
AP[®] Microeconomics

Sample Student Responses and Scoring Commentary Set 1

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Free Response Question 1

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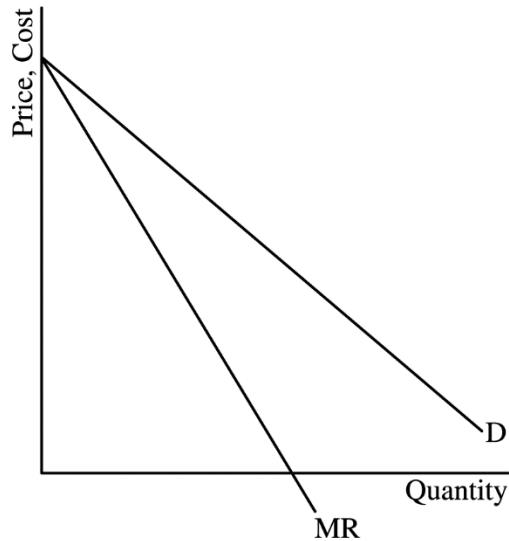
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Question 1

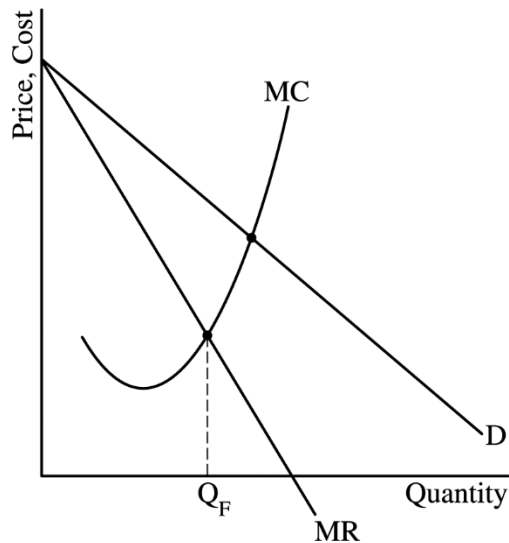
9 points (5 + 2 + 2)

(a) 5 points

- One point is earned for drawing a correctly labeled graph of the monopoly showing downward-sloping demand (D) and marginal revenue (MR) curves with the MR curve below the demand curve.



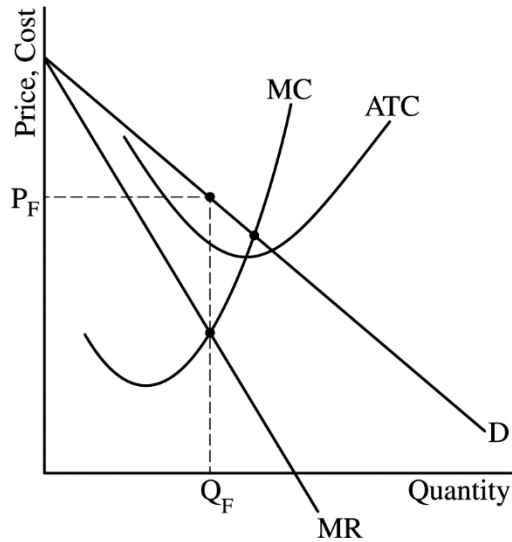
- One point is earned for showing the profit-maximizing quantity, labeled Q_F , where $MR = MC$.



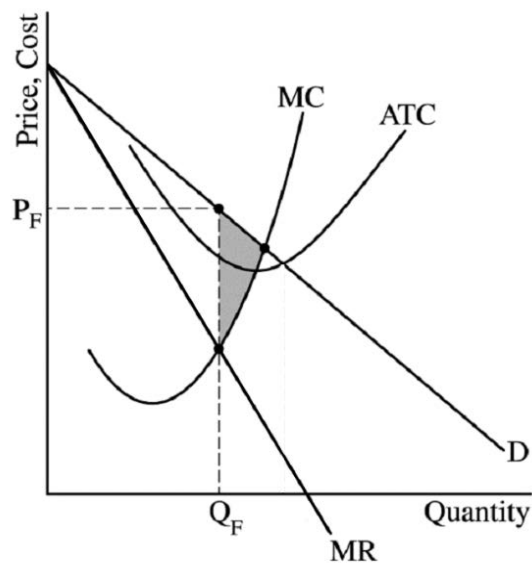
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Question 1 (continued)

- One point is earned for showing the profit-maximizing price, labeled P_F , from the demand curve at Q_F , and above the average total cost curve (ATC).



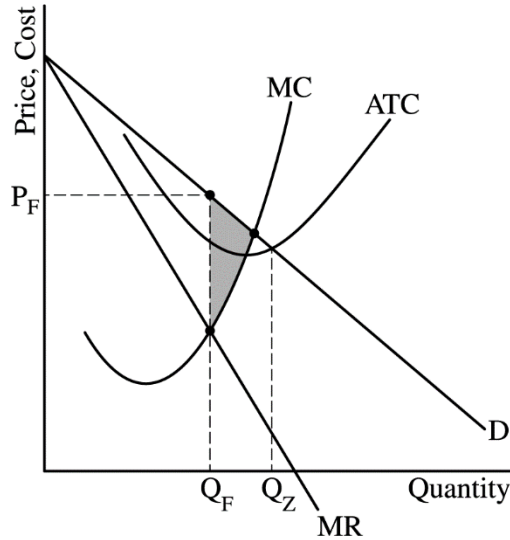
- One point is earned for completely shading the area representing the deadweight loss.



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Question 1 (continued)

- One point is earned for showing the quantity where economic profits are zero, labeled Q_Z , where ATC intersects the demand curve.

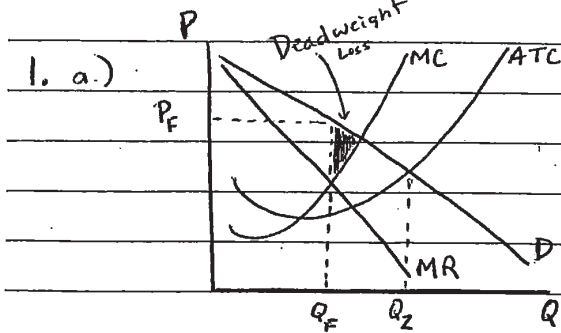


(b) 2 points

- One point is earned for stating the deadweight loss will remain unchanged, and for explaining that changes in fixed costs do not affect MC or do not change the profit-maximizing quantity of the firm.
- One point is earned for stating that FillUp's economic profit will decrease.

(c) 2 points

- One point is earned for stating that the price must be greater than AVC at the profit-maximizing level of output.
- One point is earned for stating that the profit-maximizing quantity and price will both decrease.



b.) i. The deadweight loss will remain unchanged because an increase in fixed costs does not shift the marginal cost curve and does not change the profit-maximizing quantity.

ii. FillUp's economic profit will decrease because average total cost will increase at the profit-maximizing quantity.

c.) i. Price must be greater than average variable cost

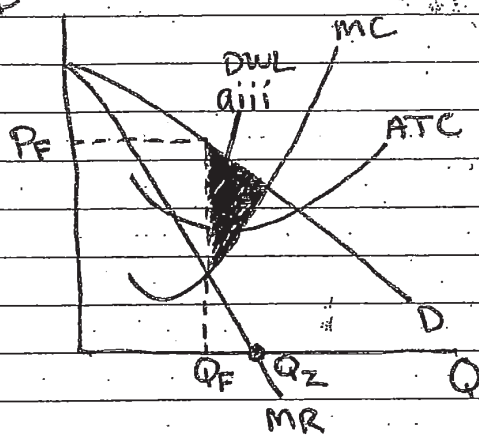
ii. The profit-maximizing quantity and price will both decrease

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1B

ANSWER PAGE FOR QUESTION 1

a. D



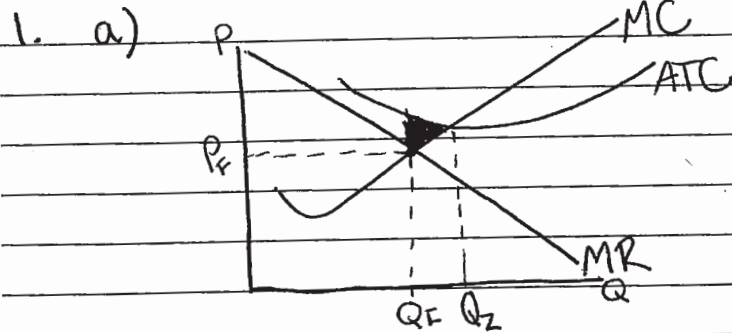
bi. Increase because an increase in fixed costs causes Price to increase and marginal cost to shift left.

bii. Decrease.

ci. Fill Up must lower the price because if Price = Demand and the demand for gas decreases so does Price.

cii. Price and Quantity both decrease.

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- b)
- (i) Fillup's deadweight loss would increase because an increase in fixed costs would result in an increase in average total costs, causing deadweight loss to increase.
 - (ii) Fillup's economic profit would decrease because the costs are increasing but the revenue is remaining unchanged.
- c)
- (i) Fillup must continue to make economic profit to continue to operate in the short run.
 - (ii) Fillup's profit-maximizing quantity and price must both decrease in the short run assuming the firm continues to operate.

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2019 SCORING COMMENTARY

Question 1

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Overview

The question assessed students' understanding of the market conditions for monopoly, how a monopoly would operate under these conditions, how a change in market conditions would affect firm behavior, and market efficiency. Students were expected to draw and label a graph for a monopoly earning positive economic profit and to show how the firm would operate if it were to make zero economic profit. Students were expected to analyze a change in supply conditions to determine how the change would affect market efficiency and the monopoly's profit. Students were also expected to analyze how a change in demand conditions would impact firm decision-making and operations.

The question states that FillUp has a local monopoly on the sale of gasoline and earns positive economic profit. In part (a) students were asked to draw a correctly labeled graph for a monopoly. Part (a)(i) and (a)(ii) asked students to show the profit-maximizing quantity and price, respectively. These parts of the question test students' knowledge of market conditions for a monopoly and their ability to illustrate these concepts using a graph. This task includes demonstrating knowledge of revenue and cost conditions by drawing a downward-sloping demand (D) curve and a downward-sloping marginal revenue (MR) curve that lies below the demand curve. Students had to draw both the marginal cost (MC) curve and average total cost (ATC) curve. Students were asked to show that the profit-maximizing quantity occurs where MR equals MC and that the profit-maximizing price is determined by identifying the price that corresponds to this quantity on the D curve. These tasks required students to demonstrate marginal analysis in a graphical format. Students also had to apply the positive economic profit condition by placing the ATC curve below the D curve at the profit-maximizing quantity. Part (a)(iii) asked students to shade in the area representing the deadweight loss associated with the monopoly's profit-maximizing quantity. In this task students graphically illustrate the inefficiency caused by monopoly power. Part (a)(iv) asked students to consider an alternative outcome where the firm would earn zero economic profit. Students had to demonstrate understanding of this condition by identifying the quantity where the D curve intersected the ATC curve. While not stated explicitly in the question prompt, this last task relates to one possible type of government intervention into a monopoly market.

Part (b) of this question introduced a supply-side change and asked students to analyze how this change would impact firm behavior and market efficiency. Specifically, this part of the question told students to assume that FillUp's fixed costs increased because of a new lease on its property and because the firm stayed in business. This part required students to demonstrate knowledge of production cost relationships and recognize that a change in fixed costs would have no impact on marginal costs. Students had to apply this lack of effect on marginal cost to conclude that the firm would not alter its profit-maximizing quantity. Part (b)(i) asked students to identify the effect of this change on deadweight loss. Students needed to state that deadweight loss would remain unchanged and explain that a change in fixed costs does not affect the firm's marginal costs and profit-maximizing quantity. In part (b)(ii) students had to assert that the monopoly's economic profit would decrease as a result of the increase in fixed costs.

Part (c) of this question introduced a demand-side change and asked students to analyze how this change would impact firm behavior. This part told students to assume that the demand for gasoline decreased because people bike to work more often. In part (c)(i) students needed to state that for the firm to continue to operate in the short run its price must be greater than its average variable cost (or equivalent variations such as total revenue greater than total variable costs). Part (c)(ii) asked students to determine the firm's short-run response to the decrease in demand. Students needed to apply the demand shift and conclude that the profit-maximizing quantity and price would both decrease.

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2019 SCORING COMMENTARY

Question 1 (continued)

Sample: 1A**Score: 9**

The student answers all parts of the question correctly and earned all 9 points.

Sample: 1B**Score: 6**

The response did not earn 1 point in part (a) for incorrectly identifying the maximum quantity at which FillUp would earn zero economic profit because Q_Z does not correspond to the intersection of the demand and average total cost curves. The response did not earn 1 point in part (b) for incorrectly stating the deadweight loss increases as a result of the increase in fixed costs. In part (c) the response did not earn 1 point because it does not provide the correct relationship between price and average variable cost ($P > AVC$) at the profit-maximizing level of output that must be true for the firm to continue to operate in the short run as a result of the decrease in demand for gasoline.

Sample: 1C**Score: 3**

The response earned 1 point in part (a) for correctly identifying the profit-maximizing quantity Q_F where the firm's marginal cost curve intersects its marginal revenue curve. The student earned 1 point in part (b) for correctly asserting that FillUp's economic profit would decrease as a result of the increase in its fixed costs. The student earned 1 point in part (c) for correctly asserting that FillUp's profit-maximizing quantity and price would both decrease in the short run as a result of the decrease in demand for gasoline.