j

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

j

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.

j

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

j

and the quantity supplied will decrease, therefore decreasing total surplus.

Assume that in a perfectly competitive market, a firm's costs and revenues are

marginal cost = average variable cost at $20

marginal cost = average total cost at $30

marginal cost = average revenue at $25

a. How will this firm determine the profit maximizing level of output?

b. What price will this firm charge? Explain how the firm determined this price.

c. Should this firm produce in the short run? Why or why not?

d. Will this firm earn a profit or incur a loss? Why?

2. Respond to all parts of the question.

Part A

1 Point

- **1 -** for MC=MR=P or MR=MC or P=MC

0	1 ✓

The student earns all of the following points:

1 - for MC=MR=P or MR=MC or P=MC

Part B

2 Points

- **1 -** Price equals $25
- **1 -** Market/industry determines the price.

Or price may be used to link marginal revenue to average revenue.

j

0	1	2 ✓

The student earns all of the following points:

- **1 -** Price equals $25
- **1 -** Market/industry determines the price.

Or price may be used to link marginal revenue to average revenue.

Part C

1- for yes, and reason P>AVC or TR>TVC.

0	1 ✓

The student earns all of the following points:

1 - for yes, and reason P>AVC or TR>TVC.

Part D

1 - for loss and reason - P<ATC or TR<TC is acceptable.

0	1 ✓

The student earns all of the following points:

1 - for loss and reason - P<ATC or TR<TC is acceptable.

j

In answering the question, you should emphasize the line of reasoning that generated your results; it is not enough to list the results of your analysis. 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.

Bestmilk, a typical profit-maximizing dairy firm, is operating in a constant-cost, perfectly competitive industry that is in long-run equilibrium.

a. *Draw correctly labeled side-by*-side graphs for the dairy market and for Bestmilk and show each of the following.

    i. Price and output for the industry

    ii. Price and output for Bestmilk

b. Assume that milk is a normal good and that consumer income falls. Assume that Bestmilk continues to produce. On your graphs in part (a), show the effect of the decrease in income on each of the following in the short run.

    i. Price and output for the industry

    ii. Price and output for Bestmilk

    iii. Area of loss or profit for Bestmilk

c. Following the decrease in consumer income, what must be true for Bestmilk to continue to produce in the short run?

d. Assume that the industry adjusts to a new long-run equilibrium. Compare the following between the initial and the new long-run equilibrium.

    i. Price in the industry

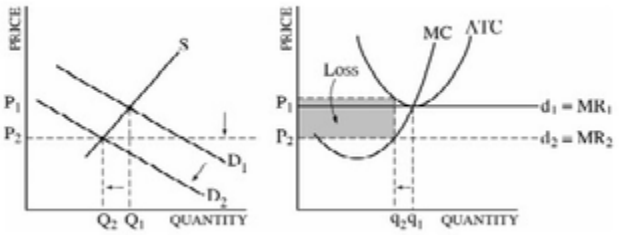
    ii. Output of a typical firm

    iii. The number of firms in the dairy industry

3. Respond to all parts of the question.

Part A

j

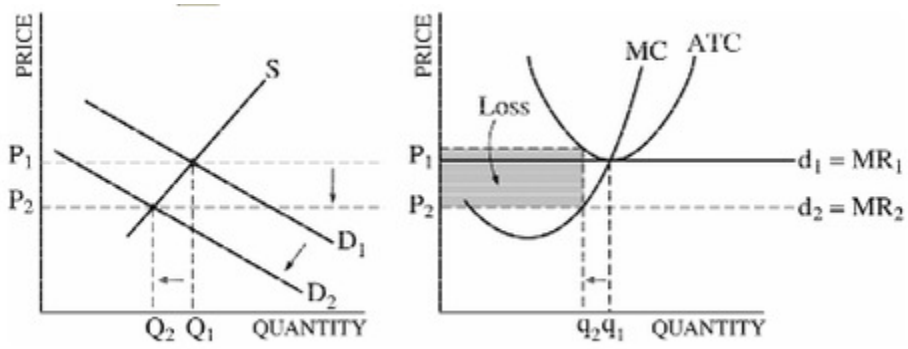


4 Points

- One point is earned for a correctly labeled market graph of the dairy industry.
- One point is earned for correctly labeled equilibrium industry price and quantity.
- One point is earned for drawing a horizontal demand curve for Bestmilk at the market price.
- One point is earned for showing the equilibrium quantity for Bestmilk where price equals marginal cost and the minimum of average total cost (P = MC = ATC).

0	1	2	3	4 ✓

The student earns all of the following points:



- One point is earned for a correctly labeled market graph of the dairy industry.
- One point is earned for correctly labeled equilibrium industry price and quantity.
- One point is earned for drawing a horizontal demand curve for Bestmilk at the market price.
- One point is earned for showing the equilibrium quantity for Bestmilk where price equals marginal cost and the minimum of average total cost (P = MC = ATC).

Part B

4 points maximum

j

- One point is earned for showing a decrease in market demand.
- One point is earned for showing a decrease in equilibrium market price and quantity.
- One point is earned for showing the change to a new lower profit-maximizing price and quantity for Bestmilk.
- One point is earned for shading the area of loss for Bestmilk.

0	1	2	3	4 ✓

The student earns all of the following points:

4 points maximum

- One point is earned for showing a decrease in market demand.
- One point is earned for showing a decrease in equilibrium market price and quantity.
- One point is earned for showing the change to a new lower profit-maximizing price and quantity for Bestmilk.
- One point is earned for shading the area of loss for Bestmilk.

Part C

1 Point

- One point is earned for stating that P>/=AVC, or TR>/=TVC, or P>AVC, or TR>TVC, or losses are less than total fixed cost.

0	1 ✓

The student earns all of the following points:

1 point maximum

- One point is earned for stating that P>/=AVC, or TR>/=TVC, or P>AVC, or TR>TVC, or losses are less than total fixed cost.

Part D

3 Points maximum

- One point is earned for stating that industry price returns to the original long-run equilibrium price.
- One point is earned for stating that the output of a typical fi rm returns to the original profit-maximizing quantity.

j

- One point is earned for stating that there is a decrease in the number of firms.

0	1	2	3 ✓

The student earns all of the following points:

3 points maximum

- One point is earned for stating that industry price returns to the original long-run equilibrium price.
- One point is earned for stating that the output of a typical fi rm returns to the original profit-maximizing quantity.
- One point is earned for stating that there is a decrease in the number of firms.

j

Brody's firm produces trumpets in a perfectly competitive market. The table below shows Brody's total variable cost. He has a fixed cost of $240, and the price per trumpet is $60.

Quantity	Total Variable Cost
6	$120
7	$145
8	$165
9	$220
10	$290
11	$390

a. Calculate the average total cost of producing 6 trumpets. Show your work.

b. Calculate the marginal cost of producing the 11th trumpet.

c. What is Brody's profit-maximizing quantity? Use marginal analysis to explain your answer.

d. At the profit-maximizing quantity you determined in part (c), calculate Brody's profit or loss. Show your work.

e. Brody also produces saxophones at a loss in a perfectly competitive market. Draw a correctly labeled graph for Brody's firm showing the following at a market price of $200.

   i. Brody's profit-maximizing quantity of saxophones

   ii. Brody's loss, completely shaded

4. Respond to all parts of the question.

Part A

1 point is earned for: correctly calculating the ATC of producing 6 trumpets as $60 and for showing the work.

ATC = TC / Q = (FC + VC) / Q = ($240 + $120) / 6 = $360 / 6 = $60

OR

ATC = AFC + AVC = ($240 / 6) + ($120 / 6) = $40 + $20 = $60

j

0	1 ✓

The student response earns all of the following points:

1 point is earned for: correctly calculating the ATC of producing 6 trumpets as $60 and for showing the work.

ATC = TC / Q = (FC + VC) / Q = ($240 + $120) / 6 = $360 / 6 = $60

OR

ATC = AFC + AVC = ($240 / 6) + ($120 / 6) = $40 + $20 = $60

Part B

1 point is earned for: correctly calculating the marginal cost of the 11th trumpet as $100.

0	1 ✓

The student response earns all of the following points:

1 point is earned for: correctly calculating the marginal cost of the 11th trumpet as $100.

Part C

1 point is earned for: correctly stating that Brody's profit-maximizing quantity is 9 trumpets, and for explaining how Brody uses marginal analysis. Brody determines quantity by equating MR to MC **OR** by choosing the greatest quantity with MR > MC: At the 9th trumpet: MR > MC ($60 > $55) and at the 10th trumpet: MR < MC ($60 < $70)

OR At the 9th trumpet: MR > MC ($60 > $55) and this is the last trumpet with MR > MC

Note: Using P instead of MR is also acceptable because P = MR for perfectly competitive firms.

0	1 ✓

The student response earns all of the following points:

1 point is earned for: correctly stating that Brody's profit-maximizing quantity is 9 trumpets, and for explaining how Brody uses marginal analysis. Brody determines quantity by equating MR to MC **OR** by choosing the greatest quantity with MR > MC: At the 9th trumpet: MR > MC ($60 > $55) and at the 10th trumpet: MR < MC ($60 < $70)

OR At the 9th trumpet:MR > MC ($60 > $55) and this is the last trumpet with MR > MC

j

Note: Using P instead of MR is also acceptable because P = MR for perfectly competitive firms.

Part D

1 point is earned for: correctly calculating Brody's profit as $80 and for showing the work.

Profit = Total Revenue – Total Cost = ($60 × 9) – ($220 + $240) = $540 – $460 = $80

OR

Profit = (P – ATC) × Q = ($60 – $51.11) × 9 = $80

0	1 ✓

The student response earns all of the following points:

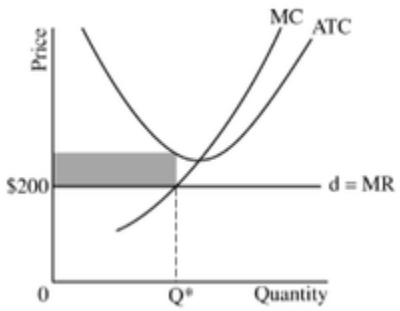
1 point is earned for: correctly calculating Brody's profit as $80 and for showing the work.

Profit = Total Revenue – Total Cost = ($60 × 9) – ($220 + $240) = $540 – $460 = $80

OR

Profit = (P – ATC) × Q = ($60 – $51.11) × 9 = $80

Part E



1 point is earned for: drawing a correctly labeled graph for a perfectly competitive firm with a horizontal demand curve at P = $200.

1 point is earned for: showing the profit-maximizing quantity, Q*, on the horizontal axis at MR = MC, connected with a dashed line.

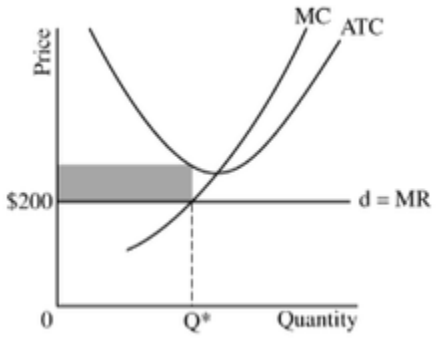
1 point is earned for: showing the ATC curve above the demand (d) curve at Q* and with the MC curve cutting the ATC curve at its minimum and for completely shading the area representing the loss.

Note: All quantities and prices should be labeled on the axes and connected to the intersection points by dashed lines.

j

0	1	2	3 ✓

The student response earns all of the following points:



1 point is earned for: drawing a correctly labeled graph for a perfectly competitive firm with a horizontal demand curve at P = $200.

1 point is earned for: showing the profit-maximizing quantity, Q*, on the horizontal axis at MR = MC, connected with a dashed line.

1 point is earned for: showing the ATC curve above the demand (d) curve at Q* and with the MC curve cutting the ATC curve at its minimum and for completely shading the area representing the loss.

Note: All quantities and prices should be labeled on the axes and connected to the intersection points by dashed lines.

j

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.

j

Will Dave's General Store's profit-maximizing quantity of Good X 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 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

j

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 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

j

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 will intersect marginal revenue at a lower quantity.

Assume that a firm uses capital as a fixed factor of production and uses labor as a variable factor. The marginal product of labor at first increases and then decreases with the amount of labor.

a. Using a correctly labeled graph, draw and identify the firm's average total cost curve (ATC), average variable cost curve (AVC), and marginal cost curve (MC).

b. Given your graph in part (a), answer each of the following.

   i. Why is the MC shaped as it is?

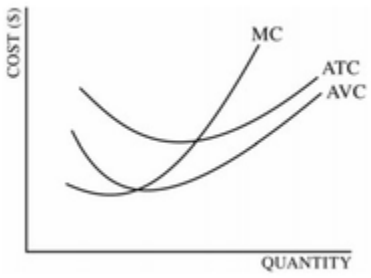
   ii. What does the difference between the AVC and the ATC represent?

c. Define economies of scale.

d. Draw a long-run average total cost curve that has a region of economies of scale followed by a region of diseconomies of scale, as output increases.

6. Respond to all parts of the question.

Part A



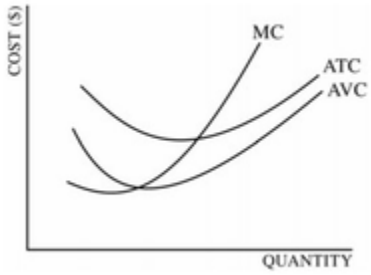
3 Points

- One point is earned for a U-shaped ATC curve.
- One point is earned for a U-shaped AVC curve that lies below the ATC curve.
- One point is earned for an MC curve that is drawn correctly given the average costs curve.

0	1	2	3 ✓

j

The student earns all of the following points:



- One point is earned for a U-shaped ATC curve.
- One point is earned for a U-shaped AVC curve that lies below the ATC curve.
- One point is earned for an MC curve that is drawn correctly given the average costs curve.

Part B

2 Points

- One point is earned for stating that the MC curve is U-shaped because there are increased returns to labor followed by decreasing returns to labor OR because of the law of diminishing marginal returns.
- One point is earned for stating the average fixed cost.

0	1	2 ✓

The student earns all of the following points:

- One point is earned for stating that the MC curve is U-shaped because there are increased returns to labor followed by decreasing returns to labor OR because of the law of diminishing marginal returns.
- One point is earned for stating the average fixed cost.

Part C

1 Point

- One point is earned for stating that the long-run average cost curve decreases as the firm increases output.

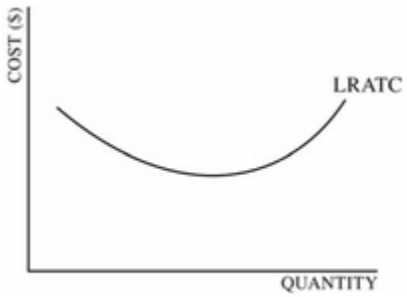
0	1 ✓

The student earns all of the following points:

j

- One point is earned for stating that the long-run average cost curve decreases as the firm increases output.

Part D

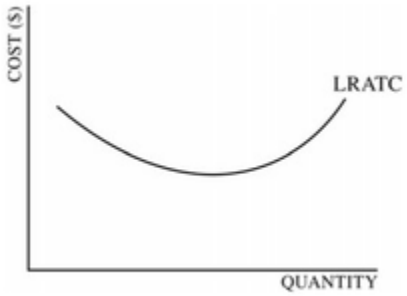


1 Point

- One point is earned for drawing a U-shaped long-run average total cost curve.

0	1 ✓

The student earns all of the following points



One point is earned for drawing a U-shaped long-run average total cost curve.

j

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.

j

(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.

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 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.

j

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,

j

thus decreasing total economic surplus.

j

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.

j

(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.

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 $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.

j

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

j

quantity.

j

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.

j

(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.

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 $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.

j

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

j

a variable cost, so a decrease in the wage will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

j

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

j

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

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 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.

j

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

j

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.

j

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

j

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.

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 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.

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

Part D

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

j

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 not affect the quantity exchanged in the market.

j

j

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.

j

(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.

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 $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.

j

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

j

shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

j

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.

j

(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.

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 $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.

j

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

j

binding and will not affect the quantity exchanged in the market.

Assume that pencils are manufactured in a perfectly competitive market that is in long-run equilibrium.

a. Draw correctly labeled side-by-side graphs for the pencil market and for a representative firm and show each of the following.

   i. The market price and quantity, labeled P_M and Q_M, respectively

   ii. The firm's profit-maximizing price and quantity, labeled P_F and Q_F, respectively

b. What is the relationship between P_M and P_F? Explain.

c. Rent on the factory building is an important fixed cost in the production of pencils, and the industry experiences significant increases in rent.

   i. What will happen to the firm's profit-maximizing quantity in the short run? Explain.

   ii. On your graph in part (a), show the impact of the rent increase and completely shade the area representing the firm's profit or loss in the short run.

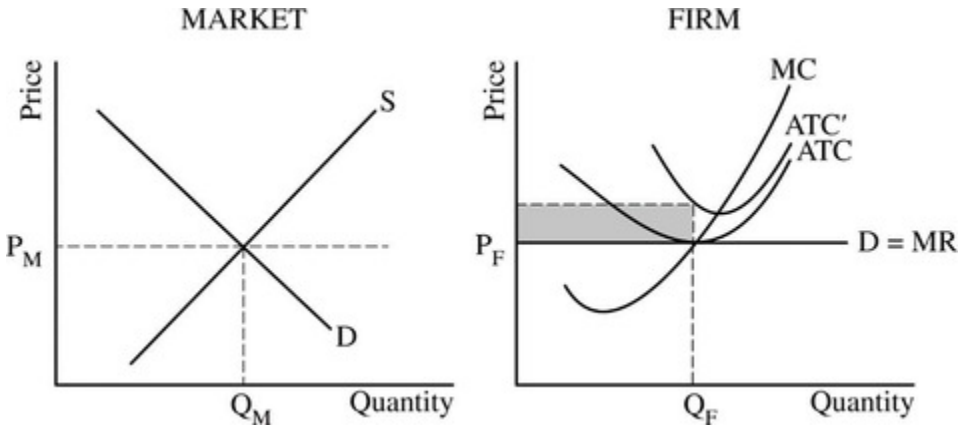
d. As a result of the rent increase, what will happen to each of the following in the long run?

   I. The number of firms in the market. Explain.

   II. The market equilibrium quantity relative to Q_M and the market equilibrium price relative to PM. Explain.

14. Respond to all parts of the question.

Part A



4 points:

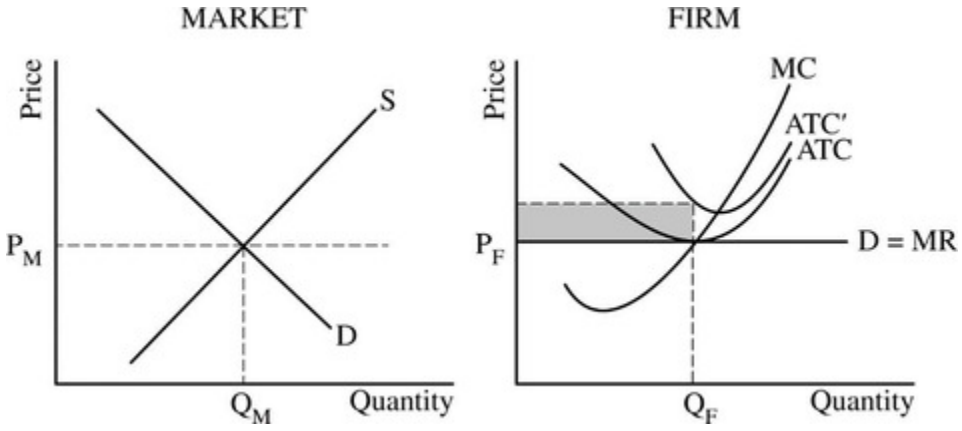
---

j

- One point is earned for drawing a correctly labeled graph for the market with a downward sloping demand curve and an upward sloping supply curve, and for labeling PM and QM.
- One point is earned for drawing a horizontal marginal revenue curve for the firm, at PF.
- One point is earned for showing the profit-maximizing quantity at MC=MR, labeled QF.
- One point is earned for showing the ATC curve tangent to the MR curve at QF where ATC is at its minimum.

0	1	2	3	4 ✓

Student Receives 4/4 point(s)



4 points:

- One point is earned for drawing a correctly labeled graph for the market with a downward sloping demand curve and an upward sloping supply curve, and for labeling PM and QM.
- One point is earned for drawing a horizontal marginal revenue curve for the firm, at PF.
- One point is earned for showing the profit-maximizing quantity at MC=MR, labeled QF.
- One point is earned for showing the ATC curve tangent to the MR curve at QF where ATC is at its minimum.

Part B

1 points:

· One point is earned for stating that PM=PF, and for explaining that the firm is a price taker OR the firm accepts the market equilibrium price as given.

0	1 ✓

j

Student Receives 1/1 point(s)

1 points:

- One point is earned for stating that PM=PF, and for explaining that the firm is a price taker OR the firm accepts the market equilibrium price as given.

Part C

2 points:

- One point is earned for stating that the firm's output will not change in the short run, and for explaining that a change in a fixed cost will not affect the firm's marginal cost OR that rent is not a variable cost AND will not affect the firm's marginal cost.
- One point is earned for showing an upward shift of the ATC curve and the area representing the firm's loss, completely shaded.

0	1	2 ✓

Student Receives 2/2 point(s)

2 points:

- One point is earned for stating that the firm's output will not change in the short run, and for explaining that a change in a fixed cost will not affect the firm's marginal cost OR that rent is not a variable cost AND will not affect the firm's marginal cost.
- One point is earned for showing an upward shift of the ATC curve and the area representing the firm's loss, completely shaded.

Part D

2 points:

- One point is earned for stating the number of firms in the market will decrease, and for explaining that some firms will exit the market as a result of the losses incurred in the short run.
- One point is earned for stating that the new market equilibrium quantity will decrease relative to QM and the new market equilibrium price will increase relative to PM and for explaining that the market supply will shift to the left.

0	1	2 ✓

Student Receives 2/2 point(s)

j

2 points:

- One point is earned for stating the number of firms in the market will decrease, and for explaining that some firms will exit the market as a result of the losses incurred in the short run.
- One point is earned for stating that the new market equilibrium quantity will decrease relative to QM and the new market equilibrium price will increase relative to PM and for explaining that the market supply will shift to the left.

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.

A firm's short-run production function shows the relationship between the firm's input and output. Assume the firm uses one variable input, labor, and one fixed input, capital. The following table shows short-run production function for a firm that produces widgets.

Quantity of Labor	Total Product
0	0
1	6
2	14
3	24
4	32
5	39
6	42

(a) Calculate the marginal product of the sixth worker. Show your work.

(b) Does the production function exhibit diminishing returns to labor? Explain.

(c) When marginal product is falling, what happens to marginal cost?

(d) On a single correctly labeled graph, draw the firm's short-run average total cost curve (ATC), average variable cost curve (AVC), and marginal cost curve (MC).

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.

---

j

The response must show appropriate work in order to receive the point.

0	1 ✓

The response states that the MP of the sixth worker is 3 units and shows appropriate work.

MP of the sixth worker $= (42 - 39)/(6 - 5) = 3$ units

Part (b)

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

The response must both state that the production function exhibits diminishing returns and explain why in order to receive the point. In addition to the explanation given, it is also acceptable for the student to simply explain that starting with the 4th worker, each additional worker adds less to total output thus exhibiting diminishing returns to labor.

0	1 ✓

The response correctly states that the production function exhibits diminishing returns and goes on to explain that because of the fixed input in the short run, initially, as more and more workers are added (from zero to three), total product increases at an increasing rate. It then continues to increase at a decreasing rate (from four to six), and further additions of labor eventually result in a decline in total product. Thus the production function exhibits diminishing returns to labor.

Part (c)

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

0	1 ✓

The response correctly describes the relationship between marginal product and marginal cost—when marginal product is falling, the marginal cost must be rising. OR the response states that the marginal cost is a mirror image of the marginal product; it rises as marginal product falls due to diminishing returns.

Part (d)

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

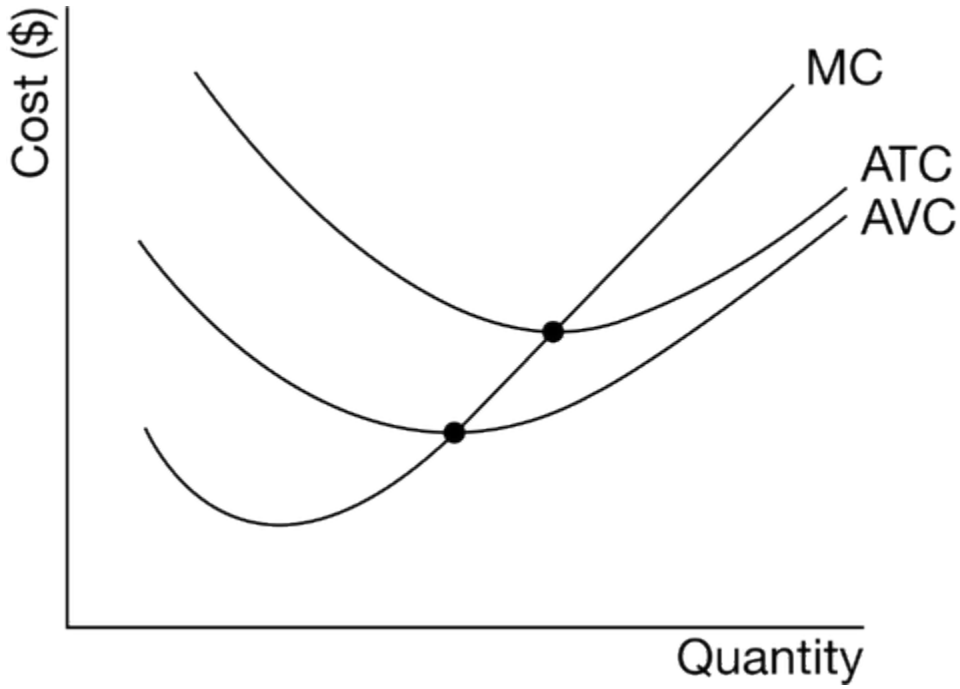
0	1	2 ✓

j

The response accurately includes both of the criteria below.

- [ ] A correctly labeled U-shaped ATC and AVC curves with the ATC curve above the AVC curve everywhere
- [ ] A rising MC curve crossing both the AVC and ATC curves at their minimum points

Solution



j

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.

Assume that Jasmine is a typical firm that produces and sells T-shirts in a perfectly competitive constant-cost industry. The market is currently in long-run equilibrium. The market price is $5, and Jasmine's marginal cost at each level of output is listed in the table below.

Quantity of Output	Marginal Cost
0	0
1	2
2	3
3	4
4	5
5	6
6	7

(a) What is Jasmine's profit-maximizing quantity of output? Explain.

(b) Draw a correctly labeled graph for Jasmine, and show Jasmine's total revenue at the profit-maximizing quantity, shaded completely.

(c) Now assume consumer demand for T-shirts increases. What will happen to the number of firms in the market in the long 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.

The response must both identify Jasmine's profit-maximizing quantity as 4 T-shirts and explain why in order to earn the point.

0	1 ✓

The response correctly identifies Jasmine's profit-maximizing quantity of T-shirts as 4 and explains that at that quantity, the price (marginal revenue) of a T-shirt ($5) and the marginal cost ($5) are equal. If Jasmine were to increase production

j

to 5, the marginal cost ($6) would exceed the price ($5); therefore, producing the fifth T-shirt would reduce her profit.

Part (b)

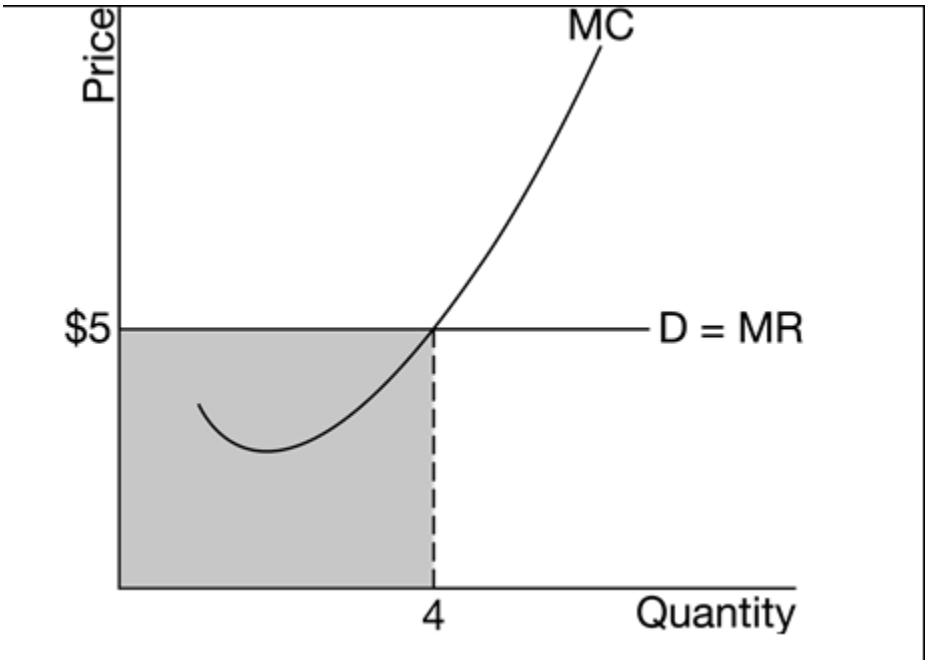
Select a point value to view scoring criteria, solutions, and/or examples and to score the response.

0	1	2	3 ✓

The response accurately includes all three of the criteria below.

- ☐ A correctly labeled graph for Jasmine with a horizontal demand (marginal revenue) curve at $5
- ☐ The profit-maximizing quantity, 4, as being where $MR = MC$
- ☐ The area representing the total revenue at the profit-maximizing quantity shaded completely

Solution



Part (c)

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

The response must both state that the number of firms in the industry will increase and explain why in order to earn the point.

j

0	1 ✓

The response states that the number of firms in the industry will increase and goes on to explain that this happens because of entry of new firms attracted by the short-run profits that firms are earning as a result of the increase in demand and higher short-run equilibrium price for T-shirts.

j

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.

j

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 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.

j

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 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

j

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.

j

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.

j

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 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.

j

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 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

j

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.

j

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

j

quantity of Good J for Sarah's Tool Store increase, decrease, or stay the same in the short run? 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 $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 8th unit is the last unit where the marginal revenue ($42) is greater than the marginal cost ($40); the firm will not produce the 9th 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.

j

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 ✓

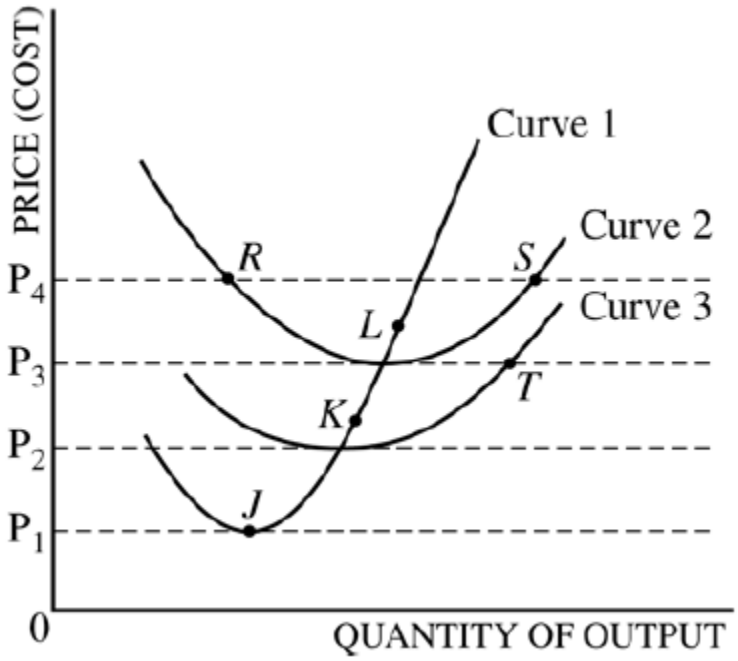
The response does both of the following:

· 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

j

quantity.



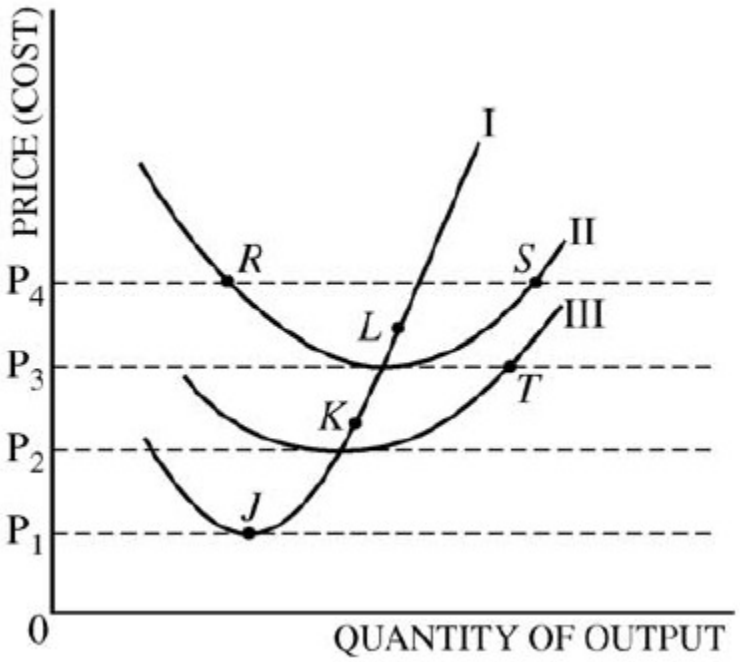
The graph above shows the short-run cost structure of a firm in a perfectly competitive industry.

a. Identify the cost curves that are denoted by each of the following labels.
    i. Curve 1
    ii. Curve 2
    iii. Curve 3
b. Explain why curve 1 does each of the following as output increases.
    i. Initially decreases
    ii. Finally increases
c. What measure of cost is represented by the vertical distance between curve 2 and curve 3 ?
d. Explain why the vertical distance between curve 2 and curve 3 decreases as output increases.
e. Using the letters on the graph, identify two points on the firm's short-run supply curve.

20. Respond to all parts of the question.

Part A

j



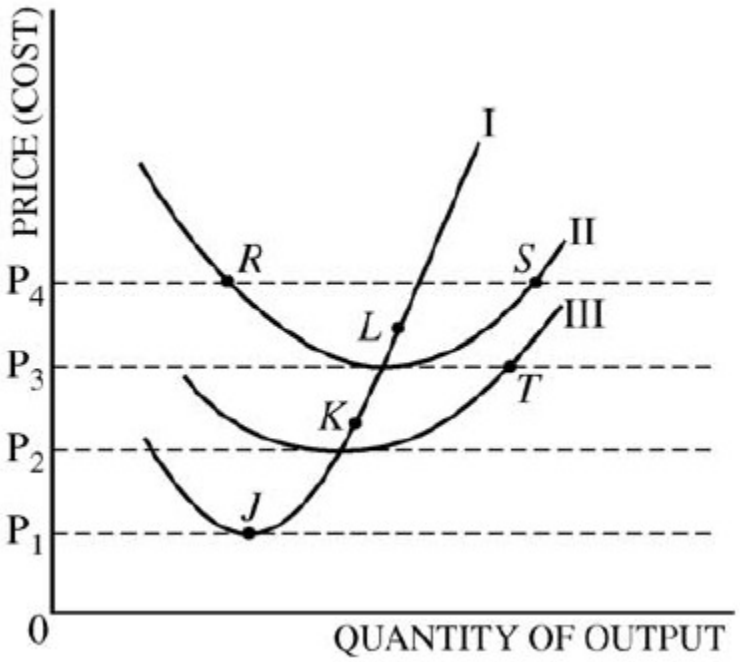
3 points:

- One point is earned for identifying curve I as marginal cost (MC).
- One point is earned for identifying curve II as average total cost (ATC).
- One point is earned for identifying curve III as average variable cost (AVC).

0	1	2	3 ✓

Student receives 3/3 point(s)

j



3 points:

- One point is earned for identifying curve I as marginal cost (MC).
- One point is earned for identifying curve II as average total cost (ATC).
- One point is earned for identifying curve III as average variable cost (AVC).

Part B

2 points:

- One point is earned for a correct explanation for (i): increasing marginal returns or increasing marginal product (productivity) or increasing returns or specialization.
- One point is earned for a correct explanation for (ii): decreasing marginal returns (productivity) or (the law of) diminishing marginal returns or sharing of fixed inputs.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for a correct explanation for (i): increasing marginal returns or increasing marginal product (productivity) or increasing returns or specialization.
- One point is earned for a correct explanation for (ii): decreasing marginal returns (productivity) or (the law of)

j

diminishing marginal returns or sharing of fixed inputs.

Part C

1 point:

- One point is earned for identifying the average fixed cost.

0	1 ✓

Student receives 1/1 point(s)

1 point:

- One point is earned for identifying the average fixed cost.

Part D

1 point:

- One point is earned for stating that the fixed cost is spread over larger quantity, so AFC decreases.

0	1 ✓

Student receives 1/1 point(s)

1 point:

- One point is earned for stating that the fixed cost is spread over larger quantity, so AFC decreases.

Part E

1 point:

- One point is earned for identifying K and L.

0	1 ✓

Student receives 1/1 point(s)

1 point:

j

- One point is earned for identifying K and L.

j

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

j

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.

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 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.

j

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

j

shift the marginal cost curve upward at each quantity so that marginal cost will intersect marginal revenue at a lower quantity.

j

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.

j

(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.

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 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.

j

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

j

a variable cost, so a decrease in the wage will shift the marginal cost curve downward at each quantity so that marginal cost will intersect marginal revenue at a higher quantity.

j

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

j

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.

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 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.

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

Part D

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

j

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 not affect the quantity exchanged in the market.

j

j

***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.

j

(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.

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 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.

j

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

j

and the quantity supplied will decrease, therefore decreasing total surplus.

j

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

j

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

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 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.

j

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

j

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.

Umbrellas are produced by a perfectly competitive, constant-cost industry. In the short run, the equilibrium price is $7 per umbrella and the typical firm is operating with a loss. The typical firm has the total cost function shown in the table below.

Daily Output	Total Cost per Day
0	$10
1	$13
2	$18
3	$24
4	$32
5	$45
6	$60

a. Using a correctly labeled graph, draw the demand curve for a typical firm in this industry.

b. Using the data above, determine each of the following for the typical firm.

   i. Total fixed cost

   ii. The loss-minimizing level of output

   iii. The value of losses at the output level you found in part (b)(ii)

c. Explain why the typical firm chooses to operate despite incurring a loss in the short run.

d. If the total cost per day remains unchanged in the long run, what is the long-run equilibrium price for umbrellas?

26. Respond to all parts of the question.

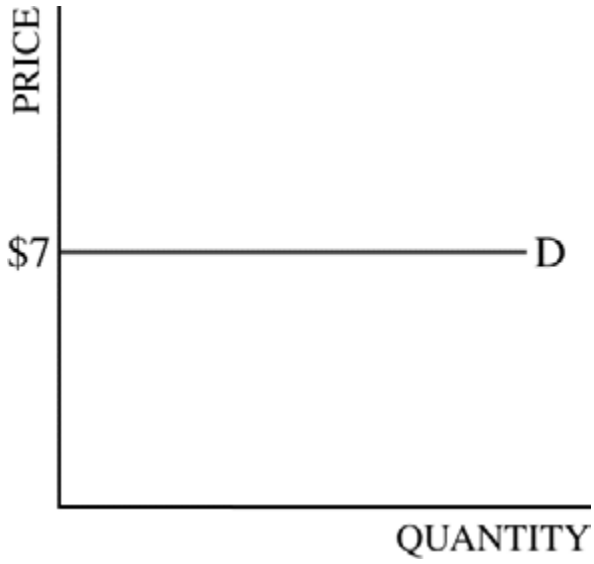
Part A

---

j

1 point:

- One point is earned for a correctly labeled graph showing a horizontal demand curve, D, for the firm at $7.

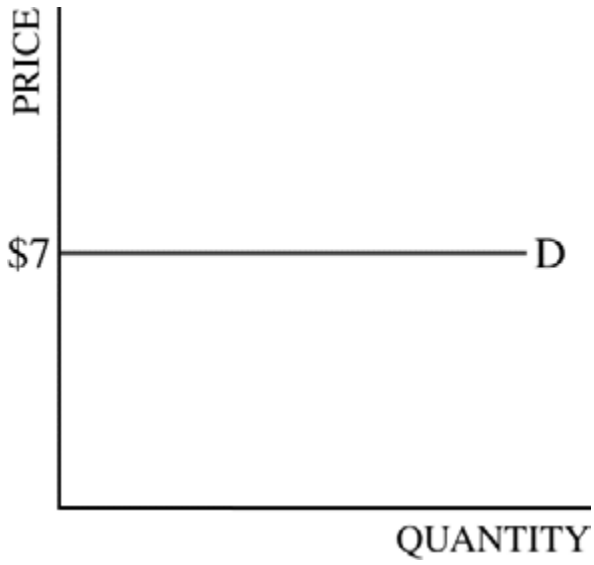


0	1 ✓

Student receives 1/1 point(s)

1 point:

- One point is earned for a correctly labeled graph showing a horizontal demand curve, D, for the firm at $7.



Part B

j

3 point:

- One point is earned for identifying the total fixed cost, $10.
- One point is earned for stating that the loss-minimizing output is 3.
- One point is earned for stating the dollar value of the loss $21-$24= -$3,

0	1	2	3 ✓

Student receives 3/3 point(s)

3 point:

- One point is earned for identifying the total fixed cost, $10.
- One point is earned for stating that the loss-minimizing output is 3.
- One point is earned for stating the dollar value of the loss $21-$24= -$3,

Part C

1 point:

- One point is earned for stating that the firm continues to produce because it is covering its variable cost, or P > AVC or TR > TVC or Losses < TFC.

0	1 ✓

Student receives 1/1 point(s)

1 point:

- One point is earned for stating that the firm continues to produce because it is covering its variable cost, or P > AVC or TR > TVC or Losses < TFC.

Part D

1 point:

- One point is earned for stating that the long-run equilibrium price for umbrellas is $8.

j

0	1 ✓

Student receives 1/1 point(s)

1 point:

- One point is earned for stating that the long-run equilibrium price for umbrellas is $8.

For each of the following statements, indicate whether it is true, false, or uncertain and explain why.

a. Average total cost is always greater than average variable cost by a constant amount.

b. In the short run, a perfectly competitive firm always maximizes profit when average total cost is at minimum.

c. If a firm shuts down in the short run, its profits will equal zero.

27. Respond to all parts of the question.

Part A

2 points:

- One point is earned for stating “false.”
- One point is earned for explaining that the difference between ATC and AVC is AFC, which decreases as a firm’s output increases.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for stating “false.”
- One point is earned for explaining that the difference between ATC and AVC is AFC, which decreases as a firm’s output increases.

Part B

---

j

2 points:

- One point is earned for stating “false.”
- One point is earned for the explanation that the profit-maximizing output occurs where P = MC, which might be to the right or to the left of the lowest point on the ATC curve.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for stating “false.”
- One point is earned for the explanation that the profit-maximizing output occurs where P = MC, which might be to the right or to the left of the lowest point on the ATC curve.

Part C

2 points:

- One point is earned for stating “false.”
- One point is earned for the explanation that if the firm shuts down in the short run, its losses from operating must be larger than (or equal to) its total fixed costs OR price must be less than AVC, so it is incurring a loss.

0	1	2 ✓

Student receives 2/2 point(s)

2 points:

- One point is earned for stating “false.”
- One point is earned for the explanation that if the firm shuts down in the short run, its losses from operating must be larger than (or equal to) its total fixed costs OR price must be less than AVC, so it is incurring a loss.

j

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 Waldo's Electronics Store for different quantities of Good K sold.

Quantity	Total Variable Cost
1	$60
2	$123
3	$187
4	$254
5	$323
6	$405
7	$489
8	$579
9	$675
10	$777

Waldo's Electronics Store sells Good K in a perfectly competitive market with a downward-sloping demand curve and an upward-sloping supply curve. The market price is $75 per unit, and the total fixed cost is $42.

(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 7 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 K is 0.5, and the cross-price elasticity of demand for televisions with respect to the price of Good K is 0.3. Based on your answer to part (e), what will happen to the demand for televisions? Explain.

(g) Now assume that the market in which Waldo's Electronics Store operates is in long-run equilibrium at a price of $70 per unit.
(i) Suppose annual property taxes for Waldo's Electronics Store increase by $5,000. Will the profit-maximizing quantity of Good K for Waldo's Electronics Store increase, decrease, or stay the same in the short run? Explain.

j

(ii) Instead suppose the government imposes a price floor at $90 on the market for Good K. Will deadweight loss in the market for Good K increase, decrease, or stay the same in the short run as a result of the price floor? Explain.

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 the profit-maximizing quantity as 5 units and explains that the 5th unit is the last unit where the marginal revenue ($75) is greater than the marginal cost ($69); the firm will not produce the 6th unit because the marginal cost of producing it ($82) is greater than the marginal revenue earned ($75).

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.

$Economic\ Profit = TR - TC = 5(\$75) - (\$323 + \$42) = \$10$

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 $6 and shows the work.

$AFC = \frac{TFC}{Q} = \frac{\$42}{7} = \$6$

Part D

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

j

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

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 K 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,

j

thus decreasing total economic surplus.

j

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.

Number of Trips	Price per Trip ($)	Total Revenue ($)
1	30	30
2	28	56
3	26	78
4	24	96
5	22	110
6	20	120
7	18	126
8	16	128
9	14	126
10	12	120
11	10	110
12	8	96
13	6	78
14	4	56
15	2	30

Wrightway has a local monopoly on transportation services from Burginville's city center to its airport. Wrightway's average variable cost and marginal cost for each trip are constant at $8. Wrightway incurs a $20 cost each day regardless of the number of trips it provides. The table above shows the price per trip that Wrightway can charge for different numbers of trips provided in a day.

(a) Calculate the profit-maximizing number of trips for Wrightway to provide each day. Show your work.

(b) What is the allocatively efficient number of trips per day?

j

(c) Suppose the Burginville City Council is considering two proposals to get Wrightway to reduce deadweight loss from the provision of rides.

- Proposal I: Grant a $35 daily subsidy to Wrightway
- Proposal II: Grant a $5 per trip subsidy to Wrightway

(i) How many trips would Wrightway provide each day under Proposal I?
(ii) How many trips would Wrightway provide each day under Proposal II?
(iii) Which of the two proposals is preferable to the Burginville City Council? Explain.

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.

The response must show appropriate work in order to receive the point.

0	1 ✓

The response accurately includes the criterion below.

- ☐ Calculates the profit-maximizing number of trips as 6 trips and shows the work.
  The MR of 6 trips is $10 (= $120 − $110), which is greater than the MC of $8; the MR of 7 trips is $6 (= $126 − $120), which is less than the MC of $8.
  OR
  The total profit of 6 trips is $52 [$= \text{TR} - \text{TC} = \$120 - (\$20 + (6 \times \$8)) = \$120 - \$68$], which is greater than the total profit of 5 trips [$= \text{TR} - \text{TC} = \$110 - (\$20 + (5 \times \$8)) = \$110 - \$60 = \$50$] and is greater than the total profit of 7 trips [$= \text{TR} - \text{TC} = \$126 - (\$20 + (7 \times \$8)) = \$126 - \$76 = \$50$].

Part B

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

0	1 ✓

The response accurately includes the criterion below.

- ☐ States that 12 is the allocatively efficient number of trips.

j

Part C

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

0	1	2	3 ✓

The response does all of the following.

- [ ] States that Wrightway would provide 6 trips.
- [ ] States that Wrightway would provide 7 trips.
- [ ] States that Proposal II is preferable and explains that the market quantity under Proposal II is closer to the socially efficient quantity with Proposal II ($\$35$) costing no more than Proposal I ($\$5 \times 7$).

j

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.

j

(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.

30. 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.

j

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

j

and will not affect the number of transactions in the market.