EXAMINATION 4 VERSION B
"Perfect and Imperfect Competition"
April 29, 2015

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 pt each, 8 pts total]

(1) Suppose the marginal cost of a blender is $10 but the marginal benefit to consumers of another blender is $5. Then producing one more blender will
a.   decrease total surplus by $15.
b.   decrease total surplus by $10.
c.   decrease total surplus by $5.
d.   increase total surplus by $15.
e.   increase total surplus by $10.
f.   increase total surplus by $5.
g.   have no effect on total surplus.

(2) A firm that takes price as given believes its marginal revenue from selling one more unit will be
a.   equal to zero.
b.   greater than the price of that unit.
c.   equal to the price of that unit.
d.   less than the price of that unit.

(3) If every consumer in the economy faces the same prices, then all consumers
a.   will choose combinations of goods where their marginal rates of substitution are exactly identical.
b.   have exactly the same income.
c.   will choose exactly the same combinations, or bundles, of goods.
d.   have exactly the same budget line.

(4) Firms X and Y both produce yogurt, but for some unknown reason, Firm X's marginal cost is $3 and Firm Y's marginal cost is $5. If one unit of output is shifted from Firm X to Firm Y, then total industry costs will
a.   increase by $2.
b.   increase by $3.
c.   increase by $5.
d.   decrease by $2.
e.   decrease by $3.
f.   decrease by $5.

(5) An industry is a natural monopoly if
a.   the industry became a monopoly without government interference.
b.   the only seller in the market sells a natural or "green" product.
c.   one firm owns all the key natural resources required to produce the product.
d.   a firm's average cost is negatively related to its quantity.

(6) Suppose a coffee shop sells 20 cups of specialty coffee if the price is $3, and sells 21 cups of the same coffee if the price is $2.95. The shop's marginal revenue of the 21st cup is therefore
a.   negative $2.25 .
b. $0.90 .
c. $1.95 .
d. $2.95 .
e. $3.00 .
f. $20.00 .

(7) Which of the following are illegal under U.S. antitrust laws?
a.   being a monopoly.
b.   mergers that would tend to monopolize an industry.
c.   excessive profits.
d.   All of the above.

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

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) [Perfect competition: 10 pts] Suppose the elasticity of demand in the market for gasoline is -2 .
    a. Is market demand *elastic, inelastic,* or *unit-elastic?*

    b. Suppose the price of gasoline decreased by 1%. By how much would the quantity demanded increase?

	%

Suppose that Acme Gasoline has a market share of 10% in this market. Assume the other firms in this market always keep their quantities constant when Acme changes its price or quantity.
    c. Compute Acme's perceived elasticity of demand for its product.

    d. Is Acme's perceived demand *elastic, inelastic,* or *unit-elastic?*

    e. Suppose Acme decreased the price of gasoline by 1%. By how much would Acme's quantity increase?

	%

(2) [Monopoly price discrimination: 4 pts] Suppose a ballet company sells tickets to both students and the general public. The ballet company believes the elasticity of demand by students is –6, and the elasticity of demand by the general public is –1.25. Assume the marginal cost of a seat at the ballet is $20.

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

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

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$

(3) [Economy-wide efficiency: 20 pts] The graph at right shows a country's production possibility curve.
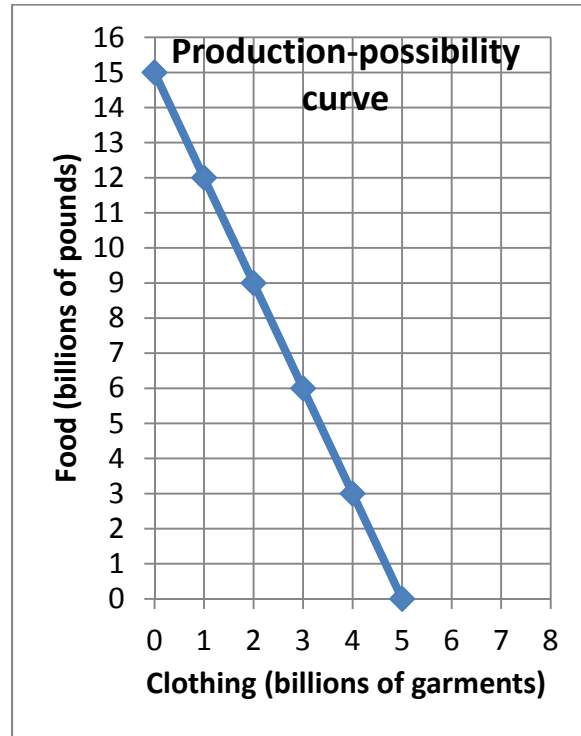
a. What is this **country's** opportunity cost of a garment?

pounds of food

b. What is this **country's** opportunity cost of a pound of food?

garments

Assume this country's economy is in competitive equilibrium in all markets and the price of a pound of food is **$ 4**.

c. What must be the marginal cost of food (per pound) for all firms producing food?

$

d. What must be the price of a garment?

$

e. What must be the marginal cost of clothing (per garment) for all firms producing garments?

$

Production-possibility curve

Food (billions of pounds) vs. Clothing (billions of garments)

Adam is a consumer in this economy. He has an income of **$ 120**.

f. *Using a straightedge,* draw Adam's budget line in the graph at right.

g. What is the slope of Adam's budget line?

h. What is **Adam's** opportunity cost of a garment?

pounds of food

i. What is **Adam's** opportunity cost of a pound of food?

garments

j. What is Adam's marginal rate of substitution of clothing for food—that is, the slope of his indifference curve—at his preferred bundle on this budget line?

Budget line

Food (pounds) vs. Clothing (garments)
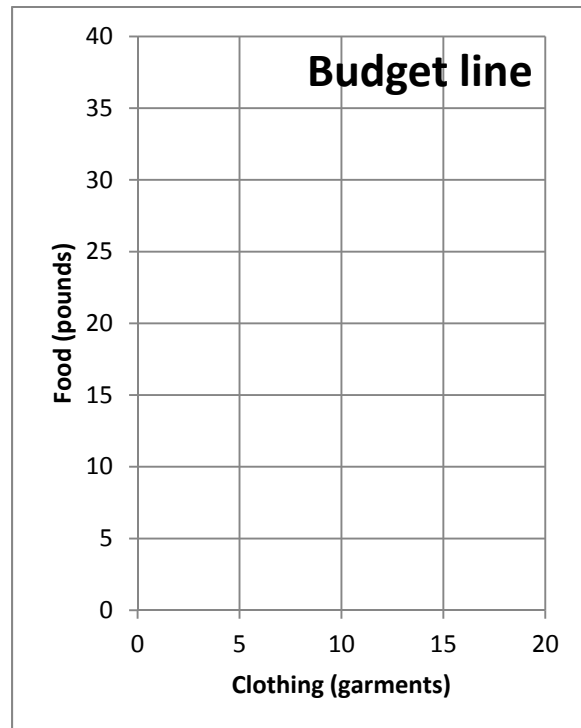
(4) [Monopoly, price discrimination: 20 pts] MoviePlex is the only movie theatre in town, so it enjoys a local monopoly. Its marginal cost, average cost, and demand curves are shown below.
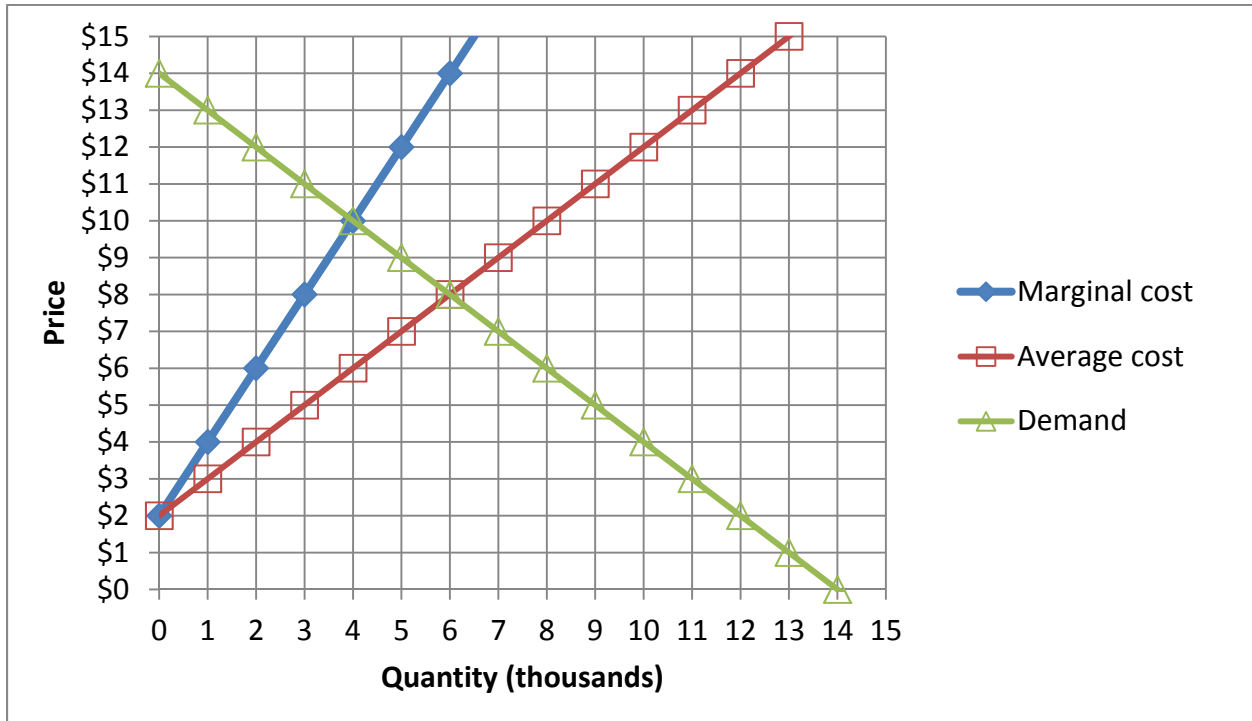
First, suppose MoviePlex must charge the same price on every movie admission sold.
   a. *Using a straightedge*, draw and label MoviePlex' marginal revenue curve.

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b. Compute MoviePlex's profit-maximizing quantity.	thousand
c. Compute the price that MoviePlex would charge.	$
d. Compute MoviePlex's profits.	$ thousand
e. Compute consumer surplus	$ thousand
f. Compute the social deadweight loss.	$ thousand

Second, suppose MoviePlex can charge a different price for every movie admission sold. In other words, suppose *perfect price discrimination* is possible, where every movie admission can be sold for the maximum price the buyer is willing to pay.
   g. Compute MoviePlex's profit-maximizing quantity.

g. Compute MoviePlex's profit-maximizing quantity.	thousand
h. Compute MoviePlex's revenue.	$ thousand
i. Compute MoviePlex's profits.	$ thousand
j. Compute consumer surplus.	$ thousand
k. Compute the social deadweight loss.	$ thousand

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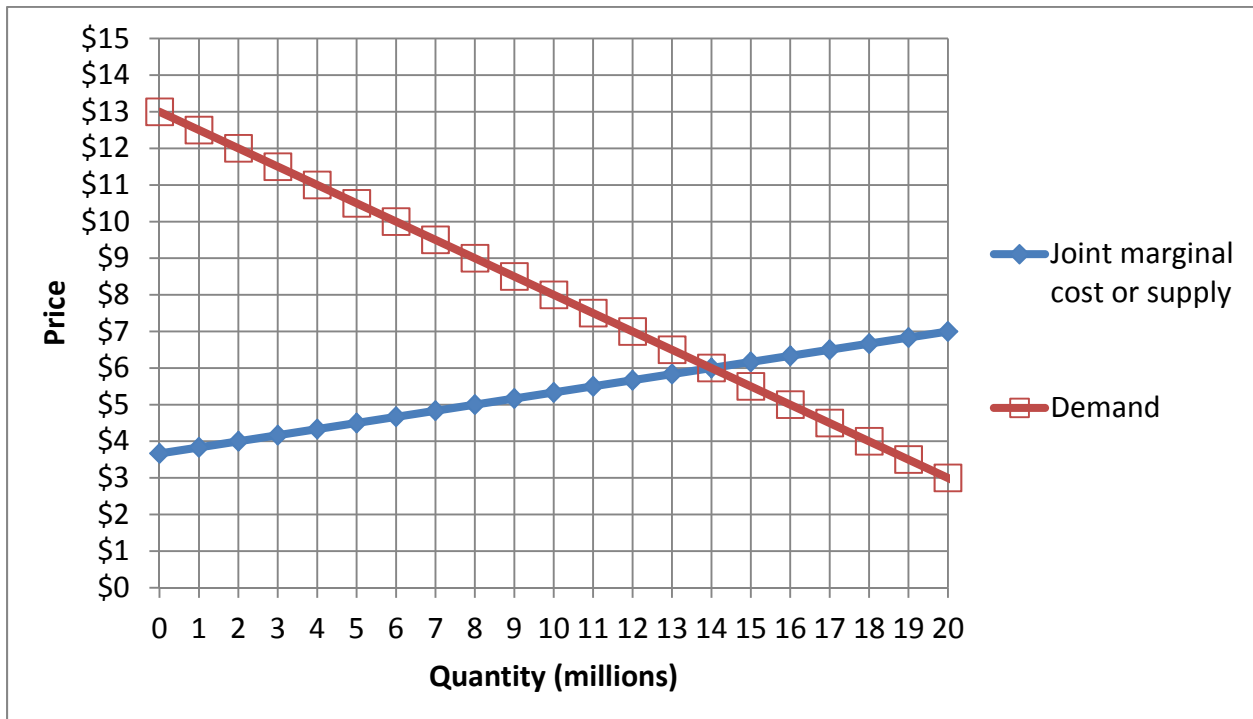
First, assume the firms *compete* with each other, each maximizing its own profit while taking the market price as given.

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 deadweight loss from collusion.

$ million

(6) [Monopolistic competition: 16 pts] Yolanda operates a food truck that serves sandwiches downtown during lunch hour. The graph below shows marginal cost and average cost curves for Yolanda's sandwiches.
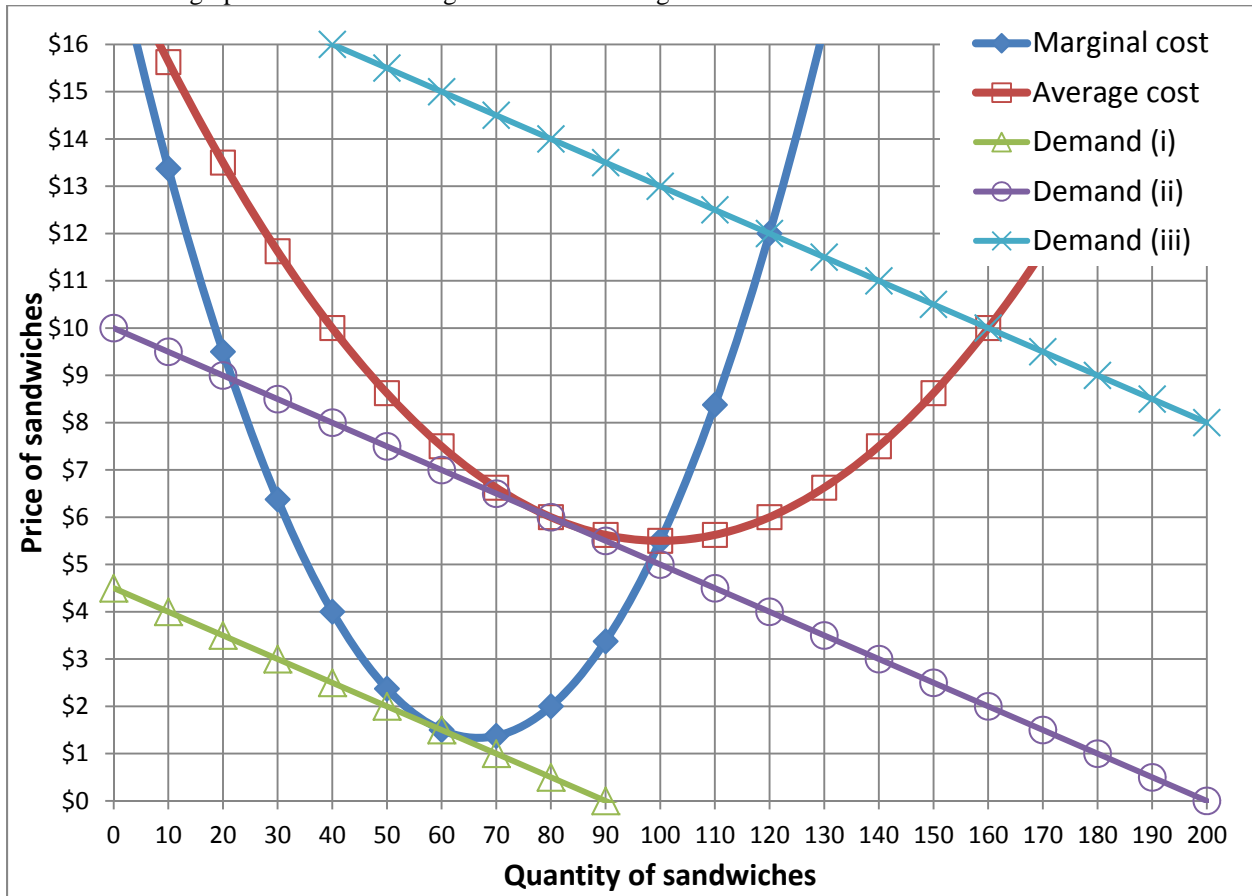
a. Although there are many other food trucks in town, Yolanda's demand curve slopes down. Does that indicate that foods from different trucks are *perfect substitutes* or *differentiated products*?

Assume there is free entry in this market. Anyone can operate a food truck if they think they can make a profit. Consider long-run equilibrium.

b. Which demand curve represents long-run equilibrium—demand (i), demand (ii), or demand (iii) ?

c. What is Yolanda's equilibrium price of a sandwich?

$

d. What is Yolanda's equilibrium quantity of sandwiches?

sandwiches

e. What is Yolanda's equilibrium average cost of a sandwich?

$

f. What is Yolanda's equilibrium marginal cost of a sandwich?

$

g. What is Yolanda's equilibrium profit?

$

h. What quantity of Yolanda's sandwiches would be economically efficient— that is, would eliminate any deadweight loss?

sandwiches

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

(1) Suppose the government permitted firms in the milk industry to set prices cooperatively.
   a.   Who would gain?
   b.   Who would lose?
   c.   Would society as a whole gain or lose?
Justify your answers with a supply-and-demand graph.

(2) The Des Moines Arts Festival features craft artists producing handmade jewelry, clothing, sculpture, etc.
   a.   Do craft artists produce "differentiated products"? Why or why not?
   b.   Is price equal to marginal cost for craft artists? Why or why not?
   c.   Is price equal to average cost for craft artists? Why or why not?

Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]