ECON 002 - Principles of Microeconomics Signature: _____
Drake University, Fall 2015
William M. Boal Printed name: _____

EXAMINATION 4 VERSION A
"Perfect and Imperfect Competition"
November 30, 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, 10 pts total]

(1) A perfectly competitive firm expects that if it increases its output, this will cause the price to
a. increase.
b. decrease.
c. stay the same.
d. cannot be determined from information given.

(2) Suppose that the bread industry is producing 10 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.

(3) Suppose the price of a pair of jeans is $30 and the price of a teeshirt is $5. If the economy is perfectly competitive, then these prices indicate that the *economy's* opportunity cost of a pair of jeans is
a. 1/5 of a teeshirt.
b. 1/6 of a teeshirt.
c. 1 teeshirt.
d. 5 teeshirts.
e. 6 teeshirts.

(4) A "natural monopoly" is a firm that enjoys
a. a downward-sloping average cost curve.
b. patent protection.
c. an exclusive government franchise allowing it alone to sell the product.
d. exclusive ownership of a natural resource essential for producing the product.

(5) Suppose a car dealer with market power is selling five cars per day at $10,000 each. If it cuts the price to $9,000, it can sell one more car (that is, six cars per day). Marginal revenue for the sixth car is thus
a. $10,000.
b. $9,000.
c. $5,000.
d. $4,000.

(6) At its current level of output, Acme Manufacturing's marginal revenue is $5 and its marginal cost is $4. Acme can increase its profit by
a. increasing output.
b. decreasing output.
c. Acme cannot increase profit by either increasing or decreasing output.
d. Cannot be determined from information given.

(7) After a cartel agreement is reached, each cartel member has an incentive to cheat by
a. producing less than its quota of output.
b. raising its price higher than the cartel's agreed price.
c. shutting down all production.
d. producing more than its quota of output.

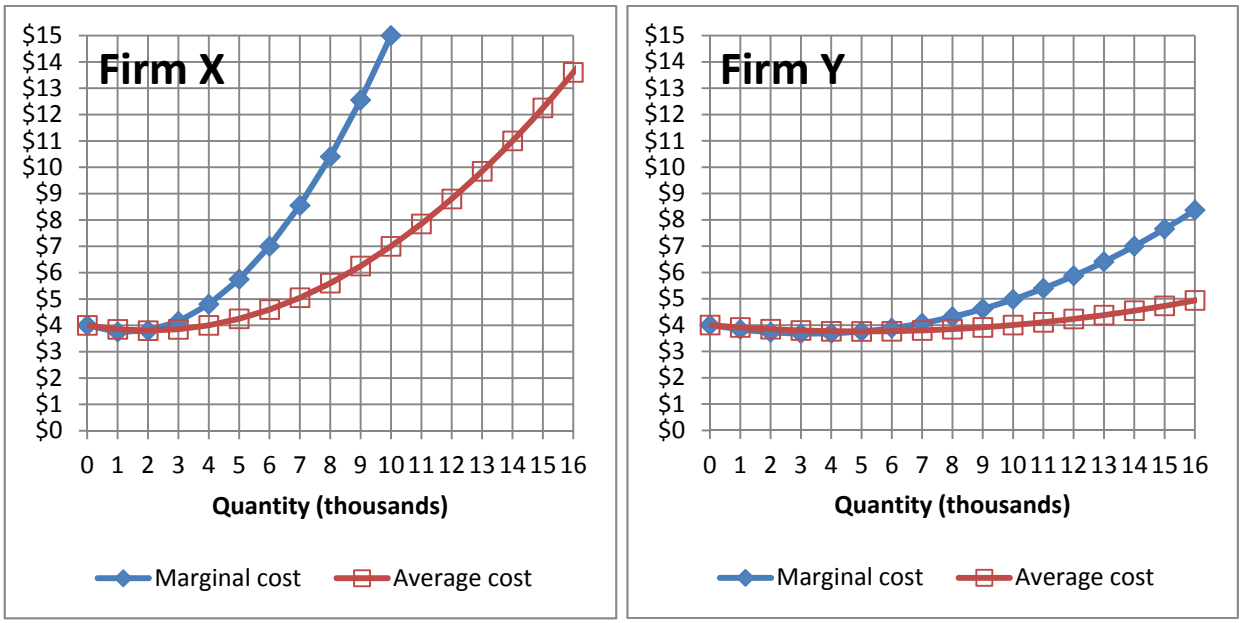
(8) Antitrust laws prohibit
a. dishonest accounting practices.
b. deceptive advertising
c. anticompetitive practices.
d. all of the above.

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

(10) Marginal-cost pricing occurs in markets characterized by
a. perfect competition.
b. monopoly.
c. monopolistic competition.
d. both (a) and (c).

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) [Economy-wide efficiency: 12 pts] Suppose there are two firms in the industry producing snow shovels, with the marginal cost curves and average cost curves shown in the graph below.



a. Suppose Firm X is currently producing **10** thousand snow shovels. If Firm X increases production by one snow shovel, by how much will its total cost increase? (Give an answer to the nearest whole dollar.)

$

b. Suppose Firm Y is currently producing **10** thousand snow shovels. If Firm Y increases production by one snow shovel, by how much will its total cost increase? (Give an answer to the nearest whole dollar.)

$

First assume the firms' output levels must be set by a government planner. The planner wants the firms to produce a total of **20** thousand snow shovels, but total industry cost (that is, the combined costs for both firms) must be as low as possible.

c. Which firm should be instructed to produce more output—*Firm X* or *Firm Y*, or should they produce an *equal* amount of output to make total industry cost as low as possible?

d. How much output should Firm X produce?

thousand

e. How much output should Firm Y produce?

thousand

Alternatively assume there is no government planner. Assume instead that the two firms are competitive and that they each maximize their own profit while taking price as given.

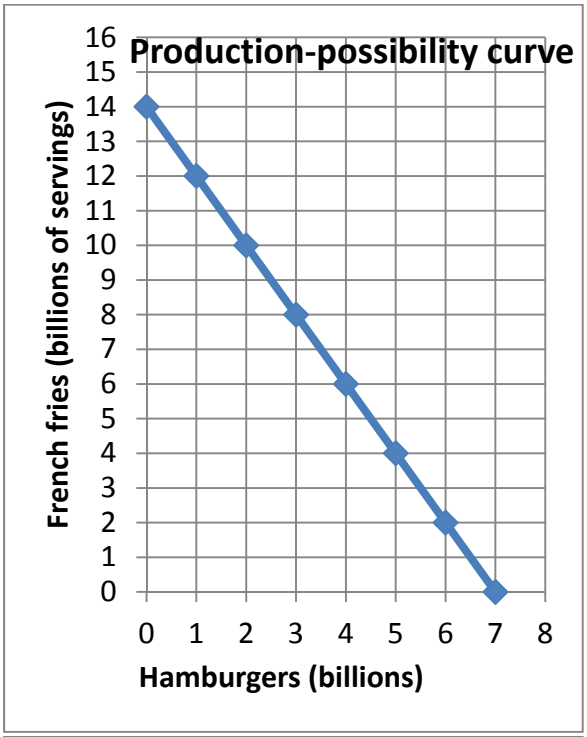
f. What price for snow shovels will motivate the two firms to produce a total of **20** thousand snow shovels at lowest total industry cost?

$

(2) [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 hamburger? servings of French fries

b. What is this **country's** opportunity cost of a serving of French fries? hamburgers



Assume this country's economy is in competitive equilibrium in all markets and the price of a hamburger is $6.

c. What must be the marginal cost of producing hamburgers? $

d. What must be the price of a serving of French fries? $

e. What must be the marginal cost of producing French fries? $

Luke is a consumer in this economy. He has an income of **$ 60**.

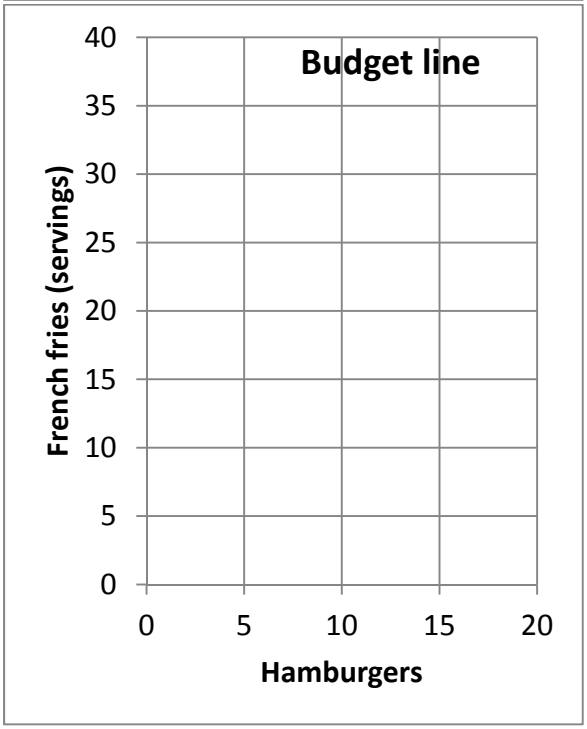
f. *Using a straightedge*, draw Luke's budget line in the graph at right.

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

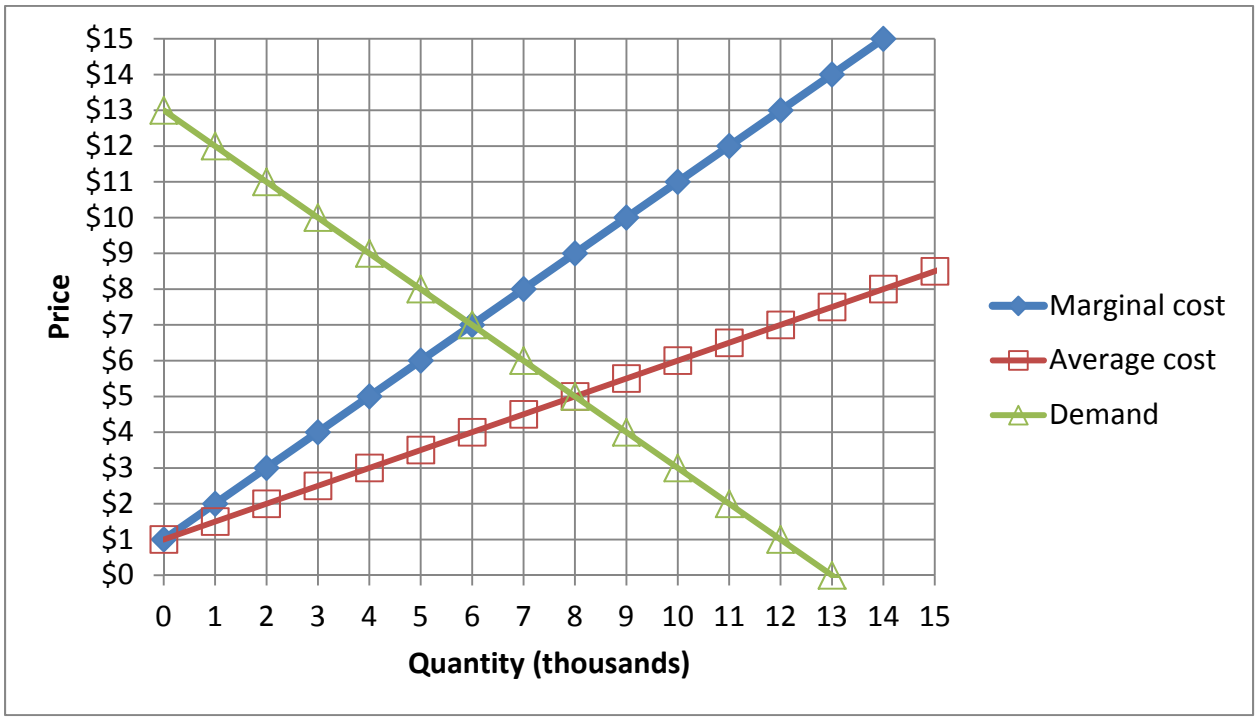
h. What is **Luke's** opportunity cost of a hamburger? servings of French fries

i. What is **Luke's** opportunity cost of a serving of French fries? hamburgers

j. What is Luke's marginal rate of substitution of hamburgers for French fries—that is, the slope of his indifference curve—at his preferred bundle on this budget line?



(3) [Monopoly, price discrimination: 20 pts] Zippy Roller Rink is the only roller rink in town, so it enjoys a local monopoly. Its annual marginal cost, average cost, and demand curves are shown below.



First, suppose Zippy must charge the same admission price to everyone.

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

b. Compute Zippy's profit-maximizing quantity.	thousand
c. Compute the price that Zippy would charge.	$
d. Compute Zippy's profit.	$ thousand
e. Compute consumer surplus	$ thousand
f. Compute the social deadweight loss from this pricing scheme.	$ thousand

Second, suppose Zippy can charge a different admission price to each person, equal to the maximum price that person is willing to pay. In other words, suppose *perfect price discrimination* is possible.

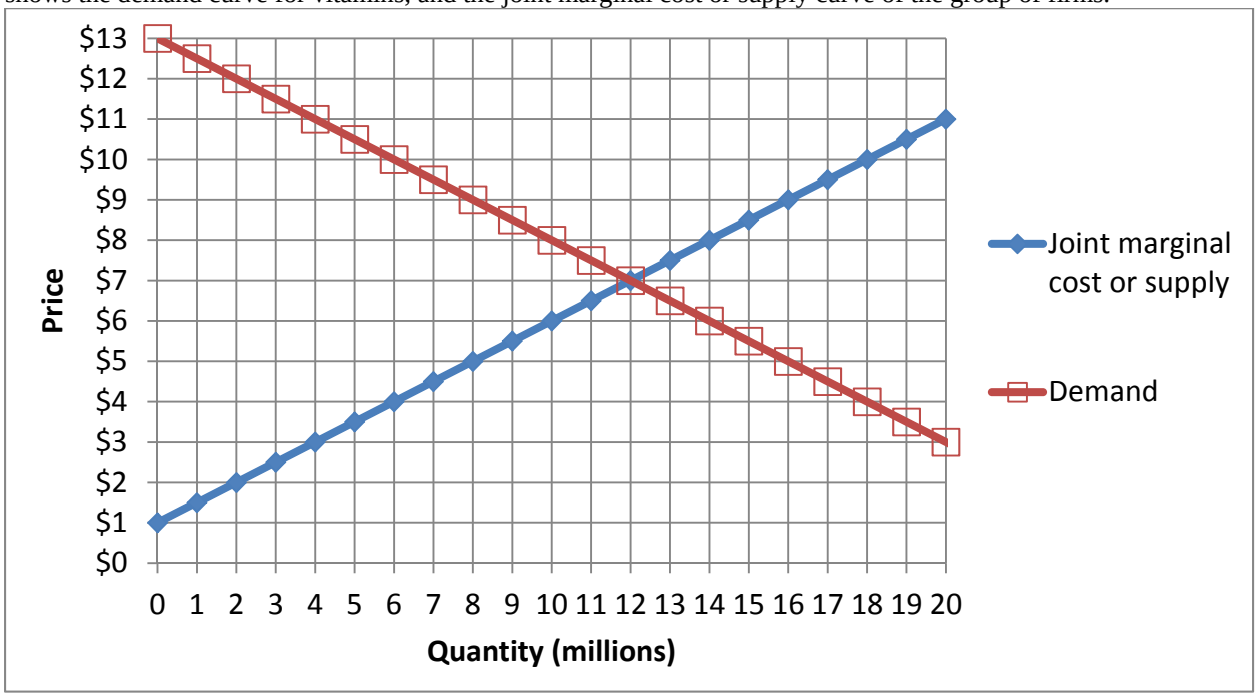
g. Compute Zippy's profit-maximizing quantity.	thousand
h. Compute Zippy's revenue.	$ thousand
i. Compute Zippy's profit.	$ thousand
j. Compute consumer surplus.	$ thousand
k. Compute the social deadweight loss from this pricing scheme.	$ thousand

(4) [Monopoly price discrimination: 4 pts] Suppose a movie theatre sells tickets to both children and adults. The theatre believes the elasticity of demand by children is –9, and the elasticity of demand by adults is –1.5. Assume the theatre's marginal cost of a ticket is $4.

a. Compute the profit-maximizing ticket price for children. $

b. Compute the profit-maximizing ticket price for adults. $

(5) [Competition versus collusion: 16 pts] Suppose a small group of firms produce vitamins. The graph below shows the demand curve for vitamins, 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.

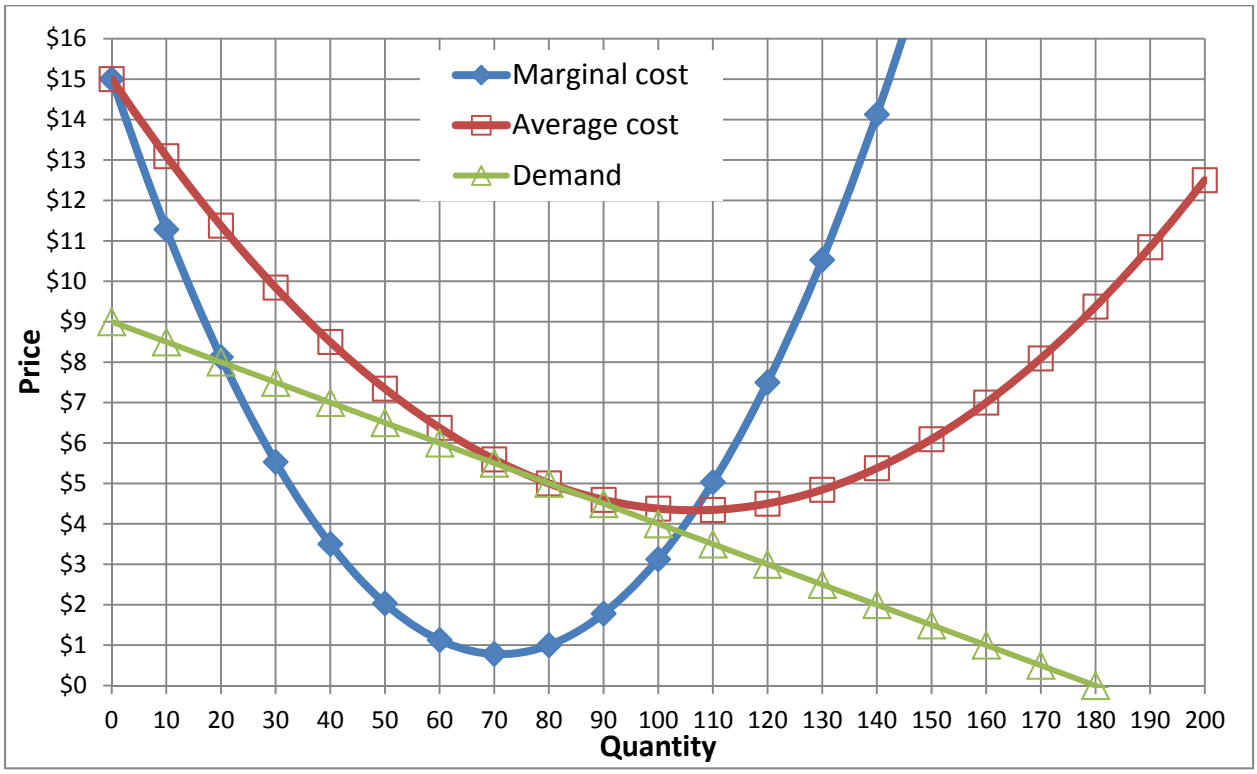
e. What total quantity will the firms produce? million

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: 14 pts] Kelsey sells ice cream cones from a stand on the beach. The graph below shows her cost curves and demand curve.



a. Although there are other ice cream stands on the beach, Kelsey's demand curve slopes down. Does that indicate that ice cream cones from different stands are *perfect substitutes* or *differentiated products*?

b. *Using a straightedge*, draw and label Kelsey's marginal revenue curve.

c. What price will Kelsey set for ice cream cones?

d. How many ice cream cones will she sell?

e. What is Kelsey's average cost of an ice cream cone?

f. What is Kelsey's marginal cost of an ice cream cone?

$
ice cream cones
$
$

g. Kelsey clearly has market power because her demand curve slopes down. So why does she have zero economic profit? Give the most plausible explanation.

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

(1) Which company is more likely to price its products above marginal cost—Microsoft or Dell Computer? Why?

(2) Consider the following statement. "Perfect competition is only the 'law of the jungle.' If the government would allow firms to set prices cooperatively, everyone would benefit and society would be better off."
   a. Do you agree or disagree? Why?
   b. Illustrate your answer with a supply-and-demand graph, using the concept of deadweight loss.

Circle the question you are answering and write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]