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

Printed name: ______________________________

EXAMINATION 4 VERSION A
"Perfect and Imperfect Competition"
November 30, 2022

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 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, 22 pts total]

(1) Suppose the paper industry is perfectly competitive and the price of a ream of paper is $5. Then any firm in the paper industry believes its marginal revenue is
a. more than $5.
b. less than $5.
c. exactly equal to $5.
d. zero.

(2) 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.

(3) 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.

(4) Suppose the marginal cost producing of a car is $10,000 but the marginal benefit to consumers of another car is $15,000. Then producing one more car will
a. decrease total surplus by $10,000.
b. decrease total surplus by $5,000.
c. increase total surplus by $5,000.
d. increase total surplus by $10,000.
e. increase total surplus by $25,000.

(5) Efficiency in consumption requires that all consumers
a. have the same budget lines.
b. have equal marginal rates of substitution.
c. have equal incomes.
d. choose identical combinations, or bundles, of goods.
e. All of the above.

(6) Firms X and Y both produce motor oil, but for some unknown reason, Firm X's marginal cost is $3 and Firm Y's marginal cost is $5. If one quart 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 $8.

(7) If the economy is perfectly competitive in all markets, it is always
a. on the production-possibility curve.
b. inside the production-possibility curve.
c. outside the production-possibility curve.
d. cannot be determined from the information given.

(8) Suppose the price of a mobile phone is $400 and the price of a computer is $800. If the economy is perfectly competitive, then these prices indicate that the *economy's* opportunity cost of a phone is
a. 1/4 of a computer.
b. 1/2 of a computer.
c. 1 computer.
d. 2 computers.
e. 4 computers.

(9) A monopoly 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.

(10) If at the current level of output, a firm's marginal revenue is greater than marginal cost,
a. the firm can increase profit by increasing output.
b. the firm can increase profit by decreasing output.
c. the firm can increase profit by shutting down.
d. the firm cannot change its profit through small changes in output.

(11) 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. each firm's average cost curve slopes down.

(12) Suppose a sandwich stand sells 10 sandwiches per hour if the price is \$5, and sells 11 sandwiches if the price is lowered to \$4.75. The stand's marginal revenue of the 11th sandwich is therefore
a. \$0.25 .
b. \$2.25 .
c. \$2.50 .
d. \$4.75 .
e. \$5.00 .

(13) 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.

(14) Under perfect price discrimination, consumer surplus is
a. zero.
b. positive, but less than under single-price monopoly.
c. positive, and more than under single-price monopoly.
d. negative.

(15) Perfect price discrimination is impractical because a monopolist
a. cannot know how much each customer is willing to pay for the product.
b. always has a marginal cost greater than anyone's willingness to pay.
c. is not really interested in maximizing profit.
d. faces downward-sloping demand.

(16) 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.

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

(18) 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.

(19) Suppose the computer chip industry has two firms, each of which has the same marginal cost, and that the market elasticity of demand is -5. If the industry is a Cournot oligopoly, the markup of price over marginal cost (P-MC)/P must be
a. 2%.
b. 5%.
c. 10%.
d. 50%.
e. Cannot be determined from information given.

(20) 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.

(21) If the products of different firms are "differentiated," then each firm

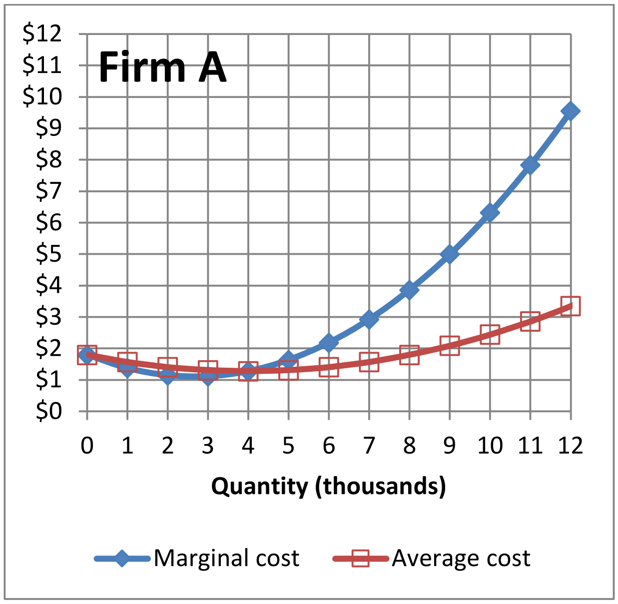
a. faces upward-sloping demand.
b. faces downward-sloping demand.
c. faces horizontal (perfectly elastic) demand.
d. takes price as given.

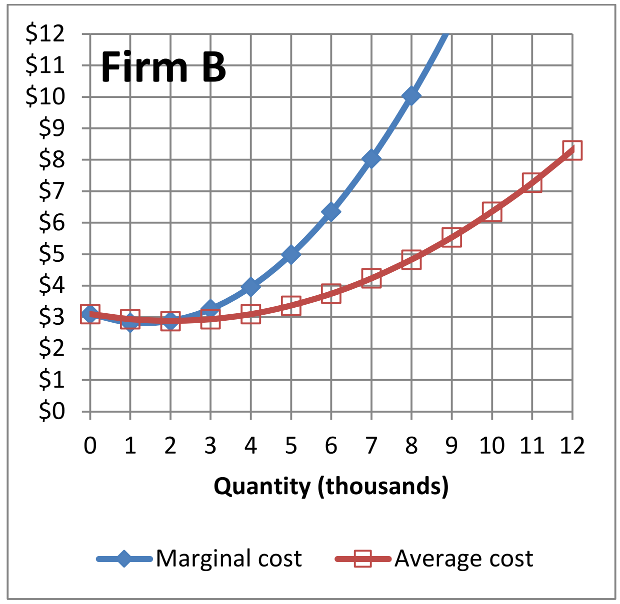
(22) Entry into the ethnic restaurant business is practically free, but each restaurant's cuisine is somewhat unique. Therefore, a sensible economic model for ethnic restaurants is

a. monopoly.
b. joint-profit-maximizing cartel.
c. monopolistic competition.
d. perfect competition.

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 A is currently producing **7** thousand snow shovels. If Firm A 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 B is currently producing **7** thousand snow shovels. If Firm B increases production by one snow shovel, by how much will its total cost increase? (Give an answer to the nearest whole dollar.)	$

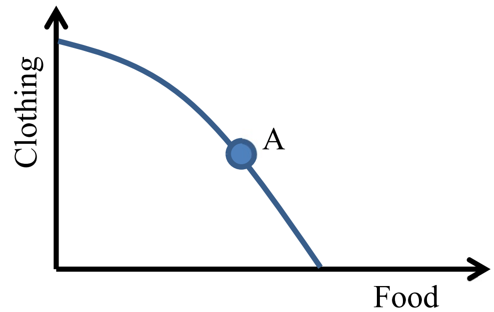
First assume the firms' output levels must be set by a government planner. The planner wants the firms to produce a total of **14** thousand snow shovels, but total industry cost (that is, the combined costs for both firms) must be as low as possible.

c. Which firm should be instructed to produce more output—*Firm 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 snow shovels will motivate the two firms to produce a total of **14** thousand snow shovels at lowest total industry cost?	$

(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 -2.



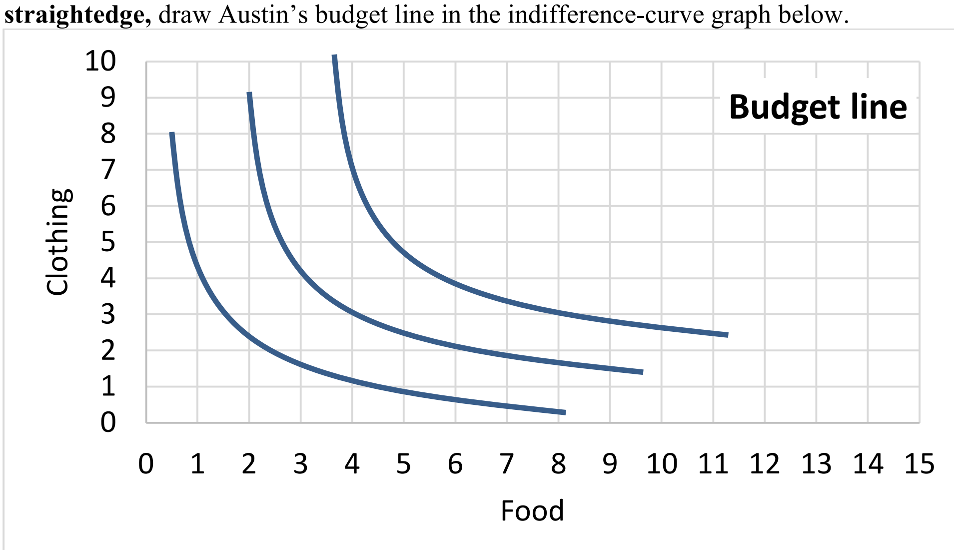
a. What is this **country's** opportunity cost of a unit of food?	units of clothing
b. What is this **country's** opportunity cost of a unit of clothing?	units of food

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

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

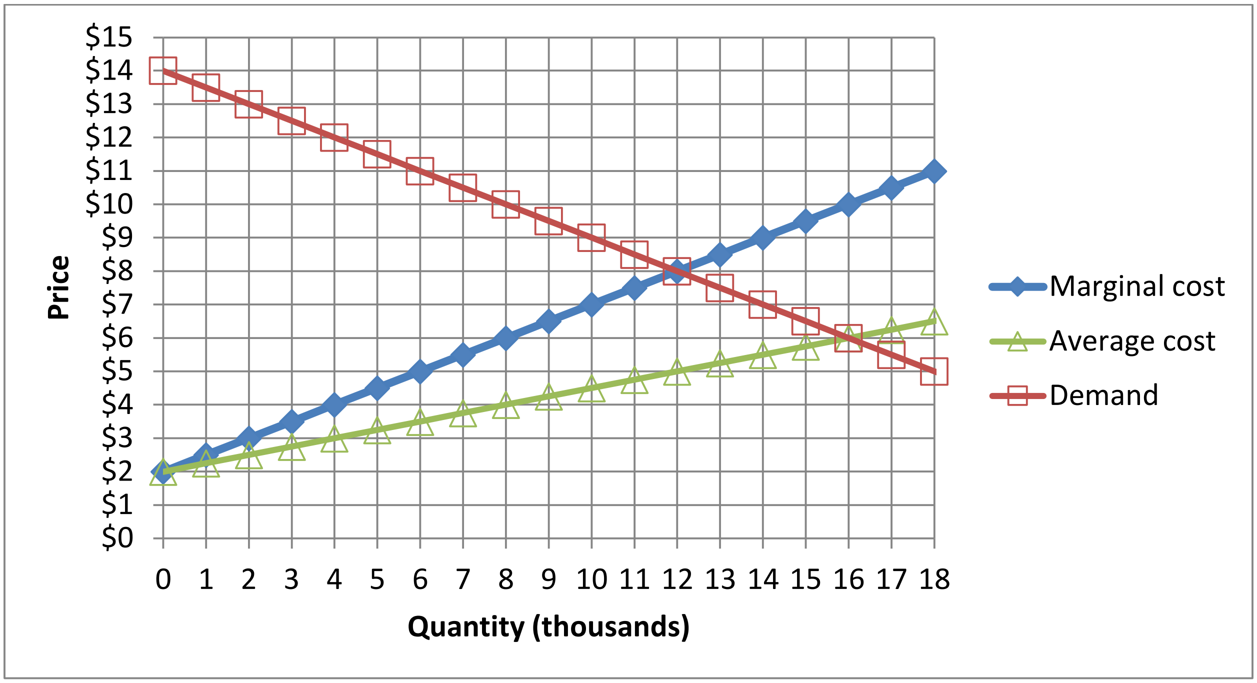
Austin is a consumer in this economy. He has an income of **$ 40**.

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



e. What is **Austin's** opportunity cost of a unit of food?	units of clothing
f. What is **Austin's** opportunity cost of a unit of clothing?	units of food
g. How many units of food will Austin choose to purchase?	units of food
h. At **Austin's** chosen bundle, what is his marginal rate of substitution—that is, the slope of his indifference curve? (Give a number.)	

(3) [Monopoly: 12 pts] Winterland is the only ice rink in the county, so it enjoys a local monopoly. Its marginal cost, average cost, and demand curves are shown below.



Assume that Winterland must charge the same price on every admission sold.

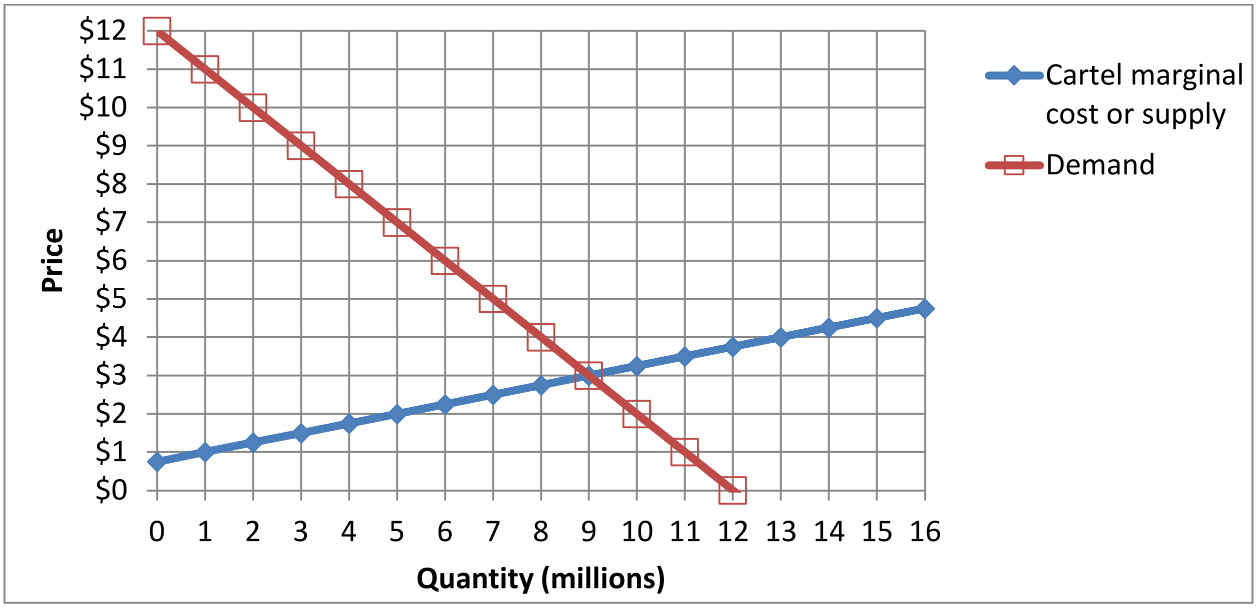
a. *Using a straightedge*, draw and label Winterland's marginal revenue curve.

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

(4) [Monopoly price discrimination: 4 pts] Suppose the local theatre sells tickets to both children and adults. The theatre believes the elasticity of demand by children is –6, and the elasticity of demand by adults is –2. Assume the theatre's marginal cost of providing a ticket is $10.

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 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.

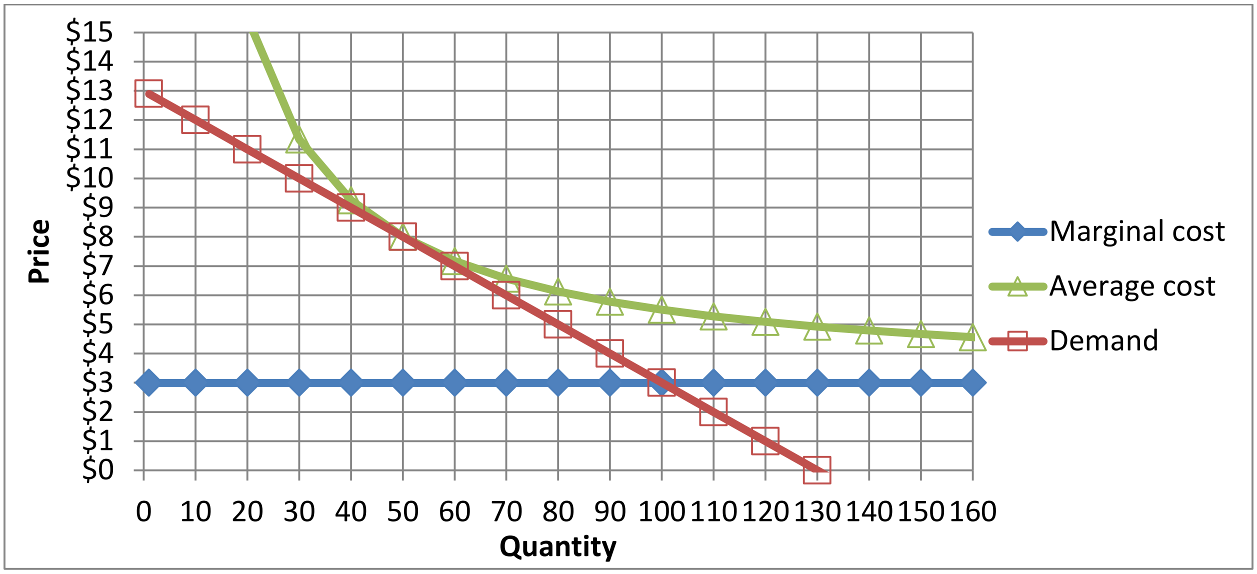
e. What total quantity will the firms produce? ____ million

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] Anita sells sandwiches from a food truck downtown. The graph below shows her cost curves and demand curve.



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

First suppose that Anita sets a price of $5, for some unknown reason.

b. How many sandwiches will Anita sell? sandwiches

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

d. How much? $

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

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

f. How many sandwiches will Anita sell? sandwiches

g. What price will Anita set? $

h. What is Anita's marginal cost? $

i. What is Anita's profit? $

[end of exam]