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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Allura's Little Robotics Company for different quantities of Good S sold.

Quantity	*Total Cost*
0	$100
1	$136
2	$180
3	$228
4	$280
5	$336
6	$396
7	$460
8	$528
9	$600
10	$680

Allura's Little Robotics Company sells Good S in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $62 per unit.

(a) Calculate the average fixed cost of producing 2 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good S is -0.5, and the cross-price elasticity of demand for toy robots with respect to the price of Good S is 0.8. Based on your answer to part (e), what will happen to the demand for toy robots? Explain.

(g) Now assume that the market in which Allura's Little Robotics Company operates is in long-run equilibrium at a price of $65 per unit.
(i) Suppose shipping costs per order for Allura's Little Robotics Company decrease. Will the profit-maximizing quantity

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of Good S for Allura's Little Robotics Company increase, decrease, or stay the same in the short run? Explain.
(ii) Instead suppose the government imposes a price ceiling of $60 on the market for Good S. Will total economic surplus in the market for Good S increase, decrease, or stay the same in the short run as a result of the price ceiling? Explain.

1. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $50 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$100}{2} = \$50$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 6 units and explains that the 6th unit is the last unit where the marginal revenue ($62) is greater than the marginal cost ($60); the firm will not produce the 7th unit because the marginal cost of producing it ($64) is greater than the marginal revenue earned ($62).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$24$ and shows the work.

$Economic\ Profit = TR - TC = 6(\$62) - \$396 = -\$24$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that demand for toy robots will increase and explains that the positive cross-price elasticity of demand for toy robots with respect to the price of Good S means that the goods are substitutes; therefore, an increase in the price of Good S will lead to an increase in the demand for toy robots.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good S will increase and explains that shipping costs per order are a variable cost, so a decrease in shipping costs per order will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

· States that total economic surplus will decrease and explains that a price ceiling below the equilibrium price is binding and the quantity supplied will decrease, therefore decreasing total surplus.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Dave's General Store for different quantities of Good X sold.

Quantity	Total Cost
0	$100
1	$110
2	$140
3	$190
4	$290
5	$440
6	$640
7	$900
8	$1,230
9	$1,640
10	$2,140

Dave's General Store sells Good X in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $120 per unit.

(a) Calculate the average fixed cost of producing 5 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good X is 2.5, and the cross-price elasticity of demand for shoes with respect to the price of Good X is -0.4 . Based on your answer to part (e), what will happen to the demand for shoes? Explain.

(g) Now assume that the market in which Dave's General Store operates is in long-run equilibrium.
(i) Suppose the rent paid by Dave's General Store decreases. Will Dave's General Store's profit-maximizing quantity of Good X increase, decrease, or stay the same in the short run? Explain.
(ii) Instead suppose Dave's General Store hires labor in a perfectly competitive market and the market wage increases.

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Will Dave's General Store's profit-maximizing quantity of Good X increase, decrease, or stay the same in the short run? Explain.

2. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $20 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$100}{5} = \$20$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 4 units and explains that the 4^{th} unit is the last unit where the marginal revenue ($120) is greater than the marginal cost ($100); the firm will not produce the 5^{th} unit because the marginal cost of producing it ($150) is greater than the marginal revenue earned ($120).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $190 and shows the work.

$Economic\ Profit = TR - TC = 4(\$120) - \$290 = \$190$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for shoes will increase and explains that the negative cross-price elasticity of demand for shoes with respect to the price of Good X means that the goods are complements; therefore, a decrease in the price of Good X will lead to an increase in the demand for shoes.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good X will stay the same in the short run and explains that a change in fixed cost does not affect the marginal cost.

· States that the profit-maximizing quantity of Good X will decrease and explains that an increase in the market wage will increase the wage the firm pays its workers because the firm is a wage-taker in a perfectly competitive market; wages are a variable cost, so an increase in the wage will shift the marginal cost curve upward at each quantity so that marginal cost

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will intersect marginal revenue at a lower quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Emily's Eye Care Store for different quantities of Good M sold.

Quantity	Total Variable Cost
1	$20
2	$25
3	$35
4	$50
5	$70
6	$95
7	$125
8	$160
9	$200
10	$245

Emily's Eye Care Store sells Good M in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $33 per unit, and the total fixed cost is $30.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 6 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good M is 1.4, and the cross-price elasticity of demand for eyeglasses with respect to the price of Good M is -0.75. Based on your answer to part (e), what will happen to the demand for eyeglasses? Explain.

(g) Now assume that the market in which Emily's Eye Care Store operates is in long-run equilibrium at a price of $30 per unit.
(i) Suppose annual property taxes for Emily's Eye Care Store increase by $2,000. Will the profit-maximizing quantity of Good M for Emily's Eye Care Store increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose the government imposes a price floor at $35 on the market for Good M. Will deadweight loss in the market for Good M increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

3. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 7 units and explains that the 7th unit is the last unit where the marginal revenue ($33) is greater than the marginal cost ($30); the firm will not produce the 8th unit because the marginal cost of producing it ($35) is greater than the marginal revenue earned ($33).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $76 and shows the work.

$$Economic\ Profit = TR - TC = 7(\$33) - (\$125 + \$30) = \$76$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $5 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$30}{6} = \$5$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for eyeglasses will increase and explains that the negative cross-price elasticity of demand for eyeglasses with respect to the price of Good M means that the goods are complements; therefore, a decrease in the price of Good M will lead to an increase in the demand for eyeglasses.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good M will stay the same in the short run and explains that property taxes are a fixed cost and a change in fixed cost does not affect the marginal cost.

· States that deadweight loss will increase and explains that a price floor above the equilibrium price is binding and the quantity exchanged in the market will be limited by the quantity demanded, which is less than the equilibrium quantity, thus decreasing total economic surplus.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

*The table below shows the total costs fa*ced by Hank's Clothing Emporium for different quantities of Good A sold.

Quantity	Total Cost
0	$80
1	$130
2	$185
3	$255
4	$330
5	$410
6	$510
7	$640
8	$800
9	$995
10	$1,230

Hank's Clothing Emporium sells Good A in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $60 per unit.

(a) Calculate the average fixed cost of producing 5 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good A is -2 , and the cross-price elasticity of demand for khaki pants with respect to the price of Good A is 0.8. Based on your answer to part (e), what will happen to the demand for khaki pants? Explain.

(g) Now assume that the market in which Hank's Clothing Emporium operates is in long-run equilibrium.
(i) Suppose the rent paid by Hank's Clothing Emporium increases. Will Hank's Clothing Emporium's profit-maximizing quantity of Good A increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose Hank's Clothing Emporium hires labor in a perfectly competitive market and the market wage decreases. Will Hank's Clothing Emporium's profit-maximizing quantity of Good A increase, decrease, or stay the same in the short run? Explain.

4. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $16 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$80}{5} = \$16$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 2 units and explains that the 2nd unit is the last unit where the marginal revenue ($60) is greater than the marginal cost ($55); the firm will not produce the 3rd unit because the marginal cost of producing it ($70) is greater than the marginal revenue earned ($60).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$65$ and shows the work.

$$\text{Economic Profit} = TR - TC = 2(\$60) - \$185 = -\$65$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for khaki pants will increase and explains that the positive cross-price elasticity of demand for khaki pants with respect to the price of Good A means that the goods are substitutes; therefore, an increase in the price of Good A will lead to an increase in the demand for khaki pants.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good A will stay the same in the short run and explains that a change in fixed cost does not affect the marginal cost.

· States that the profit-maximizing quantity of Good A will increase and explains that a decrease in the market wage will decrease the wage the firm pays its workers because the firm is a wage-taker in a perfectly competitive market; wages are a variable cost, so a decrease in the wage will shift the marginal cost curve downward at each quantity so that marginal

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cost will intersect marginal revenue at a higher quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Julia's Accessories Store for different quantities of Good E sold.

Quantity	Total Variable Cost
1	$35
2	$73
3	$113
4	$154
5	$198
6	$248
7	$303
8	$360
9	$421
10	$498

Julia's Accessories Store sells Good E in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $62 per unit, and the total fixed cost is $152.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 8 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good E is -1.2, and the cross-price elasticity of demand for bracelets with respect to the price of Good E is 0.6. Based on your answer to part (e), what will happen to the demand for bracelets? Explain.

(g) Now assume that the market in which Julia's Accessories Store operates is in long-run equilibrium.
(i) Suppose the market demand for Good E decreases. Will the profit-maximizing quantity of Good E for Julia's Accessories Store increase, decrease, or stay the same in the short run? Explain.
(ii) Suppose instead the wages that Julia's Accessories Store pays its workers increase. Will the profit-maximizing

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quantity of Good E for Julia's Accessories Store increase, decrease, or stay the same in the short run? Explain.

5. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 9 units and explains that the 9th unit is the last unit where the marginal revenue ($62) is greater than the marginal cost ($61); the firm will not produce the 10th unit because the marginal cost of producing it ($77) is greater than the marginal revenue earned ($62).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$15$ and shows the work.

$$Economic\ Profit = TR - TC = 9(\$62) - (\$421 + \$152) = -\$15$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $19 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$152}{8} = \$19$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for bracelets will increase and explains that the positive cross-price elasticity of demand for bracelets with respect to the price of Good E means that the goods are substitutes; therefore, an increase in the price of Good E will lead to an increase in the demand for bracelets.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good E will decrease and explains that the decrease in market demand will decrease the market price (the firm's marginal revenue), which will shift the marginal revenue curve downward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

· States that the profit-maximizing quantity of Good E will decrease and explain that wages are a variable cost, so an increase in wages will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal

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revenue at a lower quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Kailas's Wholesale Market for different quantities of Good Z sold.

Quantity	Total Cost
0	$30
1	$55
2	$95
3	$140
4	$200
5	$280
6	$380
7	$500
8	$640
9	$800
10	$980

Kailas's Wholesale Market sells Good Z in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $90 per unit.

(a) Calculate the average fixed cost of producing 3 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good Z is 2, and the cross-price elasticity of demand for chairs with respect to the price of Good Z is 0.4. Based on your answer to part (e), what will happen to the demand for chairs? Explain.

(g) Now assume that the market in which Kailas's Wholesale Market operates is in long-run equilibrium.
(i) Suppose the rent paid by Kailas's Wholesale Market decreases. Will Kailas's Wholesale Market's profit-maximizing quantity of Good Z increase, decrease, or stay the same in the short run? Explain.
(ii) Instead suppose Kailas's Wholesale Market hires labor in a perfectly competitive market and the market wage

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increases. Will Kailas's Wholesale Market's profit-maximizing quantity of Good Z increase, decrease, or stay the same in the short run? Explain.

6. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $10 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$30}{3} = \$10$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 5 units and explains that the 5^{th} unit is the last unit where the marginal revenue ($90) is greater than the marginal cost ($80); the firm will not produce the 6^{th} unit because the marginal cost of producing it ($100) is greater than the marginal revenue earned ($90).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $170 and shows the work.

$$Economic\ Profit = TR - TC = 5(\$90) - \$280 = \$170$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for chairs will decrease and explains that the positive cross-price elasticity of demand for chairs with respect to the price of Good Z means that the goods are substitutes; therefore, a decrease in the price of Good Z will lead to a decrease in the demand for chairs.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good Z will stay the same in the short run and explains that a change in fixed cost does not affect the marginal cost.

· States that the profit-maximizing quantity of Good Z will decrease and explains that an increase in the market wage will increase the wage the firm pays its workers because the firm is a wage-taker in a perfectly competitive market; wages are a variable cost, so an increase in the wage will shift the marginal cost curve upward at each quantity so that marginal cost

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will intersect marginal revenue at a lower quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Karen's Kaleidoscope Store for different quantities of Good N sold.

Quantity	Total Variable Cost
1	$30
2	$70
3	$120
4	$180
5	$250
6	$340
7	$435
8	$535
9	$645
10	$760

Karen's Kaleidoscope Store sells Good N in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $80 per unit, and the total fixed cost is $300.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 3 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good N is -1.8, and the cross-price elasticity of demand for kaleidoscopes with respect to the price of Good N is -0.5 .Based on your answer to part (e), what will happen to the demand for kaleidoscopes? Explain.

(g) Now assume that the market in which Karen's Kaleidoscope Store operates is in long-run equilibrium at a price of $85 per unit.
(i) Suppose annual property taxes for Karen's Kaleidoscope Store decrease by $2,500. Will the profit-maximizing

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quantity of Good N for Karen's Kaleidoscope Store increase, decrease, or stay the same in the short run? Explain.
(ii) Instead suppose the government imposes a price floor at $\$75$ on the market for Good N. Will deadweight loss in the market for Good N increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

7. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 5 units and explains that the 5th unit is the last unit where the marginal revenue ($80) is greater than the marginal cost ($70); the firm will not produce the 6th unit because the marginal cost of producing it ($90) is greater than the marginal revenue earned ($80).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as

$$-\$150$$

and shows the work.

$$Economic\ Profit = TR - TC = 5(\$80) - (\$250 + \$300) = -\$150$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $100 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$300}{3} = \$100$$

2020 Long

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for kaleidoscopes will decrease and explains that the negative cross-price elasticity of demand for kaleidoscopes with respect to the price of Good N means that the goods are complements; therefore, an increase in the price of Good N will lead to a decrease in the demand for kaleidoscopes.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good N will stay the same in the short run and explain that property taxes are a fixed cost and a change in fixed cost does not affect the marginal cost.

· States that the deadweight loss will stay the same and explain that a price floor below equilibrium is not binding and will

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not affect the quantity exchanged in the market.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Kiyoshi's Clothing Store for different quantities of Good F sold.

Quantity	Total Cost
0	$8
1	$18
2	$32
3	$48
4	$72
5	$104
6	$144
7	$192
8	$248
9	$312
10	$384

Kiyoshi's Clothing Store sells Good F in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $60 per unit.

(a) Calculate the average fixed cost of producing 4 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good F is 3, and the cross-price elasticity of demand for gloves with respect to the price of Good F is 0.5. Based on your answer to part (e), what will happen to the demand for gloves? Explain.

(g) Now assume that the market in which Kiyoshi's Clothing Store operates is in long-run equilibrium at a price of $50 per unit.
(i) Suppose the government imposes a price floor at $55 per unit on the market for Good F. Will consumer surplus in the market for Good F increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

(ii) Suppose instead the cost of energy, a variable cost for Kiyoshi's Clothing Store, increases. Will the profit-maximizing quantity of Good F for Kiyoshi's Clothing Store increase, decrease, or stay the same in the short run? Explain.

8. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $2 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$8}{4} = \$2$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 8 units and explains that the 8^{th} unit is the last unit where the marginal revenue ($60) is greater than the marginal cost ($56); the firm will not produce the 9^{th} unit because the marginal cost of producing it ($64) is greater than the marginal revenue earned ($60).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $232 and shows the work.

$Economic\ Profit = TR - TC = 8(\$60) - \$248 = \$232$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for gloves will decrease and explains that the positive cross-price elasticity of demand for gloves with respect to the price of Good F means that the goods are substitutes; therefore, a decrease in the price of Good F will lead to a decrease in the demand for gloves.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that consumer surplus will decrease and explains that a price floor above the equilibrium price is binding and the quantity exchanged in the market will be limited by the quantity demanded, which is less than the equilibrium quantity, thus decreasing consumer surplus.

· States that the profit-maximizing quantity of Good F will decrease and explains that an increase in variable cost will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower

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quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Lynda's Office Supply Store for different quantities of Good P sold.

Quantity	Total Cost
0	$12
1	$22
2	$52
3	$102
4	$172
5	$252
6	$342
7	$442
8	$552
9	$672
10	$802

Lynda's Office Supply Store sells Good P in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $45 per unit.

(a) Calculate the average fixed cost of producing 4 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good P is 1.8, and the cross-price elasticity of demand for chair mats with respect to the price of Good P is 0.9. Based on your answer to part (e), what will happen to the demand for chair mats? Explain.

(g) Now assume that the market in which Lynda's Office Supply Store operates is in long-run equilibrium at a price of $40 per unit.
(i) Suppose shipping costs per order for Lynda's Office Supply Store increase. Will the profit-maximizing quantity of Good P for Lynda's Office Supply Store increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose the government imposes a price ceiling of $50 on the market for Good P. Will total economic surplus in the market for Good P increase, decrease, or stay the same in the short run as a result of the price ceiling? Explain.

9. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $3 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$12}{4} = \$3$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 2 units and explains that the 2nd unit is the last unit where the marginal revenue ($45) is greater than the marginal cost ($30); the firm will not produce the 3rd unit because the marginal cost of producing it ($50) is greater than the marginal revenue earned ($45).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $38 and shows the work.

$Economic\ Profit = TR - TC = 2(\$45) - \$52 = \$38$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for chair mats will decrease and explains that that the positive cross-price elasticity of demand for chair mats with respect to the price of Good P means that the goods are substitutes; therefore, a decrease in the price of Good P will lead to a decrease in the demand for chair mats.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good P will decrease and explains that shipping costs per order are a variable cost, so an increase in shipping costs per order will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

· States that total economic surplus will stay the same and explains that a price ceiling above the equilibrium price is not binding and will not affect the quantity exchanged in the market.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

*The table below shows the total variable co*sts faced by Raskin's Clothing Store for different quantities of Good D sold.

Quantity	Total Variable Cost
1	$50
2	$105
3	$161
4	$218
5	$276
6	$335
7	$410
8	$540
9	$695
10	$875

Raskin's Clothing Store sells Good D in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $150 per unit, and the total fixed cost is $85.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 10 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good D is 1.2, and the cross-price elasticity of demand for dresses with respect to the price of Good D is 0.2. Based on your answer to part (e), what will happen to the demand for dresses? Explain.

(g) Now assume that the market in which Raskin's Clothing Store operates is in long-run equilibrium.
(i) Suppose the market demand for Good D increases. Will the profit-maximizing quantity of Good D for Raskin's Clothing Store increase, decrease, or stay the same in the short run? Explain.
(ii) Suppose instead the wages that Raskin's Clothing Store pays its workers decrease. Will the profit-maximizing quantity of Good D for Raskin's Clothing Store increase, decrease, or stay the same in the short run? Explain.

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10. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 8 units and explains that the 8th unit is the last unit where the marginal revenue ($150) is greater than the marginal cost ($130); the firm will not produce the 9th unit because the marginal cost of producing it ($155) is greater than the marginal revenue earned ($150).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $575 and shows the work.

$$Economic\ Profit = TR - TC = 8(\$150) - (\$540 + \$85) = \$575$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost of producing 5 units as $20 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$85}{10} = \$8.50$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

2020 Long

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for dresses will decrease and explains that the positive cross-price elasticity of demand for dresses with respect to the price of Good D means that the goods are substitutes; therefore, a decrease in the price of Good D will lead to a decrease in the demand for dresses.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good D will increase and explains that the increase in market demand will increase the market price (the firm's marginal revenue), which will shift the marginal revenue curve upward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

· States that the profit-maximizing quantity of Good D will increase and explains that wages are a variable cost, so a decrease in wages will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Saif's General Store for different quantities of Good C sold.

Quantity	Total Variable Cost
1	\$50
2	\$103
3	\$165
4	\$232
5	\$310
6	\$393
7	\$481
8	\$581
9	\$690
10	\$810

Saif's General Store sells Good C in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $\$90$ per unit, and the total fixed cost is $\$275$.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 5 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good C is -1.5, and the cross-price elasticity of demand for hats with respect to the price of Good C is -0.6. Based on your answer to part (e), what will happen to the demand for hats? Explain.

(g) Now assume that the market in which Saif's General Store operates is in long-run equilibrium.
(i) Suppose the market demand for Good C decreases. Will the profit-maximizing quantity of Good C for Saif's General Store increase, decrease, or stay the same in the short run? Explain.
(ii) Suppose instead the wages that Saif's General Store pays its workers increase. Will the profit-maximizing quantity of Good C for Saif's General Store increase, decrease, or stay the same in the short run? Explain.

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11. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 7 units and explains that the 7th unit is the last unit where the marginal revenue ($90) is greater than the marginal cost ($88); the firm will not produce the 8th unit because the marginal cost of producing it ($100) is greater than the marginal revenue earned ($90).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$126$ and shows the work.

$$Economic\ Profit = TR - TC = 7(\$90) - (\$481 + \$275) = -\$126$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $55 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$275}{5} = \$55$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

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The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for hats will decrease and explains that the negative cross-price elasticity of demand for hats with respect to the price of Good C means that the goods are complements; therefore, an increase in the price of Good C will lead to a decrease in the demand for hats.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good C will decrease and explains that the decrease in market demand will decrease the market price (the firm's marginal revenue), which will shift the marginal revenue curve downward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

· States that the profit-maximizing quantity of Good C will decrease and explains that wages are a variable cost, so an increase in wages will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Sarah's Tool Store for different quantities of Good J sold.

Quantity	Total Cost
0	$110
1	$145
2	$175
3	$200
4	$220
5	$245
6	$275
7	$310
8	$350
9	$395
10	$445

Sarah's Tool Store sells Good J in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $42 per unit.

(a) Calculate the average fixed cost of producing 5 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good J is -1.4, and the cross-price elasticity of demand for widgets with respect to the price of Good J is -0.25. Based on your answer to part (e), what will happen to the demand for widgets? Explain.

(g) Now assume that the market in which Sarah's Tool Store operates is in long-run equilibrium at a price of $45 per unit.
(i) Suppose the government imposes a price floor at $40 per unit on the market for Good J. Will consumer surplus in the market for Good J increase, decrease, or stay the same in the short run as a result of the price floor? Explain.
(ii) Suppose instead the cost of energy, a variable cost for Sarah's Tool Store, decreases. Will the profit-maximizing

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quantity of Good J for Sarah's Tool Store increase, decrease, or stay the same in the short run? Explain.

12. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $22 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$110}{5} = \$22$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 8 units and explains that the 8^{th} unit is the last unit where the marginal revenue ($42) is greater than the marginal cost ($40); the firm will not produce the 9^{th} unit because the marginal cost of producing it ($45) is greater than the marginal revenue earned ($42).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$14$ and shows the work.

$Economic\ Profit = TR - TC = 8(\$42) - \$350 = -\$14$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that demand for widgets will decrease and explains the negative cross-price elasticity of demand for widgets with respect to the price of Good J means that the goods are complements; therefore, an increase in the price of Good J will lead to a decrease in the demand for widgets.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that consumer surplus will stay the same and explains that a price floor below equilibrium is not binding and will not affect the quantity exchanged in the market.

· States that the profit-maximizing quantity of Good J will increase and explains that a decrease in variable cost will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Sophia's Lighting Store for different quantities of Good H sold.

Quantity	Total Cost
0	$50
1	$90
2	$110
3	$115
4	$140
5	$185
6	$250
7	$335
8	$440
9	$565
10	$710

Sophia's Lighting Store sells Good H in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $140 per unit.

(a) Calculate the average fixed cost of producing 2 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good H is 1.3, and the cross-price elasticity of demand for desk lamps with respect to the price of Good H is -0.9. Based on your answer to part (e), what will happen to the demand for desk lamps? Explain.

(g) Now assume that the market in which Sophia's Lighting Store operates is in long-run equilibrium at a price of $130 per unit.
(i) Suppose the government imposes a price floor at $150 per unit on the market for Good H. Will consumer surplus in

the market for Good H increase, decrease, or stay the same in the short run as a result of the price floor? Explain.
(ii) Suppose instead the cost of energy, a variable cost for Sophia's Lighting Store, increases. Will the profit-maximizing quantity of Good H for Sophia's Lighting Store increase, decrease, or stay the same in the short run? Explain.

13. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $25 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$50}{2} = \$25$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 9 units and explains that the 9th unit is the last unit where the marginal revenue ($140) is greater than the marginal cost ($125); the firm will not produce the 10th unit because the marginal cost of producing it ($145) is greater than the marginal revenue earned ($140).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $695 and shows the work.

$Economic\ Profit = TR - TC = 9(\$140) - \$565 = \$695$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for desk lamps will increase and explains that the negative cross-price elasticity of demand for desk lamps with respect to the price of Good H means that the goods are complements; therefore, a decrease in the price of Good H will lead to an increase in the demand for desk lamps.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that consumer surplus will decrease and explains that a price floor above the equilibrium price is binding and the quantity exchanged in the market will be limited by the quantity demanded, which is less than the equilibrium quantity, thus decreasing consumer surplus.

· States that the profit-maximizing quantity of Good H will decrease and explains that an increase in variable cost will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower

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quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Surisitee's Sporting Goods Store for different quantities of Good Y sold.

Quantity	Total Cost
0	$85
1	$105
2	$130
3	$165
4	$210
5	$290
6	$410
7	$580
8	$810
9	$1,110
10	$1,490

Surisitee's Sporting Goods Store sells Good Y in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $40 per unit.

(a) Calculate the average fixed cost of producing 2 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good Y is -2.5, and the cross-price elasticity of demand for basketballs with respect to the price of Good Y is -0.8. Based on your answer to part (e), what will happen to the demand for basketballs? Explain.

(g) Now assume that the market in which Surisitee's Sporting Goods Store operates is in long-run equilibrium.
(i) Suppose the rent paid by Surisitee's Sporting Goods Store increases. Will Surisitee's Sporting Goods Store's profit-maximizing quantity of Good Y increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose Surisitee's Sporting Goods Store hires labor in a perfectly competitive market and the market wage decreases. Will Surisitee's Sporting Goods Store's profit-maximizing quantity of Good Y increase, decrease, or stay the same in the short run? Explain.

14. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $42.50 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$85}{2} = \$42.50$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 3 units and explains that the 3rd unit is the last unit where the marginal revenue ($40) is greater than the marginal cost ($35); the firm will not produce the 4th unit because the marginal cost of producing it ($45) is greater than the marginal revenue earned ($40).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$45$ and shows the work.

$$Economic\ Profit = TR - TC = 3(\$40) - \$165 = -\$45$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that demand for basketballs will decrease and explains that the negative cross-price elasticity of demand for basketballs with respect to the price of Good Y means that the goods are complements; therefore, an increase in the price of Good Y will lead to a decrease in the demand for basketballs.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good Y will stay the same in the short run and explains that a change in fixed cost does not affect the marginal cost.

· States that the profit-maximizing quantity of Good Y will increase and explains that a decrease in the market wage will decrease the wage the firm pays its workers because the firm is a wage-taker in a perfectly competitive market; wages are a variable cost, so a decrease in the wage will shift the marginal cost curve downward at each quantity so that marginal

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cost will intersect marginal revenue at a higher quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Steve's Home Appliances Store for different quantities of Good L sold.

Quantity	Total Variable Cost
1	$55
2	$105
3	$152
4	$205
5	$270
6	$345
7	$428
8	$525
9	$630
10	$745

Steve's Home Appliances Store sells Good L in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $80 per unit, and the total fixed cost is $145.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 5 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good L is -0.8, and the cross-price elasticity of demand for coffee machines with respect to the price of Good L is 0.25. Based on your answer to part (e), what will happen to the demand for coffee machines? Explain.

(g) Now assume that the market in which Steve's Home Appliances Store operates is in long-run equilibrium at a price of $90 per unit.
(i) Suppose annual property taxes for Steve's Home Appliances Store decrease by $7,000. Will the profit-maximizing

quantity of Good L for Steve's Home Appliances Store increase, decrease, or stay the same in the short run? Explain.
(ii) Instead suppose the government imposes a price floor at $\$70$ on the market for Good L. Will deadweight loss in the market for Good L increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

15. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 6 units and explains that the 6th unit is the last unit where the marginal revenue ($80) is greater than the marginal cost ($75); the firm will not produce the 7th unit because the marginal cost of producing it ($83) is greater than the marginal revenue earned ($80).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as

$$-\$10$$

and shows the work.

$$Economic\ Profit = TR - TC = 6(\$80) - (\$345 + \$145) = -\$10$$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $29 and shows the work.

$$AFC = \frac{TFC}{Q} = \frac{\$145}{5} = \$29$$

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Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for coffee machines will increase and explains that the positive cross-price elasticity of demand for coffee machines with respect to the price of Good L means that the goods are substitutes; therefore, an increase in the price of Good L will lead to an increase in the demand for coffee machines.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good L will stay the same in the short run and explains that property taxes are a fixed cost and a change in fixed cost does not affect the marginal cost.

· States that deadweight loss will stay the same and explains that a price floor below equilibrium is not binding and will

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not affect the quantity exchanged in the market.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total variable costs faced by Tom's Toy Store for different quantities of Good B sold.

Quantity	Total Variable Cost
1	\$3
2	\$8
3	\$14
4	\$23
5	\$38
6	\$58
7	\$83
8	\$113
9	\$148
10	\$188

Tom's Toy Store sells Good B in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is \$21 per unit, and the total fixed cost is \$50.

(a) Identify the profit-maximizing quantity. Explain using marginal analysis.

(b) Calculate the economic profit at the profit-maximizing quantity you identified in part (a). Show your work.

(c) Calculate the average fixed cost of producing 4 units. Show your work.

(d) Based on your answer to part (b), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (b), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good B is 1.5, and the cross-price elasticity of demand for teddy bears with respect to the price of Good B is -0.2. Based on your answer to part (e), what will happen to the demand for teddy bears? Explain.

(g) Now assume that the market in which Tom's Toy Store operates is in long-run equilibrium.
(i) Suppose the market demand for Good B increases. Will the profit-maximizing quantity of Good B for Tom's Toy Store increase, decrease, or stay the same in the short run? Explain.
(ii) Suppose instead the wages that Tom's Toy Store pays its workers decrease. Will the profit-maximizing quantity of

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Good B for Tom's Toy Store increase, decrease, or stay the same in the short run? Explain.

16. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 6 units and explains that the 6th unit is the last unit where the marginal revenue ($21) is greater than the marginal cost ($20); the firm will not produce the 7th unit because the marginal cost of producing it ($25) is greater than the marginal revenue earned ($21).

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $18 and shows the work.

$Economic\ Profit = TR - TC = 6(\$21) - (\$58 + \$50) = \$18$

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $12.50 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$50}{4} = \$12.50$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for teddy bears will increase and explains that the negative cross-price elasticity of demand for teddy bears with respect to the price of Good B means that the goods are complements; therefore, a decrease in the price of Good B will lead to an increase in the demand for teddy bears.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good B will increase and explains that the increase in market demand will increase the market price (the firm's marginal revenue), which will shift the marginal revenue curve upward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

· States that the profit-maximizing quantity of Good B will increase and explains that wages are a variable cost, so a decrease in wages will shift the marginal cost curve downward at each quantity so that marginal cost will intersect

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marginal revenue at a higher quantity.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Yotti's Craft Store for different quantities of Good R sold.

Quantity	Total Cost
0	\$3
1	\$12
2	\$18
3	\$28
4	\$42
5	\$60
6	\$82
7	\$108
8	\$138
9	\$172
10	\$210

Yotti's Craft Store sells Good R in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $\$12$ per unit.

(a) Calculate the average fixed cost of producing 4 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good R is 0.8, and the cross-price elasticity of demand for balls of yarn with respect to the price of Good R is -0.1. Based on your answer to part (e), what will happen to the demand for balls of yarn? Explain.

(g) Now assume that the market in which Yotti's Craft Store operates is in long-run equilibrium at a price of $\$10$ per unit.
(i) Suppose shipping costs per order for Yotti's Craft Store increase. Will the profit-maximizing quantity of Good R for Yotti's Craft Store increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose the government imposes a price ceiling of $\$15$ on the market for Good R. Will total economic surplus in the market for Good R increase, decrease, or stay the same in the short run as a result of the price ceiling? Explain.

17. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $0.75 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$3}{4} = \$0.75$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 3 units and explains that the 3rd unit is the last unit where the marginal revenue ($12) is greater than the marginal cost ($10); the firm will not produce the 4th unit because the marginal cost of producing it ($14) is greater than the marginal revenue earned ($12).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $8 and shows the work.

$Economic\ Profit = TR - TC = 3(\$12) - \$28 = \$8$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will increase and explains that positive economic profit will attract new firms to enter the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will decrease and explains that with the entry of firms, the market supply will increase, causing the price to decrease.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that the demand for balls of yarn will increase and explains that the negative cross-price elasticity of demand for balls of yarn with respect to the price of Good R means that the goods are complements; therefore, a decrease in the price of Good R will lead to an increase in the demand for balls of yarn.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good R will decrease and explains that shipping costs per order are a variable cost, so an increase in shipping costs per order will shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

· States that total economic surplus will stay the same and explains that a price ceiling above equilibrium is not binding and will not affect the number of transactions in the market.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

The table below shows the total costs faced by Faizah's Manufacturing Firm for different quantities of Good G sold.

Quantity	Total Cost
0	$64
1	$79
2	$98
3	$120
4	$145
5	$171
6	$198
7	$228
8	$262
9	$305
10	$353

Faizah's Manufacturing Firm sells Good G in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $32 per unit.

(a) Calculate the average fixed cost of producing 8 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good G is -3, and the cross-price elasticity of demand for gizmos with respect to the price of Good G is 0.1. Based on your answer to part (e), what will happen to the demand for gizmos? Explain.

(g) Now assume that the market in which Faizah's Manufacturing Firm operates is in long-run equilibrium at a price of $35 per unit.
(i) Suppose the government imposes a price floor at $30 per unit on the market for Good G. Will consumer surplus in the market for Good G increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

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(ii) Suppose instead the cost of energy, a variable cost for Faizah's Manufacturing Firm, decreases. Will the profit-maximizing quantity of Good G for Faizah's Manufacturing Firm increase, decrease, or stay the same in the short run? Explain.

18. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $8 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$64}{8} = \$8$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 7 units and explains that the 7th unit is the last unit where the marginal revenue ($32) is greater than the marginal cost ($30); the firm will not produce the 8th unit because the marginal cost of producing it ($34) is greater than the marginal revenue earned ($32).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$4$ and shows the work.

$Economic\ Profit = TR - TC = 7(\$32) - \$228 = -\$4$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that demand for gizmos will increase and explains that the positive cross-price elasticity of demand for gizmos with respect to the price of Good G means that the goods are substitutes; therefore, an increase in the price of Good G will lead to an increase in the demand for gizmos.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that consumer surplus will stay the same and explains that a price floor below equilibrium is not binding and will not affect the quantity exchanged in the market.

· States that the profit-maximizing quantity of Good G will increase and explains that a decrease in variable cost will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

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2020 Long

***I*nclude correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.**

The table below shows the total costs faced by Susie's Diner for different quantities of Good Q sold.

Quantity	Total Cost
0	\$25
1	\$29
2	\$31
3	\$34
4	\$40
5	\$49
6	\$61
7	\$76
8	\$94
9	\$115
10	\$139

Susie's Diner sells Good Q in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is \$8 per unit.

(a) Calculate the average fixed cost of producing 2 units. Show your work.

(b) Identify the profit-maximizing quantity. Explain using marginal analysis.

(c) Calculate the economic profit at the profit-maximizing quantity you identified in part (b). Show your work.

(d) Based on your answer to part (c), will the number of firms in the industry increase, decrease, or stay the same in the long run? Explain.

(e) Based on your answer to part (c), will the market price increase, decrease, or stay the same in the long run? Explain.

(f) The income elasticity of demand for Good Q is -1.3, and the cross-price elasticity of demand for cheeseburgers with respect to the price of Good Q is -0.3. Based on your answer to part (e), what will happen to the demand for cheeseburgers? Explain.

(g) Now assume that the market in which Susie's Diner operates is in long-run equilibrium at a price of \$10 per unit.
(i) Suppose delivery costs per order for Susie's Diner decrease. Will the profit-maximizing quantity of Good Q for Susie's Diner increase, decrease, or stay the same in the short run? Explain.

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(ii) Instead suppose the government imposes a price ceiling of $6 on the market for Good Q. Will total economic surplus in the market for Good Q increase, decrease, or stay the same in the short run as a result of the price ceiling? Explain.

19. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the average fixed cost as $12.50 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$25}{2} = \$12.50$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 4 units and explains that the 4th unit is the last unit where the marginal revenue ($8) is greater than the marginal cost ($6); the firm will not produce the 5th unit because the marginal cost of producing it ($9) is greater than the marginal revenue earned ($8).

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the economic profit as $-\$8$ and shows the work.

$Economic\ Profit = TR - TC = 4(\$8) - \$40 = -\$8$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that the number of firms in the industry will decrease and explains that negative economic profit will cause firms to exit the industry.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the market price will increase and explains that with the exit of firms, the market supply will decrease, causing the price to increase.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that that demand for cheeseburgers will decrease and explains that the negative cross-price elasticity of demand for cheeseburgers with respect to the price of Good Q means that the goods are complements; therefore, an increase in the price of Good Q will lead to a decrease in the demand for cheeseburgers.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2 ✓

The response does both of the following:

· States that the profit-maximizing quantity of Good Q will increase and explains that delivery costs per order are a variable cost, so a decrease in delivery costs per order will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity

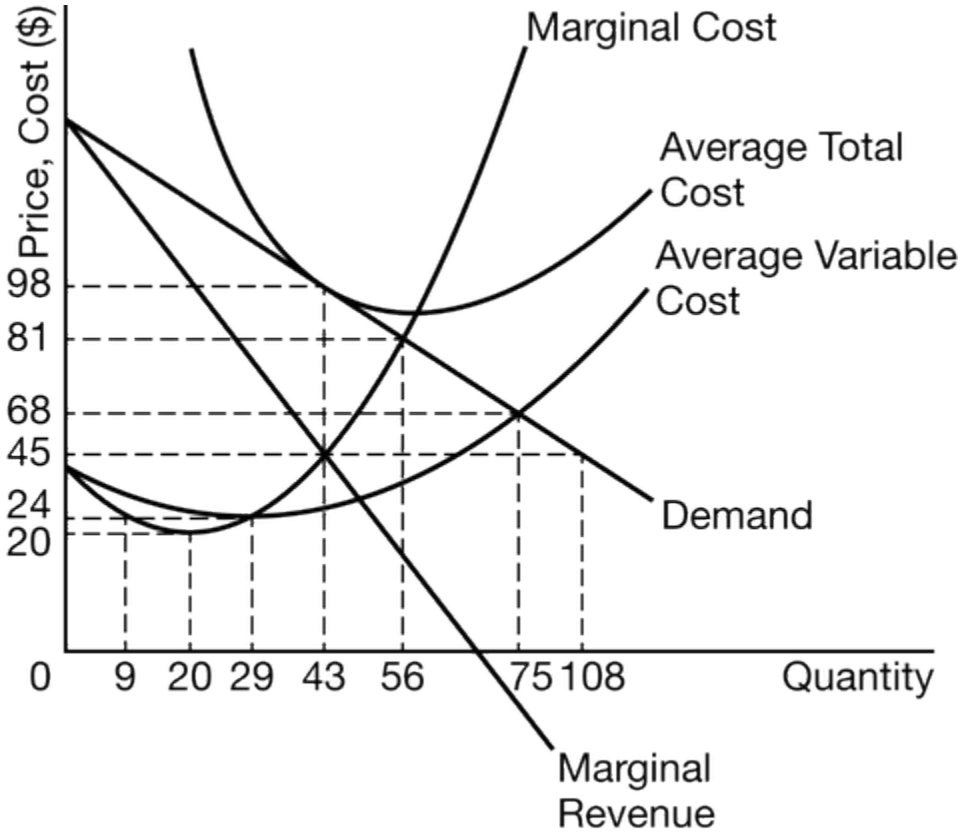
· States that total economic surplus will decrease and explains that a price ceiling below the equilibrium price is binding and the quantity supplied will decrease, therefore decreasing total surplus.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



BetterCook, a profit-maximizing firm, has a patent on a kitchen appliance, making it the only producer of that appliance. The graph above shows BetterCook's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Calculate BetterCook's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(b) Starting at a price of $68, if BetterCook were to decrease the price by 3%, will the quantity demanded increase by more than 3%, by less than 3%, or by exactly 3%? Explain.

(c) At a quantity of 29 units, is BetterCook's marginal product increasing, decreasing, or constant? Explain.

(d) Identify the quantity that maximizes BetterCook's profit. Explain.

(e) At the quantity identified in part (d), does BetterCook earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

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Assume that BetterCook's patent expires. Scheff, a company with the capability to produce the same kitchen appliance as BetterCook, intends to enter the market and charge a lower price than BetterCook for the kitchen appliance. BetterCook is considering whether to maintain its price or to lower its price to match Scheff's price. Scheff is considering whether to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (BetterCook and Scheff) have complete information. The first entry in each cell represents BetterCook's payoff and the second entry represents Scheff's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		Scheff	
		Advertise	Not Advertise
BetterCook	Maintain Price	\$400, \$150	\$600, \$250
	Lower Price	\$300, \$650	\$200, \$450

(f) Does Scheff have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose Scheff makes a credible commitment to BetterCook that if BetterCook lowers its price, then Scheff will pay BetterCook \$50. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

20. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates BetterCook's total revenue at the allocatively efficient quantity as \$4,536 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$81 \times 56 = \$4{,}536$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

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The response states that the quantity demanded will increase by less than 3% and explains that the demand is inelastic in this price range because marginal revenue is negative.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at a quantity of 29 units BetterCook's marginal product is decreasing and explains that the marginal cost is rising.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that the firm's profit-maximizing quantity as 43 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns zero economic profit and explains that the firm's average total cost curve is tangent to the demand curve, or the firm charges a price equal to the average total cost, or $\mathrm{P} = \mathrm{ATC} = \$98$.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, Scheff does not have a dominant strategy and explains that when BetterCook chooses to maintain its price, Scheff's payoff is higher when it does not advertise $(\$250 > \$150)$, and when BetterCook chooses to lower its price, Scheff's payoff is higher when it advertises $\$650 > \$450$; therefore, Scheff does not have a dominant strategy.

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Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the Nash equilibrium as BetterCook maintains its price and Scheff does not advertise with payoffs of $(\$600, \$250)$, and explains that if BetterCook chooses to lower its price, its payoff will decrease from $600 to $200 and if Scheff chooses to advertise, its payoff will decrease from $250 to $150; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for BigMed to maintain its price and Taueum to advertise with payoffs of $(\$600, \$250)$ because with the offer BigMed would earn $500 (

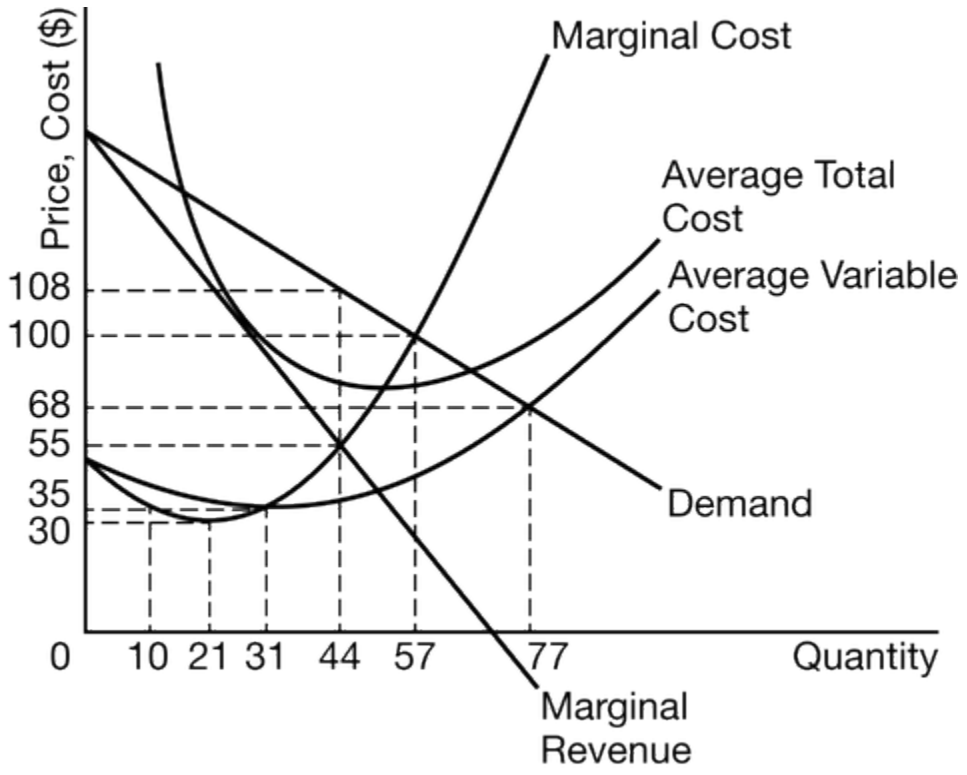
$$= \$300 + \$200$$

) when choosing to maintain the price compared to $420 (with lower price) and Tauem would earn $650 ($= \$850 - \$200$) when choosing to advertise compared to $440 ($= \$640 - \$200$ with not advertising). Or explain that with the offer BigMed will now have a dominant strategy to maintain the price because its payoff will always be higher ($\$500 > \$420$ and $\$400 > \$100$) and Tauem's dominant strategy will continue to be to advertise ($\$650 > \$440$ and $\$350 > \$250$); therefore, there is no incentive for either firm to change its strategy.

2020 Long

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



BigMed, a profit-maximizing firm, has a patent on a medical device, making it the only producer of that device. The graph above shows BigMed's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Calculate BigMed's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(b) Starting at a price of $100, if BigMed were to increase the price by 2%, will the quantity demanded decrease by more than 2%, by less than 2%, or by exactly 2%? Explain.

(c) At a quantity of 10 units, is BigMed's marginal product increasing, decreasing, or constant? Explain.

(d) Identify the quantity that maximizes BigMed's profit. Explain.

(e) At the quantity identified in part (d), does BigMed earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

Assume that BigMed's patent expires. Tauem, a company with the capability to produce the same medical device as

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BigMed, intends to enter the market and charge a lower price than BigMed for the medical device. BigMed is considering whether to maintain its price or to lower its price to match Tauem's price. Tauem is considering whether to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (BigMed and Tauem) have complete information. The first entry in each cell represents BigMed's payoff and the second entry represents Tauem's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		Tauem	
		Advertise	Not Advertise
BigMed	Maintain Price	\$300, \$850	\$200, \$640
	Lower Price	\$420, \$350	\$100, \$250

(f) Does Tauem have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose Tauem makes a credible commitment to BigMed that if BigMed maintains its price, then Tauem will pay BigMed \$200. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

21. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates BigMed's total revenue at the allocatively efficient quantity as \$5,700 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$100 \times 57 = \$5{,}700$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the quantity demanded will decrease by more than 2% and explains that the demand is elastic in

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this price range because marginal revenue is positive.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at a quantity of 10 units BigMed's marginal product is increasing and explains that the marginal cost is falling.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that the firm's profit-maximizing quantity as 44 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns a positive economic profit and explains that the firm's average total cost curve is below the demand curve, or the firm charges a price above the average total cost, or $\mathrm{P} > \mathrm{ATC}$.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, Tauem has a dominant strategy and explains that Tauem's payoff is always higher when it chooses to advertise ($\$850 > \$640$ and $\$350 > \$250$) regardless of whether BigMed chooses to maintain or lower its price; or explain that when BigMed chooses to maintain its price, Tauem's payoff is higher when it chooses to advertise ($\$850 > \$640$), and when BigMed chooses to lower its price, Tauem's payoff is higher when it chooses to advertise ($\$350 > \$250$); therefore, Tauem's dominant strategy is to advertise.

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Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the Nash equilibrium as BigMed lowers its price and Tauem advertises with payoffs of $(\$420, \$350)$ and explains that if BigMed chooses to maintain its price, its payoff will decrease from \$420 to \$300, and if Tauem chooses to not advertise, its payoff will decrease from \$350 to \$250; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

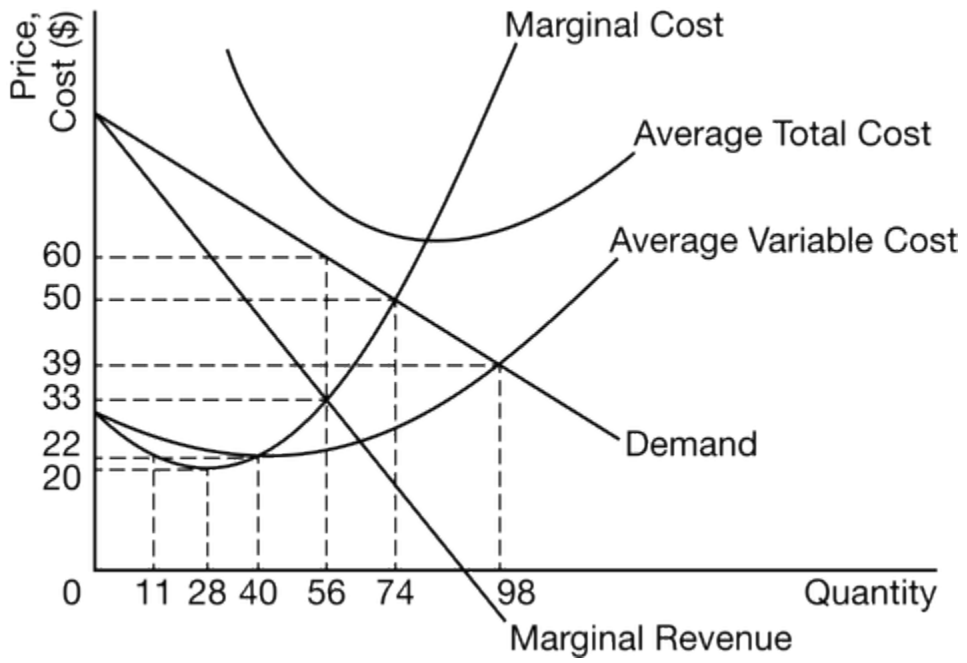
0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for BigMed to maintain its price and Taueum to advertise with payoffs of $(\$500, \$650)$ because with the offer BigMed would earn \$500 ($= \$300 + \$200$) when choosing to maintain the price compared to \$420 (with lower price) and Tauem would earn \$650 ($= \$850 - \$200$) when choosing to advertise compared to \$440 ($= \$640 - \$200$ with not advertising). Or explain that with the offer BigMed will now have a dominant strategy to maintain the price because its payoff will always be higher ($\$500 > \$420$ and $\$400 > \$100$) and Tauem's dominant strategy will continue to be to advertise ($\$650 > \$440$ and $\$350 > \$250$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



CompAce, a profit-maximizing firm, has a patent on a computer accessory, making it the only producer of that computer accessory. The graph above shows CompAce's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Identify the quantity that maximizes CompAce's profit. Explain.

(b) At the quantity identified in part (a), does CompAce earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

(c) Calculate CompAce's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(d) At a price of $60, will CompAce continue to produce or will it shut down in the short run? Explain.

(e) Assume that at 74 units, the average total cost is $62. If the total rent paid by CompAce increases by $370, calculate the firm's new average total cost at that output. Show your work.

Assume that CompAce's patent expires. ScanzAll, a company with the capability to produce the same computer accessory as CompAce, intends to enter the market and charge a lower price than CompAce for the computer accessory. CompAce is considering whether to maintain its price or to lower its price to match ScanzAll's price. ScanzAll is considering whether or not to advertise its entry into the market.

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The matrix below shows the payoffs for each combination of strategies, and both players (CompAce and ScanzAll) have complete information. The first entry in each cell represents CompAce's payoff and the second entry represents ScanzAll's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		ScanzAll	
		Not Advertise	Advertise
CompAce	Lower Price	\$3,000 , \$4,500	\$4,000 , \$3,500
	Maintain Price	\$2,000 , \$2,500	\$1,800 , \$7,500

(f) Does CompAce have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose ScanzAll makes a credible commitment to CompAce that if CompAce maintains its price, then ScanzAll will pay CompAce \$600. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

22. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 56 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns negative economic profit and explains that the firm's average total cost curve is above the demand curve, or the firm charges a price that is less than the average total cost, or $\mathrm{ATC} > \mathrm{P}$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response calculates CompAce's total revenue at the allocatively efficient quantity as $3,700 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$50 \times 74 = \$3{,}700$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at that price ($60) the firm will continue to produce and not shut down in the short run and explains that the price is above the average variable cost which means the firm generates enough revenue to pay for its variable costs and some of its fixed costs, so the firm loses less by producing, in the short run, than shutting down and losing all of its fixed costs.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the new average total cost as $67 and shows the work.

$$\text{New ATC} = \frac{\text{Original Total Cost} + \text{Increase in Total Cost}}{\text{Quantity}}$$
$$= \frac{\$62 \times 74 + \$370}{74} = \$67$$

OR

$$\text{New ATC} = \text{Original Average Total Cost} + \frac{\text{Increase in Total Cost}}{\text{Quantity}}$$
$$= \$62 + \frac{\$370}{74} = \$67$$

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that yes, CompAce has a dominant strategy and explains that CompAce's payoff is always higher when it lowers the price ($\$3{,}000 > \$2{,}000$ and $\$4{,}000 > \$1{,}800$) regardless of whether ScanzAll chooses to advertise or not advertise; or explains that when ScanzAll chooses to not advertise, CompAce's payoff is higher if it lowers its price ($\$3{,}000 > \$2{,}000$), and when ScanzAll chooses to advertise, CompAce's payoff is higher if it lowers the price ($\$4{,}000 > 1{,}800$), which means that CompAce's dominant strategy is to lower the price.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Nash equilibrium as CompAce lowers its price and ScanzAll does not advertise $(\$3{,}000,\ \$4{,}500)$, and explains that if CompAce chooses to maintain its price, its payoff will decrease from $3,000 to $2,000, and if ScanzAll chooses to advertise, its payoff will decrease from $4,500 to $3,500; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

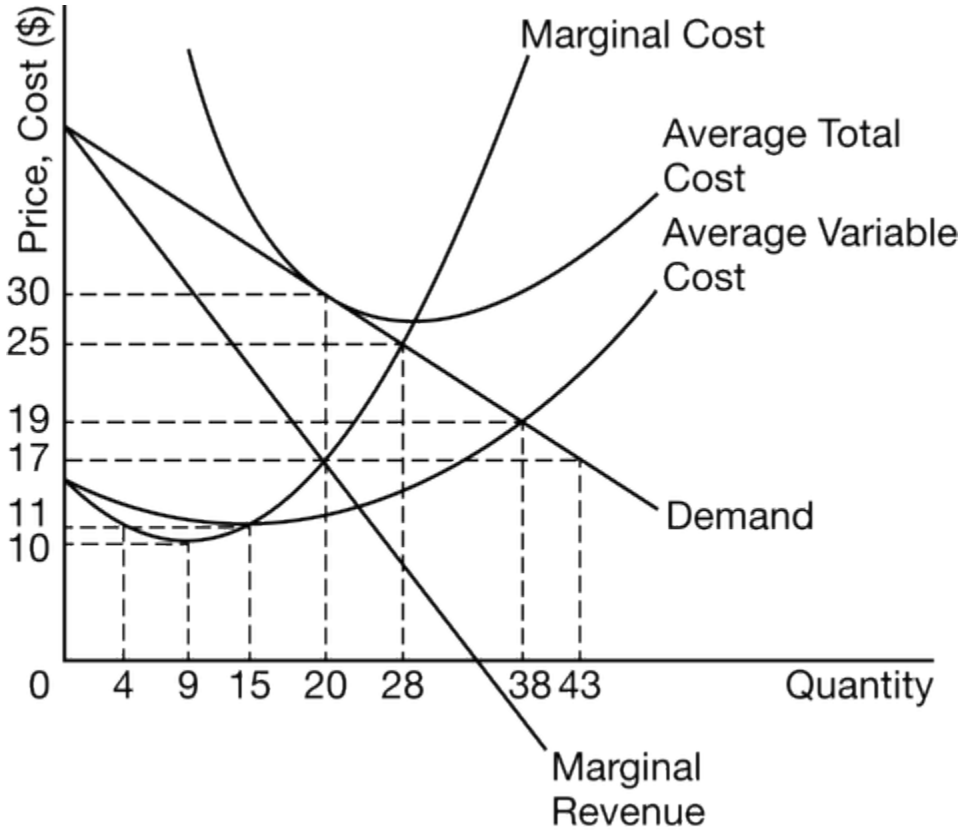
0	1 ✓

The response states that no, this offer will not result in a Nash equilibrium with different strategies and explains that the Nash equilibrium strategies will still be for CompAce to lower its price and ScanzAll to not advertise $(\$3{,}000,\ \$4{,}500)$ because if CompAce chooses to maintain its price, its payoff will decrease from $3,000 to $2,600 ($=\$2{,}000 + \$600$), and if ScanzAll chooses to advertise, its payoff will decrease from $4,500 to $3,500; therefore, there is no incentive for either firm to change its strategy. Or explains that with the offer CompAce's dominant strategy will continue to be to lower the price because its payoff will always be higher ($\$3{,}000 > \$2{,}600$ and $\$4{,}000 > \$2{,}400$) and since ScanzAll has no dominant strategy it is better off to not advertise ($\$4{,}500 > \$3{,}500$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



EarthScience, a profit-maximizing firm, has a patent on a carbon capture technology, making it the only producer of that technology. The graph above shows EarthScience's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Calculate EarthScience's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(b) Starting at a price of $30, if EarthScience were to increase the price by 6%, will the quantity demanded decrease by more than 6%, by less than 6%, or by exactly 6%? Explain.

(c) At a quantity of 20 units, is EarthScience's marginal product increasing, decreasing, or constant? Explain.

(d) Identify the quantity that maximizes EarthScience's profit. Explain.

(e) At the quantity identified in part (d), does EarthScience earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

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Assume that EarthScience's patent expires. GeoSci, a company with the capability to produce the same technology as EarthScience, intends to enter the market and charge a lower price than EarthScience for the technology. EarthScience is considering whether to maintain its price or to lower its price to match GeoSci's price. GeoSci is considering whether or not to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (EarthScience and GeoSci) have complete information. The first entry in each cell represents EarthScience's payoff and the second entry represents GeoSci's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		GeoSci	
		Advertise	Not Advertise
EarthScience	Maintain Price	\$520,\$460	\$400, \$250
	Lower Price	\$450, \$350	\$320, \$650

(f) Does EarthScience have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose GeoSci makes a credible commitment to EarthScience that if EarthScience lowers its price, then GeoSci will pay EarthScience \$150. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

23. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates EarthScience's total revenue at the allocatively efficient quantity as \$700 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$25 \times 28 = \$700$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

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The response states that the quantity demanded will decrease by more than 6% and explains that the demand is elastic in this price range because marginal revenue is positive.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at a quantity of 20 units EarthScience's marginal product is decreasing and explains that the marginal cost is rising.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that the firm's profit-maximizing quantity as 20 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns zero economic profit and explains that the firm's average total cost curve is tangent to the demand curve, or the firm charges a price equal to the average total cost, or $\mathrm{P} = \mathrm{ATC} = \$30$.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, EarthScience has a dominant strategy and explains that EarthScience's payoff is always higher when it chooses to maintain the price ($\$520 > \$450$ and $\$400 > \$320$) regardless of whether GeoSci chooses to advertise or not; or explain that when GeoSci chooses to advertise, EarthScience's payoff is higher when it chooses to maintain its price ($\$520 > \$450$), and when GeoSci chooses to not advertise, EarthScience's payoff is higher when it

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chooses to maintain its price ($\$400 > \$320$); therefore, EarthScience's dominant strategy is to maintain its price.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the Nash equilibrium Nash equilibrium as EarthScience maintains its price and GeoSci advertises with payoffs of $(\$520, \$460)$, and explains that if EarthScience chooses to lower its price its payoff will decrease from $520 to $450 and if GeoSci chooses to not advertise its payoff will decrease from $460 to $250; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

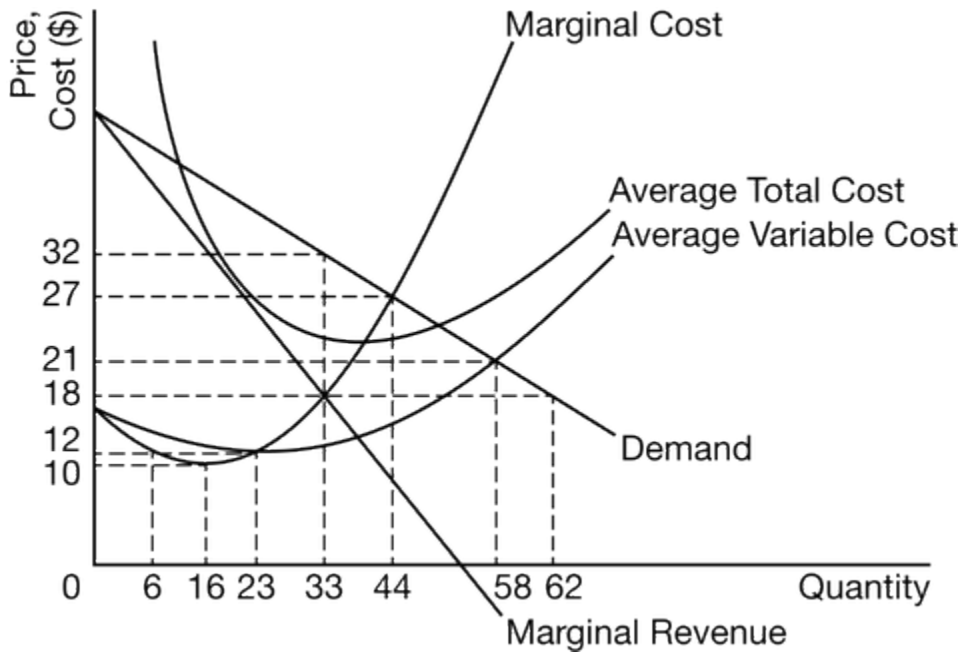
0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for EarthScience to lower its price and GeoSci to not advertise with payoffs of $(\$470, \$500)$ because with the offer EarthScience would earn $470 ($\$320 + \$150$) when choosing to lower the price compared to $400 (with maintaining the price) and GeoSci would earn $500 ($= \$650 - \$150$) when choosing to advertise compared to $200 ($= \$350 - \$150$ with not advertising). Or explain that with the offer EarthScience's dominant strategy will change to lowering the price because its payoff will always be higher ($\$600 > \$520$ and $\$470 > \$400$), and since GeoSci has no dominant strategy, it is better off to not advertise ($\$500 > \$200$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



EyesOn, a profit-maximizing firm, has a patent on cameras, making it the only producer of that camera. The graph above shows EyesOn's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Identify the quantity that maximizes EyesOn's profit. Explain.

(b) At the quantity identified in part (a), does EyesOn earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

(c) Calculate EyesOn's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(d) At a price of $10, will EyesOn continue to produce or will it shut down in the short run? Explain.

(e) Assume that at 44 units, the average total cost is $22. If the total wages paid by EyesOn increase by $220, calculate the firm's new average total cost at that output. Show your work.

Assume that EyesOn's patent expires. ViewTime, a company with the capability to produce the same camera as EyesOn, intends to enter the market and charge a lower price than EyesOn for the camera. EyesOn is considering whether to maintain its price or to lower its price to match ViewTime's price. ViewTime is considering whether or not to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (EyesOn and ViewTime) have

complete information. The first entry in each cell represents EyesOn's payoff and the second entry represents ViewTime's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		ViewTime	
		Not Advertise	Advertise
EyesOn	Lower Price	\$1,000 , \$2,600	\$4,000 , \$3,400
	Maintain Price	\$2,000 , \$6,500	\$3,000 , \$7,500

(f) Does EyesOn have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose ViewTime makes a credible commitment to EyesOn that if EyesOn maintains the price, then ViewTime will pay EyesOn \$500. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

24. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 33 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns positive economic profit and explains that the firm's average total cost curve is below the demand curve, or the firm charges a price above than the average total cost, or $\mathrm{P} > \mathrm{ATC}$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response calculates EyesOn's total revenue at the allocatively efficient quantity as $1,188 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$27 \times 44 = \$1{,}188$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at that price ($10) the firm will shut down in the short run and explains it's because the price is below the average variable cost which means the firm does not generate enough revenue to pay for its variable costs, so the firm loses more by producing, in the short run, than shutting down and just paying its fixed cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the new average total cost as $27 and shows the work.

$$\text{New ATC} = \frac{\text{Original Total Cost} + \text{Increase in Total Cost}}{\text{Quantity}}$$
$$= \frac{\$22 \times 44 + \$220}{44} = \$27$$

OR

$$\text{New ATC} = \text{Original Average Total Cost} + \frac{\text{Increase in Total Cost}}{\text{Quantity}}$$
$$= \$22 + \frac{\$220}{44} = \$27$$

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

2020 Long

0	1 ✓

The response states that no, EyesOn does not have a dominant strategy and explains that when ViewTime does not advertise, EyesOn's payoff is higher when it chooses to maintain its price ($\$2{,}000 > \$1{,}000$), and when ViewTime chooses to advertise, EyesOn's payoff is higher when it chooses to lower its price ($\$4{,}000 > \$3{,}000$); therefore, EyesOn does not have a dominant strategy.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Nash equilibrium as EyesOn lowers its price and ViewTime advertises with payoffs of $(\$4{,}000, \$3{,}400)$, and explains that if EyesOn chooses to maintain its price, its payoff will decrease from $4,000 to $3,000, and if ViewTime chooses not to advertise, its payoff will decrease from $3,400 to $2,600; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

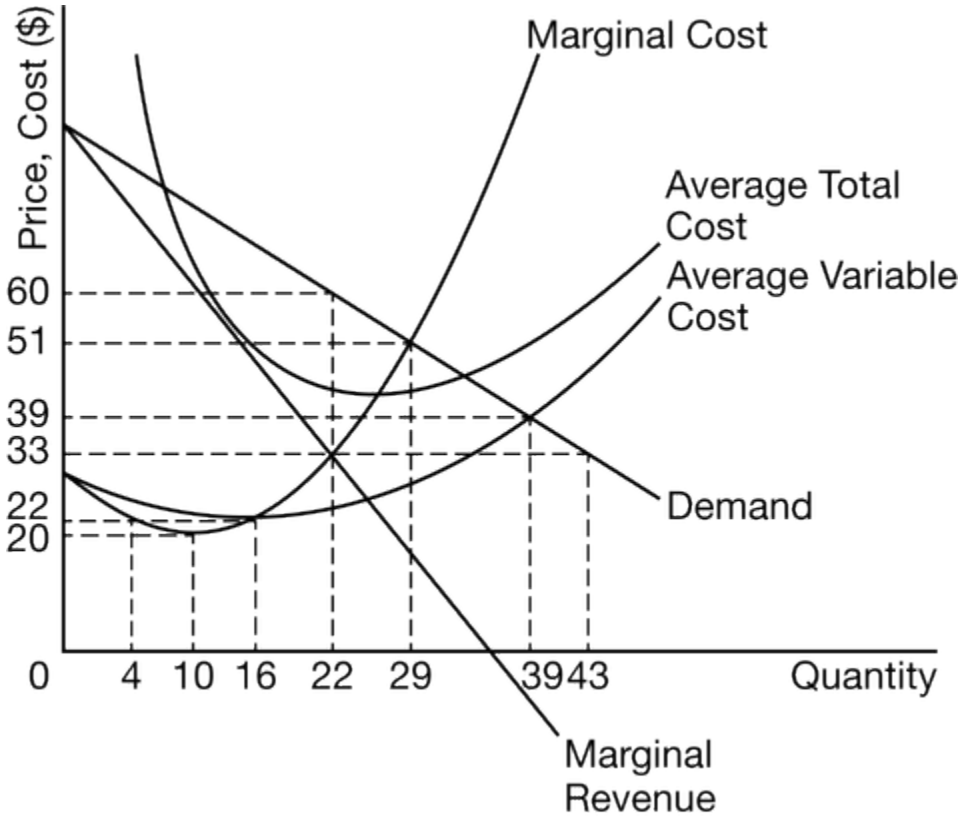
0	1 ✓

The response states that no, this offer will not result in a Nash equilibrium with different strategies and explains that the Nash equilibrium strategies will still be for EyesOn to lower its price and ViewTime to advertise with payoffs of $(\$4{,}000, \$3{,}400)$ because if EyesOn chooses to maintain its price, its payoff will decrease from $4,000 to $3,500 ($=\$3{,}000 + \$500$), and if ViewTime chooses to not advertise, its payoff will decrease from $3,400 to $2,600; therefore, there is no incentive for either firm to change its strategy. Or explains that with the offer ViewTime's dominant strategy will continue to be to advertise because its payoff will always be higher ($\$3{,}400 > \$2{,}600$ and $\$7{,}000 > \$6{,}000$) and since EyesOn has no dominant strategy it is better off lowering the price ($\$4{,}000 > \$3{,}500$); therefore, there is no incentive for either firm to change its strategy.

2020 Long

Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



GarysGym, a profit-maximizing firm, has a patent on an exercise device, making it the only producer of that device. The graph above shows GarysGym's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Calculate GarysGym's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(b) Starting at a price of $39, if GarysGym were to decrease the price by 5%, will the quantity demanded increase by more than 5%, by less than 5%, or by exactly 5%? Explain.

(c) At a quantity of 16 units, is GarysGym's marginal product increasing, decreasing, or constant? Explain.

(d) Identify the quantity that maximizes GarysGym's profit. Explain.

(e) At the quantity identified in part (d), does GarysGym earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

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Assume that GarysGym's patent expires. E-Fitness, a company with the capability to produce the same exercise device as GarysGym, intends to enter the market and charge a lower price than GarysGym for the exercise device. GarysGym is considering whether to maintain its price or to lower its price to match E-Fitness' price. E-Fitness is considering whether or not to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (GarysGym and E-Fitness) have complete information. The first entry in each cell represents GarysGym's payoff and the second entry represents E-Fitness' payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		E-Fitness	
		Advertise	Not Advertise
GarysGym	Maintain Price	\$350, \$450	\$700, \$300
	Lower Price	\$580, \$500	\$460, \$200

(f) Does GarysGym have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose GarysGym makes a credible commitment to E-Fitness that if E-Fitness does not advertise, then GarysGym will pay E-Fitness \$100. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

25. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates GarysGym's total revenue at the allocatively efficient quantity as \$1,479 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$51 \times 29 = \$1,479$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

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The response states that the quantity demanded will increase by less than 5% and explains that the demand is inelastic in this price range because marginal revenue is negative.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at a quantity of 16 units GarysGym's marginal product is decreasing and explains that the marginal cost is rising.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that the firm's profit-maximizing quantity as 22 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns positive economic profit and explains that the firm's average total cost curve is below the demand curve, or the firm charges a price above the average total cost, or $\mathrm{P} > \mathrm{ATC}$.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, GarysGym does not have a dominant strategy and explains that when E-Fitness chooses to advertise, GarysGym's payoff is higher when it chooses to lower the price ($\$580 > \$350$), and when E-Fitness chooses to not advertise, GarysGym's payoff is higher when it chooses to maintain the price ($\$700 > \$460$); therefore, GarysGym does not have a dominant strategy.

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Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the Nash equilibrium as GarysGym lowers its price and E-Fitness advertises $(\$580, \$500)$, and explains that if GarysGym chooses to maintain its price, its payoff will decrease from \$580 to \$350, and if E-Fitness chooses to not advertise, its payoff will decrease from \$500 to \$200; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

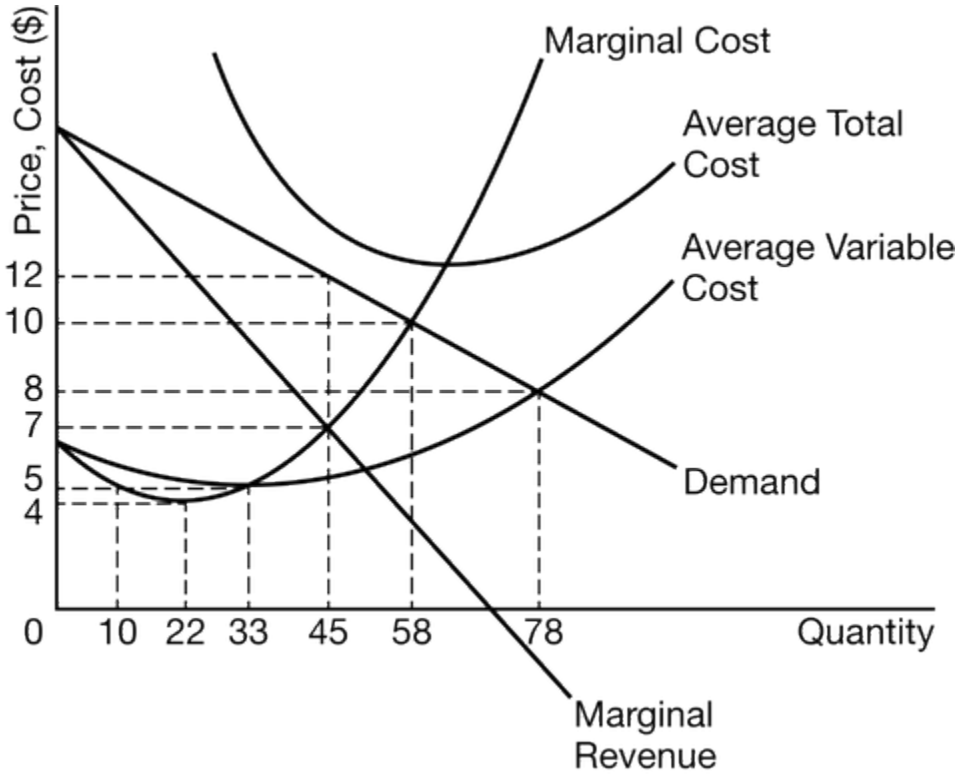
0	1 ✓

The response states that no, this offer will not result in a Nash equilibrium with different strategies and explains that the Nash equilibrium strategies will still be for GarysGym to lower its price and E-Fitness to advertise $(\$580, \$500)$ because if GarysGym chooses to maintain its price, its payoff will decrease from \$580 to \$350, and if E-Fitness chooses to not advertise, its payoff will decrease from \$500 to \$300 ($\$200 + \$100$); therefore, there is no incentive for either firm to change its strategy. Or explain that with the offer E-Fitness' dominant strategy will continue to be to advertise because its payoff will always be higher ($\$450 > \$400$ and $\$500 > \$300$), and since GarysGym has no dominant strategy, it is better off to lower its price ($\$580 > \$350$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



GaterTools, a profit-maximizing firm, has a patent on a power tool, making it the only producer of that power tool. The graph above shows GaterTools' demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Calculate GaterTools' total revenue if the firm produces the allocatively efficient quantity. Show your work.

(b) Starting at a price of $12, if GaterTools were to increase the price by 4%, will the quantity demanded decrease by more than 4%, less than 4%, or exactly 4%? Explain.

(c) At a quantity of 10 units, is GaterTools' marginal product increasing, decreasing, or constant? Explain.

(d) Identify the quantity that maximizes GaterTools' profit. Explain.

(e) At the quantity identified in part (d), does GaterTools earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

Assume that GaterTools' patent expires. HandyBilt, a company with the capability to produce the same power tool as

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GaterTools, intends to enter the market and charge a lower price than GaterTools for the power tool. GaterTools is considering whether to maintain its price or to lower its price to match HandyBilt's price. HandyBilt is considering whether to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (GaterTools and HandyBilt) have complete information. The first entry in each cell represents GaterTools' payoff and the second entry represents HandyBilt's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		HandyBilt	
		Advertise	Not Advertise
GaterTools	Maintain Price	\$200, \$850	\$300, \$250
	Lower Price	\$420, \$400	\$520, \$440

(f) Does GaterTools have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose HandyBilt makes a credible commitment to GaterTools that if GaterTools maintains its price, then HandyBilt will pay GaterTools \$250. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

26. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates GaterTools' total revenue at the allocatively efficient quantity as \$580 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$10 \times 58 = \$580$$

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the quantity demanded will decrease by more than 4% and explains that the demand is elastic in

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this price range because marginal revenue is positive.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at a quantity of 10 units GaterTools' marginal product is increasing and explains that the marginal cost is falling.

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies that the firm's profit-maximizing quantity as 45 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns a positive economic profit and explains that the firm's average total cost curve is above the demand curve, or the firm charges a price that is less than the average total cost, or $\mathrm{P} < \mathrm{ATC}$.

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, GaterTools has a dominant strategy to lower the price and explains that GaterTools' payoff is always higher when it lowers its price ($\$420 > \$200$ and $\$520 > \$300$) regardless of whether HandyBilt chooses to advertise or not.

Or explains that when HandyBilt chooses to advertise, GaterTools' payoff is higher when it chooses to lower its price

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($420 > $200), and when HandyBilt chooses to not advertise, GaterTools' payoff is higher when it chooses to lower the price ($520 > $300); therefore, GaterTools' dominant strategy is to lower its price.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the Nash equilibrium as GaterTools lowers its price and HandyBilt does not advertise with payoffs of ($520 , $440), and explains that if GaterTools chooses to maintain its price its payoff will decrease from $520 to $300 and if HandyBilt chooses to advertise its payoff will decrease from $440 to $400; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

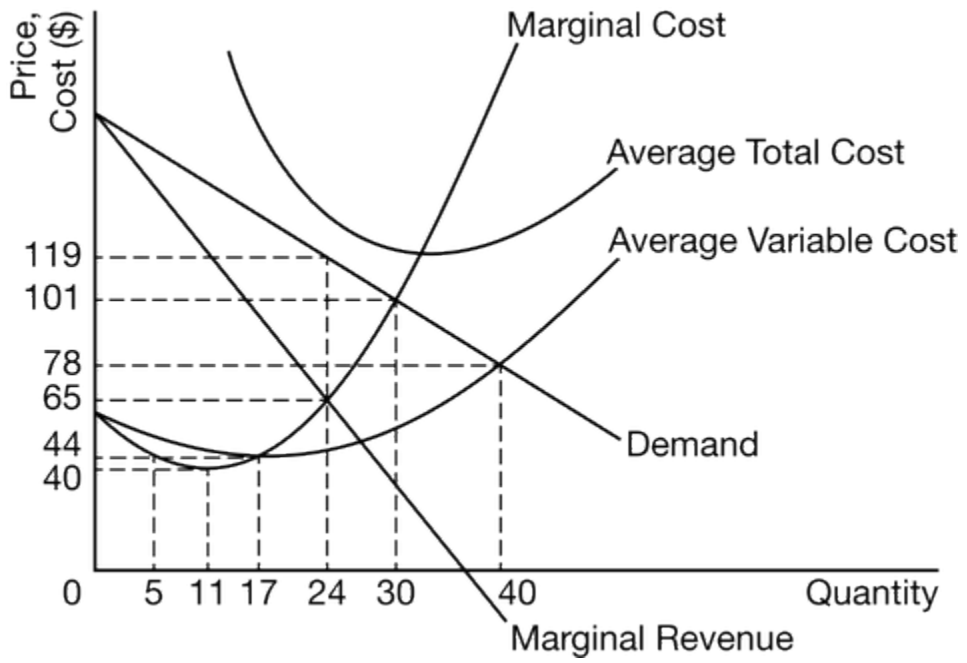
0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for GaterTools to maintain its price and HandyBilt to advertise with payoffs of ($450 , $600) because with the offer GaterTools would earn $450 (=$200 + $250) when maintaining the price compared to $420 (with lower price) and HandyBilt would earn $600 (=$850 − $200) when choosing to advertise compared to $0 (=$250 − $250 with not advertising). Or explains that with the offer GaterTools' dominant strategy will change to maintaining the price because its payoff will always be higher ($450 > $420 and $550 > $520) and since HandyBilt has no dominant strategy it is better off to advertise ($600 > $0); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



MemorEyes, a profit-maximizing firm, has a patent on a learning aid, making it the only producer of that learning aid. The graph above shows MemorEyes' demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Identify the quantity that maximizes MemorEyes' profit. Explain.

(b) At the quantity identified in part (a), does MemorEyes earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

(c) Calculate MemorEyes' total revenue if the firm produces the allocatively efficient quantity. Show your work.

(d) At a price of $40, will MemorEyes continue to produce or will it shut down in the short run? Explain.

(e) Assume that at 30 units, the average total cost is $120. If the total rent paid by MemorEyes increases by $450, calculate the firm's new average total cost at that output. Show your work.

Assume that MemorEyes' patent expires. Cognitz, a company with the capability to produce the same learning aid as MemorEyes, intends to enter the market and charge a lower price than MemorEyes for the learning aid. MemorEyes is considering whether to maintain its price or to lower its price to match Cognitz' price. Cognitz is considering whether or not to advertise its entry into the market.

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The matrix below shows the payoffs for each combination of strategies, and both players (MemorEyes and Cognitz) have complete information. The first entry in each cell represents MemorEyes' payoff and the second entry represents Cognitz' payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		Cognitz	
		Not Advertise	Advertise
MemorEyes	Lower Price	\$3,000 , \$3,400	\$4,000 , \$2,500
	Maintain Price	\$2,000 , \$6,500	\$3,000 , \$8,500

(f) Does Cognitz have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose Cognitz makes a credible commitment to MemorEyes that if MemorEyes maintains its price, then Cognitz will pay MemorEyes \$1,500. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

27. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the profit-maximizing quantity as 24 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns negative economic profit and explains that the firm's average total cost curve is above the demand curve, or the firm charges a price that is less than the average total cost, or $\mathrm{ATC} > \mathrm{P}$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response calculates MemorEyes's total revenue at the allocatively efficient quantity as $3,030 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$101 \times 30 = \$3,030$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at that price ($40) the firm will shut down in the short run and explains it's because the price is below the average variable cost which means the firm does not generate enough revenue to pay for its variable costs so the firm loses more by producing, in the short run, than shutting down and just paying its fixed cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the new average total cost as $135 and shows the work.

$$\text{New ATC} = \frac{\text{Original Total Cost} + \text{Increase in Total Cost}}{\text{Quantity}} = \frac{\$120 \times 30 + \$450}{30} = \$135$$

or

$$\text{New ATC} = \text{Original Average Total Cost} + \frac{\text{Increase in Total Cost}}{\text{Quantity}} = \$120 + \frac{\$450}{30} = \$135$$

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, Cognitz does not have dominant strategy and explains that when MemorEyes lowers its price, Cognitz's payoff is higher if it does not advertise ($\$3,400 > \$2,500$), and when MemorEyes maintains its price,

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Cognitz's payoff is higher when it chooses to advertise ($\$8{,}500 > \$6{,}500$); therefore, Cognitz does not have a dominant strategy.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Nash equilibrium as MemorEyes lowers its price and Cognitz does not advertise with payoffs of $(\$3{,}000, \$3{,}400)$, and explains that if MemorEyes chooses to maintain its price, its payoff will decrease from $3,000 to $2,000, and if Cognitz chooses to advertise, its payoff will decrease from $3,400 to $2,500; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for MemorEyes to maintain its price and Cognitz to advertise with payoffs of $(\$4{,}500, \$7{,}000)$ because with the offer MemorEyes would earn $4,500 ($=\$3{,}000 + \$1{,}500$) when choosing to maintain the price compared to $4,000 (with lower price), and Cognitz would earn $7,000 (

$$=\$8{,}500 - \$1{,}500$$

) when choosing to advertise compared to $5,000 (

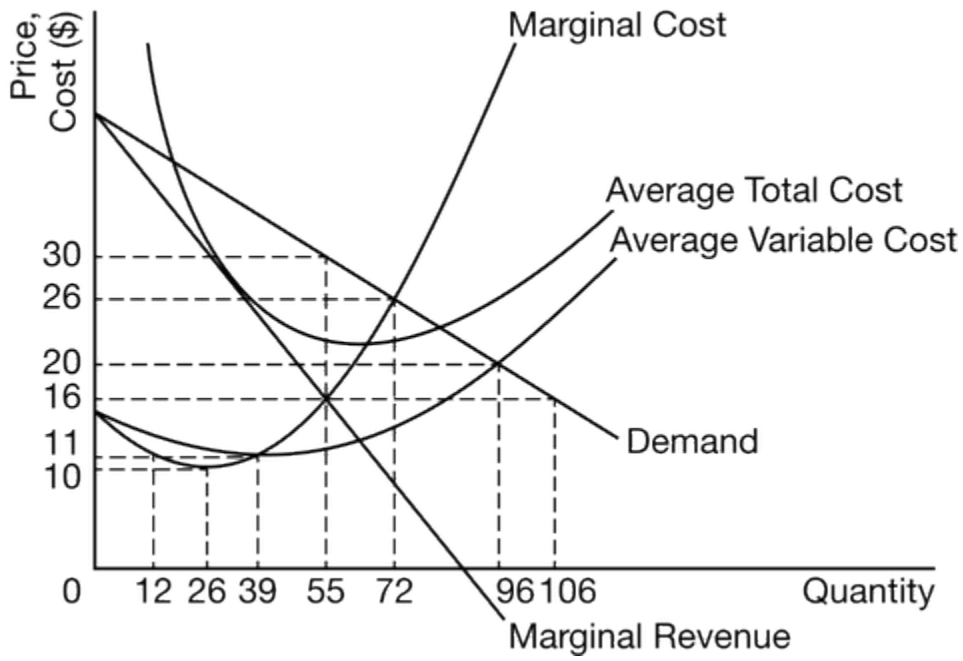
$$=\$6{,}500 - \$1{,}500$$

with not advertising); therefore, there is no incentive for either firm to change its strategy. Or explains that with the offer MemorEyes' dominant strategy will change to maintain the price because its payoff will always be higher $\$3{,}500 > \$3{,}000$ and $\$4{,}500 > \$4{,}000$) and since Cognitz has no dominant strategy it is better off to advertise $\$7{,}000 > \$5{,}000$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



NanoWare, a profit-maximizing firm, has a patent on software, making it the only producer of that software. The graph above shows NanoWare's demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Identify the quantity that maximizes NanoWare's profit. Explain.

(b) At the quantity identified in part (a), does NanoWare earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

(c) Calculate NanoWare's total revenue if the firm produces the allocatively efficient quantity. Show your work.

(d) At a price of $26, will NanoWare continue to produce or will it shut down in the short run? Explain.

(e) Assume that at 72 units, the average total cost is $22. If the total advertising costs paid by NanoWare increase by $216, calculate the firm's new average total cost at that output. Show your work.

Assume that NanoWare's patent expires. HotCode, a company with the capability to produce the same software as NanoWare, intends to enter the market and charge a lower price than NanoWare for the software. NanoWare is considering whether to maintain its price or to lower its price to match HotCode's price. HotCode is considering whether or not to advertise its entry into the market.

The matrix below shows the payoffs for each combination of strategies, and both players (NanoWare and HotCode) have

complete information. The first entry in each cell represents NanoWare's payoff and the second entry represents HotCode's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		HotCode	
		Not Advertise	Advertise
NanoWare	Lower Price	\$1,000 , \$4,200	\$3,500 , \$4,000
	Maintain Price	\$2,000 , \$4,600	\$3,000 , \$4,400

(f) Does HotCode have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose NanoWare makes a credible commitment to HotCode that if HotCode advertises, then NanoWare will pay HotCode \$500. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

28. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies profit-maximizing quantity as 55 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns positive economic profit and explains that the firm's average total cost curve is below the demand curve, or the firm charges a price that is greater than the average total cost, or $\mathrm{P} > \mathrm{ATC}$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response calculates NanoWare's total revenue at the allocatively efficient quantity as $1,872 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$26 \times 72 = \$1,872$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at that price ($26) the firm will continue to produce and not shut down in the short run and explains it's because the price is above the average variable cost and the average total cost which means the firm generates enough revenue to pay for both its variable costs and its fixed costs, so the firm makes positive economic profit, but if it shuts down it makes a loss equal to its fixed costs.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the new average total cost as $25 and shows the work.

$$\text{New ATC} = \frac{\text{Original Total Cost} + \text{Increase in Total Cost}}{\text{Quantity}} = \frac{\$22 \times 72 + \$216}{72} = \$25$$

or

$$\text{New ATC} = \text{Original Average Total Cost} + \frac{\text{Increase in Total Cost}}{\text{Quantity}} = \$22 + \frac{\$216}{72} = \$25$$

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, HotCode has a dominant strategy and explains that HotCode's payoff is always higher when

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it chooses to not advertise ($\$4{,}200 > \$4{,}000$ and $\$4{,}600 > \$4{,}400$) regardless of whether NanoWare chooses to lower or maintain its price; or explains that when NanoWare chooses to lower its price, HotCode's payoff is higher when it chooses to not advertise ($\$4{,}200 > \$4{,}000$), and when NanoWare chooses to maintain its price, HotCode's payoff is higher when it chooses to not advertise ($\$4{,}600 > \$4{,}400$); therefore, HotCode's dominant strategy is to not advertise.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Nash equilibrium as NanoWare maintains its price and HotCode does not advertise with payoffs of $(\$2{,}000, \$4{,}600)$, and explains that if NanoWare chooses to lower its price, its payoff will decrease from $2,000 to $1,000, and if HotCode chooses to advertise, its payoff will decrease from $4,600 to $4,400; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that yes, this offer will result in a Nash equilibrium with different strategies and explains that the new strategies will be for NanoWare to lower its price and HotCode to advertise with payoffs of $(\$3{,}000, \$4{,}500)$ and explain that with the offer HotCode would earn $4,500 ($=\$4{,}000 + \$500$) when choosing to advertise compared to $4,200 (with not advertising), and NanoWare would earn $3,000 (

$$=\$3{,}500 - \$500$$

) when choosing to lower the price compared to $2,500 (

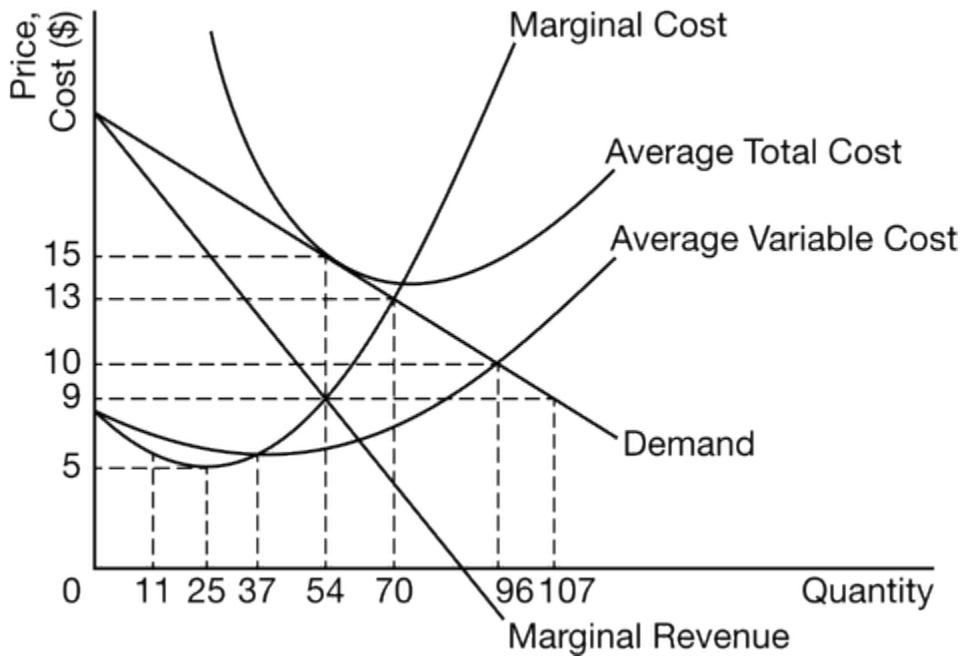
$$=\$3{,}000 - \$500$$

with maintaining the price); therefore, there is no incentive for either firm to change its strategy. Or explains that with the offer HotCode's dominant strategy will change to advertise because its payoff will always be higher ($\$4{,}500 > \$4{,}200$ and $\$4{,}900 > \$4{,}600$) and since NanoWare has no dominant strategy it is better off to lower the price ($\$3{,}000 > \$2{,}500$); therefore, there is no incentive for either firm to change its strategy.

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Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. If the question prompts you to "Calculate," you must show how you arrived at your final answer.

Use the graph provided below to answer parts (a)-(e).



TechnoParts, a profit-maximizing firm, has a patent on an electronic component, making it the only producer of that electronic component. The graph above shows TechnoParts' demand, marginal revenue, average total cost, average variable cost, and marginal cost curves.

(a) Identify the quantity that maximizes TechnoParts' profit. Explain.

(b) At the quantity identified in part (a), does TechnoParts earn a positive economic profit, a negative economic profit, or zero economic profit? Explain.

(c) Calculate TechnoParts' total revenue if the firm produces the allocatively efficient quantity. Show your work.

(d) At a price of $5, will TechnoParts continue to produce or will it shut down in the short run? Explain.

(e) Assume that at 70 units, the average total cost is $14. If the total property taxes paid by TechnoParts increase by $280, calculate the firm's new average total cost at that output. Show your work.

Assume that TechnoParts' patent expires. Faradaze, a company with the capability to produce the same electronic component as TechnoParts, intends to enter the market and charge a lower price than TechnoParts for the electronic component. TechnoParts is considering whether to maintain its price or to lower its price to match Faradaze's price. Faradaze is considering whether or not to advertise its entry into the market.

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The matrix below shows the payoffs for each combination of strategies, and both players (TechnoParts and Faradaze) have complete information. The first entry in each cell represents TechnoParts' payoff and the second entry represents Faradaze's payoff. Each player independently and simultaneously chooses its strategy. Use the matrix provided below to answer parts (f)-(h).

		Faradaze	
		Not Advertise	Advertise
TechnoParts	Lower Price	\$1,000 , \$9,500	\$3,000 , \$3,500
	Maintain Price	\$2,000 , \$6,500	\$4,000 , \$8,500

(f) Does Faradaze have a dominant strategy? Explain using numbers from the payoff matrix.

(g) Identify the Nash equilibrium. Explain why this is a Nash equilibrium using information from the payoff matrix.

(h) Suppose Faradaze makes a credible commitment to TechnoParts that if TechnoParts lowers its price, then Faradaze will pay TechnoParts \$750. Will this offer result in a Nash equilibrium with different strategies from those identified in part (g) ? Explain using numbers from the payoff matrix.

29. Respond to all parts of the question.

Part A

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies the firm's profit-maximizing quantity as 54 units and explains that at that quantity marginal revenue is equal to marginal cost.

Part B

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that the firm earns a zero economic profit and explains that the firm's average total cost curve is tangent to the demand curve, or the firm charges a price that is equal to the average total cost, or $\mathrm{ATC} = \mathrm{P} = \$15$.

Part C

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

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0	1 ✓

The response calculates TechnoParts's total revenue at the allocatively efficient quantity as $910 and shows the work.

$$\text{Total Revenue} = \text{Price} \times \text{Quantity} = \$13 \times 70 = \$910$$

Part D

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that at that price ($5) the firm will shut down in the short run and explains it's because the price is below the average variable cost which means the firm does not generate enough revenue to pay for its variable costs, so the firm loses more by producing, in the short run, than shutting down and just paying its fixed cost.

Part E

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response calculates the new average total cost as $18 and shows the work.

$$\text{New ATC} = \frac{\text{Original Total Cost} + \text{Increase in Total Cost}}{\text{Quantity}} = \frac{\$14 \times 70 + \$280}{70} = \$18$$

or

$$\text{New ATC} = \text{Original Average Total Cost} + \frac{\text{Increase in Total Cost}}{\text{Quantity}} = \$14 + \frac{\$280}{70} = \$18$$

Part F

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, Faradaze does not have a dominant strategy and explains that when Techno Parts chooses to lower its price, Faradaze's payoff is higher if it does not advertise ($\$9{,}500 > \$3{,}500$), and when TechnoParts chooses to

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maintain its price, Faradaze's payoff is higher if it advertises ($\$8{,}500 > \$6{,}500$); therefore, Faradaze does not have a dominant strategy.

Part G

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response identifies Nash equilibrium as TechnoParts maintains its price and Faradaze advertises with payoffs of $(\$4{,}000, \$8{,}500)$, and explains that if TechnoParts chooses to lower its price, its payoff will decrease from $4,000 to $3,000, and if Faradaze chooses to not advertise, its payoff will decrease from $8,500 to $6,500; therefore, there is no incentive for either firm to change its strategy.

Part H

Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1 ✓

The response states that no, this offer will not result in a Nash equilibrium with different strategies and explains that the Nash equilibrium strategies will still be for TechnoParts to maintain its price and Faradaze to advertise with payoffs of $(\$4{,}000, \$8{,}500)$ because if TechnoParts chooses to lower its price, its payoff will decrease from $4,000 to $3,750 ($=\$3{,}000 + \$750$), and if Faradaze chooses to not advertise, its payoff will decrease from $8,500 to $6,500; therefore, there is no incentive for either firm to change its strategy. Or explains that with the offer TechnoParts' dominant strategy will continue to be to maintain the price because its payoff will always be higher ($\$2{,}000 > \$1{,}750$ and $\$4{,}000 > \$3{,}750$) and since Faradaze has no dominant strategy it is better off to not advertise ($\$8{,}500 > \$6{,}500$); therefore, there is no incentive for either firm to change its strategy.