ECON 002 - Principles of Microeconomics Signature: _____
Drake University, Fall 2017
William M. Boal Printed name: _____

EXAMINATION 4 VERSION B
"Perfect and Imperfect Competition"
November 27, 2017

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators, calculators with alphabetical keyboards, wireless devices and mobile phones 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 for some reason that the quantity traded in a market for cupcakes is 10 million cupcakes, but the market is not in equilibrium. Rather, at this quantity, the height of the supply curve is \$3 and the height of the demand curve is \$5. Then producing one more cupcake would
a. increase social welfare by \$2.
b. decrease social welfare by \$3.
c. increase social welfare by \$5.
d. decrease social welfare by \$2.
e. Cannot be determined without knowing the equilibrium price.

(2) Suppose the price of pens is \$1.00 and the price of pencils is \$0.20. Both industries are perfectly competitive. The slope of the production-possibility curve, with pencils on the vertical axis and pens on the horizontal axis, must be
a. -1/4.
b. -1/5.
c. -1.
d. -4.
e. -5.
f. -20.

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

(4) Suppose a flower vendor now sells 5 bouquets per hour at the price of \$20. If the vendor drops the price to \$19, the vendor can sell 6 bouquets per hour. The marginal revenue of the 6^{th} bouquet is therefore
a. \$1 .
b. \$4 .
c. \$10.
d. \$14 .
e. \$15 .

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

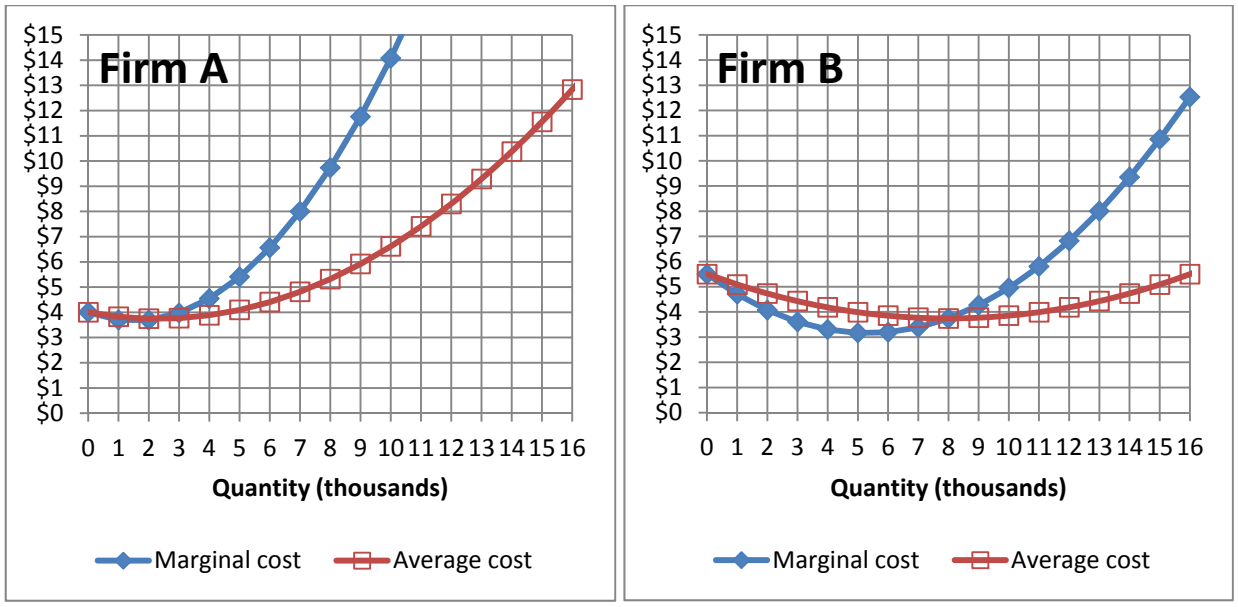
(6) Cartels often collapse because
a. costs fluctuate unpredictably.
b. each firm has an incentive to cut price and produce too much.
c. they tend to raise price above the profit-maximizing level.
d. forecasting demand is difficult.

(7) The first federal antitrust law in the United States, enacted in 1890, was the
a. Norris-LaGuardia Act.
b. Robinson-Patman Act.
c. Sherman Act.
d. Wagner Act.

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

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 brooms, with the marginal cost curves and average cost curves shown in the graph below.



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

$

b. Suppose Firm B is currently producing **10** thousand brooms. If Firm B increases production by one broom, 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 brooms, 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 A* or *Firm B*, or should they produce an *equal* amount of output to make total industry cost as low as possible?

d. How much output should Firm A produce?

thousand

e. How much output should Firm B produce?

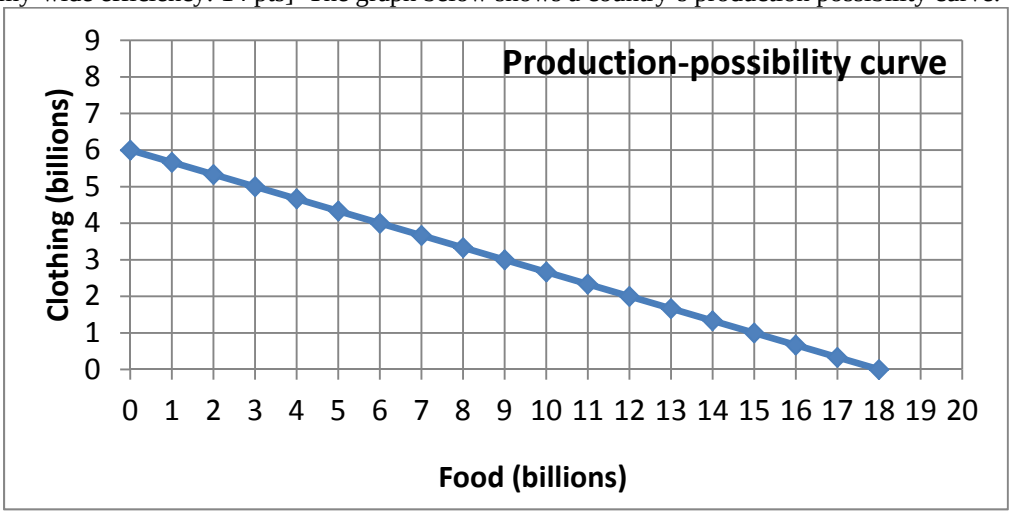
thousand

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 brooms will motivate the two firms to produce a total of **20** thousand brooms at lowest total industry cost?

$

(2) [Economy-wide efficiency: 14 pts] The graph below shows a country's production possibility curve.



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

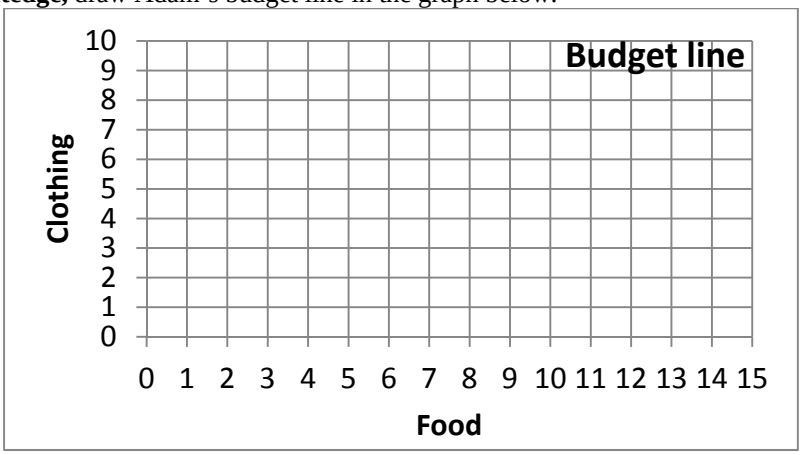
b. What is this **country's** opportunity cost of a unit of clothing? units of food

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

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

Adam is a consumer in this economy. He has an income of **$ 30**.

d. **Using a straightedge,** draw Adam's budget line in the graph below.

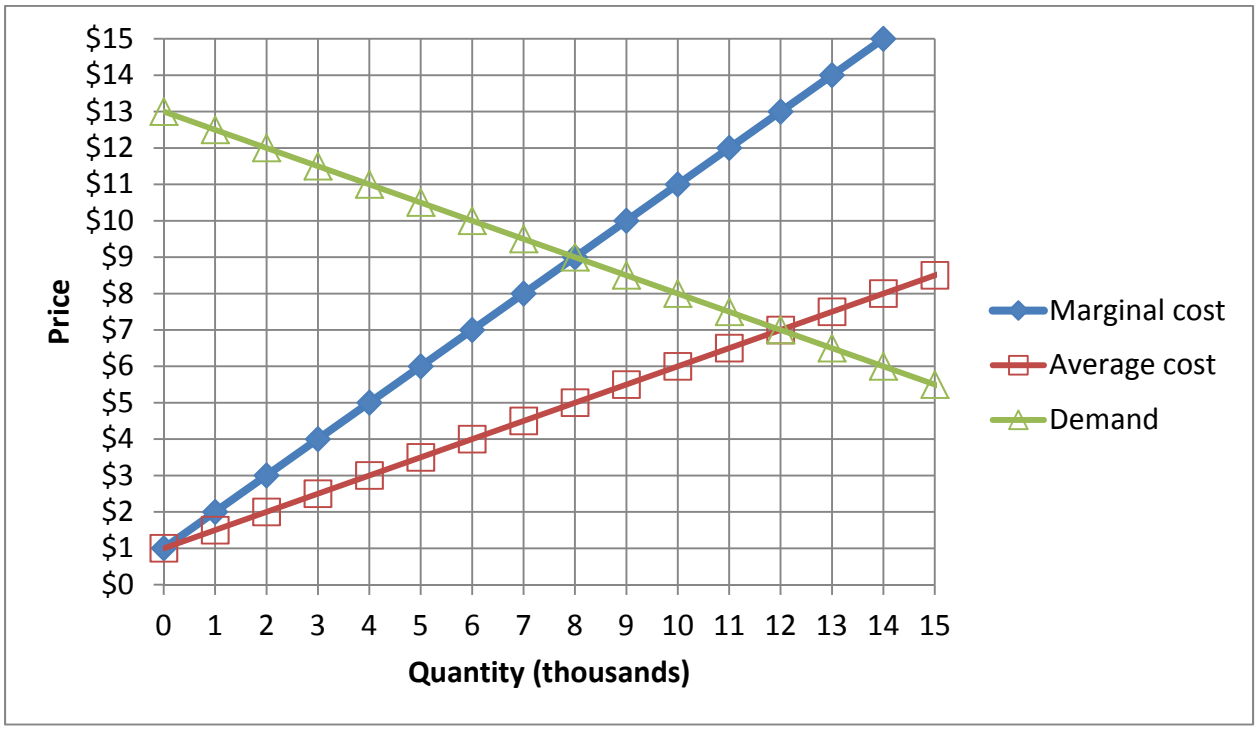


e. What is **Adam's** opportunity cost of a unit of food? units of clothing

f. What is **Adam's** opportunity cost of a unit of clothing? units of food

g. Sketch an indifference curve tangent to Adam's budget line. What is the slope of that indifference curve (that is, Adam's marginal rate of substitution) at the tangency point?

(3) [Monopoly, price discrimination: 22 pts] Funland is the only theme park in its region, so it enjoys monopoly power. The graph below shows Funland's daily demand, marginal cost, and average cost curves.



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

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

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

Second, suppose Funland can somehow 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.

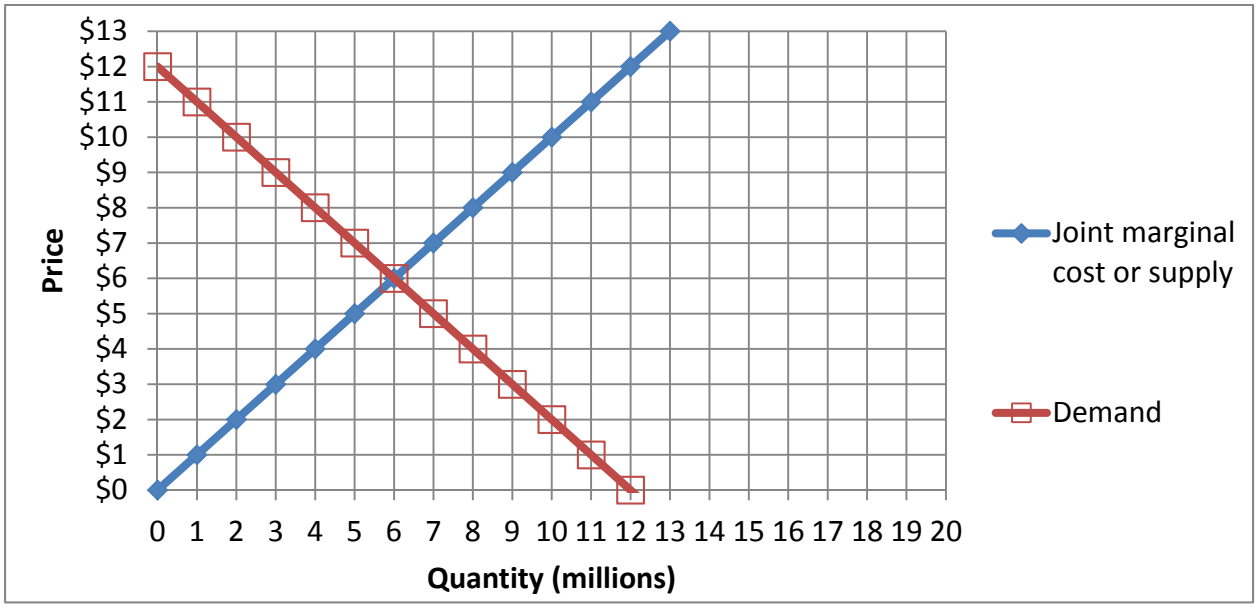
g. Compute Funland's profit-maximizing quantity.	thousand
h. Compute Funland's revenue.	$ thousand
i. Compute Funland's profit.	$ thousand
j. Compute consumer surplus.	$ thousand
k. Compute the social deadweight loss from this pricing scheme.	$ thousand

(4) [Monopoly price discrimination: 4 pts] Suppose the only movie theatre in town sells tickets to both children and adults. The theatre believes the elasticity of demand by children is –5, and the elasticity of demand by adults is –(3/2). 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 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.

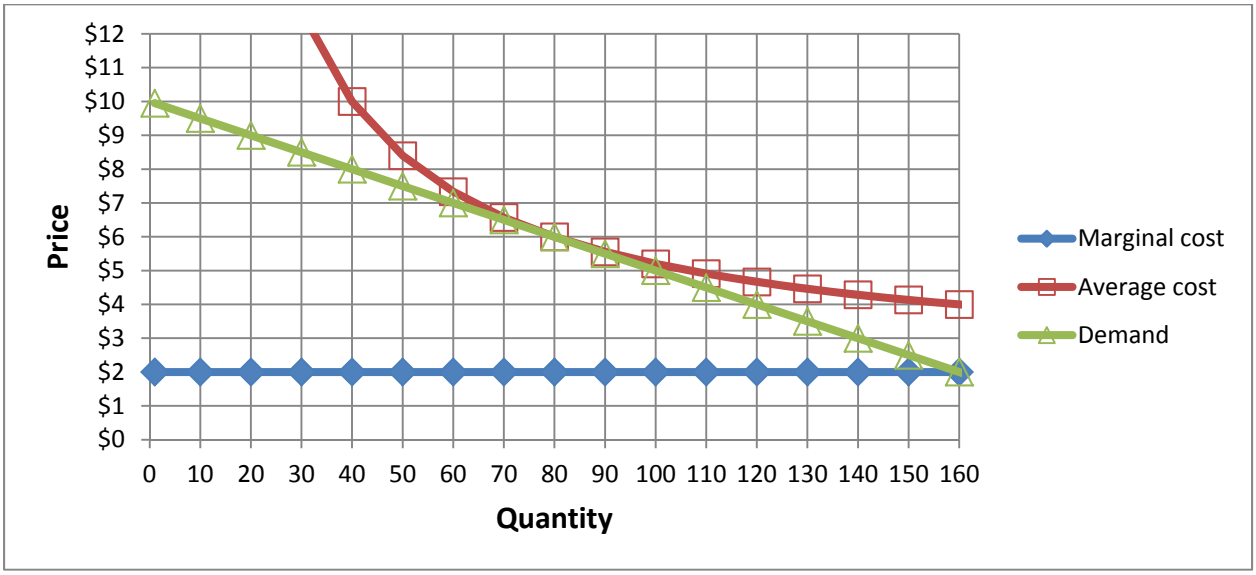
e. What total quantity will the firms produce? million

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: 20 pts] Brianna 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 same beach, Brianna's demand curve slopes down. Does that indicate that consumers view ice cream from different stands as *perfect substitutes* or *differentiated products*?

First suppose that Brianna sets a price of $8, for some unknown reason.

b. How many ice cream cones will she sell? cones

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

d. How much? $

Now suppose that Brianna sets a price to maximize her profit.

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

f. How many cones will Brianna sell? cones

g. What price will Brianna set? $

h. What is Brianna's marginal cost? $

i. What is Brianna's average cost? $

j. Brianna clearly has market power because her demand curve slopes down. So why does she have zero economic profit, unlike a monopolist? Give the most plausible explanation.

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

(1) Why do software producers like Adobe and Microsoft offer big discounts to students (often more than 50%) but hardware manufacturers like Dell, HP, and Gateway do not? Explain your reasoning. (Ignore the graph.)

(2) Who wins and who loses when a cartel collapses? Does society win or lose? Justify your answer with a supply-and-demand graph showing consumer and producer surplus.

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]