizing ticket price for students.

c. Compute the profit-maximizing ticket price for the general public.

$
$

(5) [Competition versus collusion: 16 pts] Suppose a small group of firms produce laundry soap. The graph below shows the demand curve and the joint marginal cost or supply curve of the group of firms.
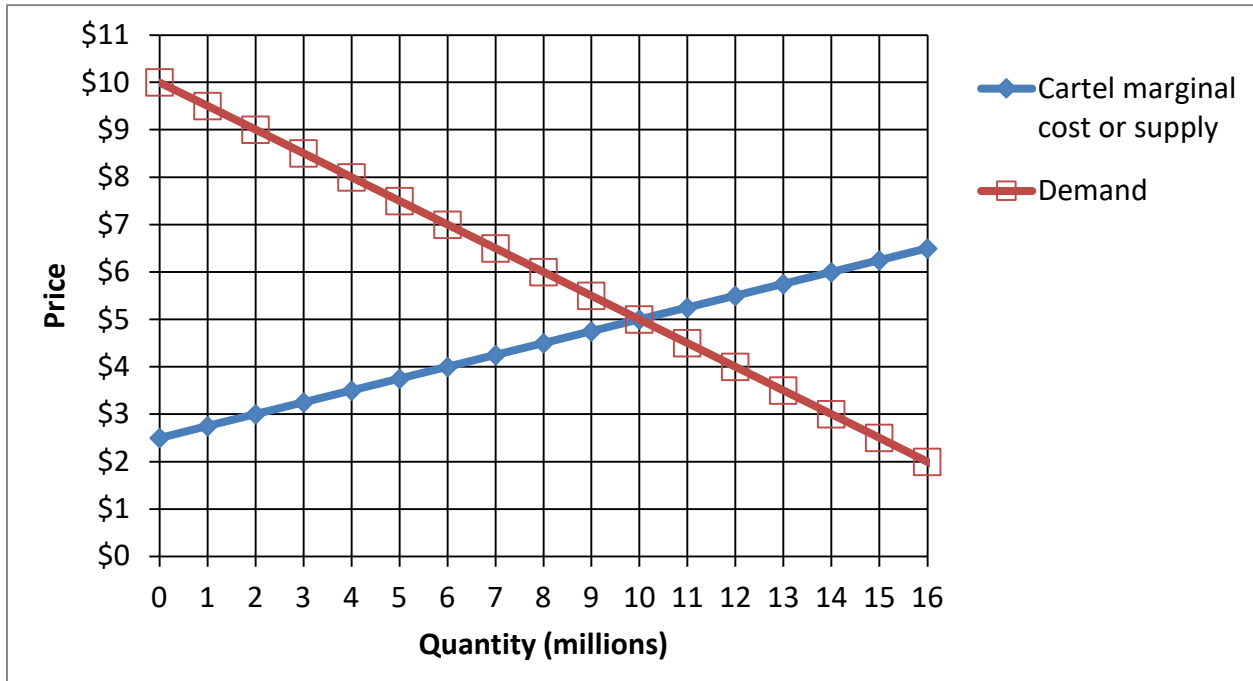
First, assume the firms *compete* with each other, each maximizing its own profit while taking the market price as given.

a. What will be the equilibrium market quantity?

	million

b. If output increased by one more unit at any firm, total costs would increase by how much?

$	

c. What will be the equilibrium market price?

$	

Second, alternatively assume the firms *collude* with each other, setting price jointly as a cartel to maximize the sum of their profits.

d. *Using a straightedge*, draw and label the colluding firms' marginal revenue curve.

e. What total quantity will the firms produce?

	million

f. If output increased by one more unit at any firm, total costs would increase by how much?
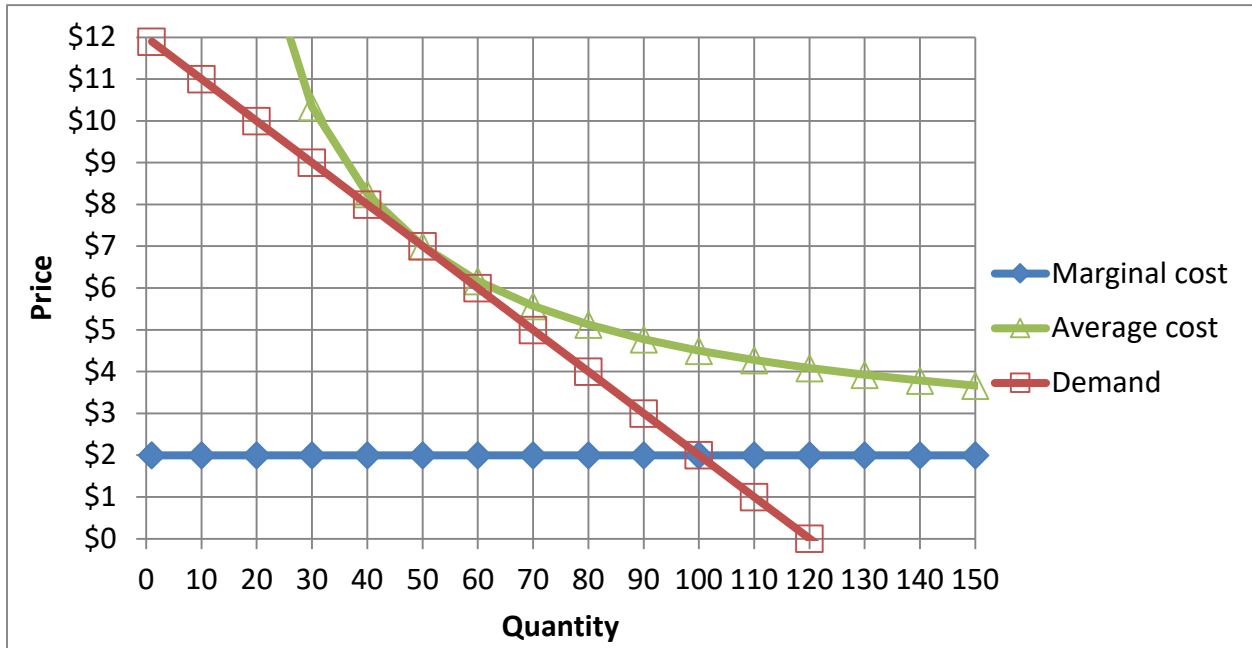
$	

g. What price will the firms jointly set?

$	

h. Compute the social deadweight loss from collusion.

$	million

(6) [Monopolistic competition: 18 pts] Abe sells sandwiches from a food truck downtown. The graph below shows his cost curves and demand curve.

a. Although there are other food trucks downtown, Abe's demand curve slopes down. Does that indicate that consumers view sandwiches from different trucks as *perfect substitutes* or *differentiated products*?

First suppose that Abe sets a price of **$4**, for some unknown reason.

b. How many sandwiches will Abe sell?

c. Will Abe make a *profit* or a *loss* ?

d. How much?

	sandwiches
$	

Now suppose that Abe sets a price to maximize his profit.

e. *Using a straightedge*, draw and label Abe's marginal revenue curve.

f. How many sandwiches will Abe sell?

g. What price will Abe set?

h. What is Abe's marginal cost?

i. What is Abe's profit?

	sandwiches
$	
$	
$	

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

(1) Which is more likely to take price as given: a gas station in a rural area, with no other gas stations within twenty miles; or a gas station in the city, with three other gas stations in the same neighborhood? Why? (Ignore the graph.)

(2) Suppose the government permitted automobile companies to set prices cooperatively.
   a. Who would gain? Who would lose?
   b. Would society as a whole gain or lose?
   c. Justify your answers with a supply-and-demand graph. Label all axes and curves. Shade the area of gain or loss for society as a whole.

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]