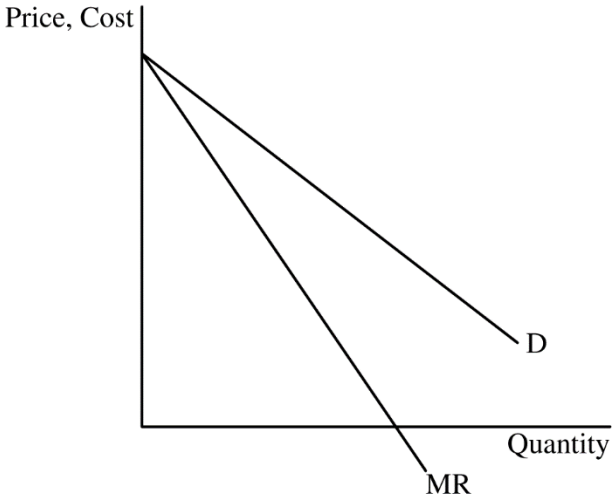
2024

AP® Microeconomics

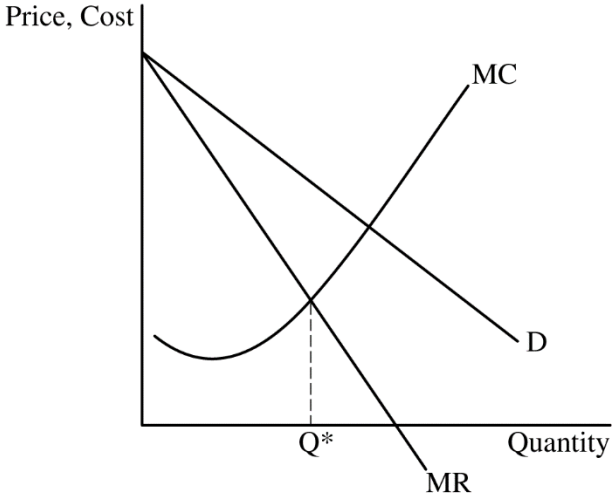
Scoring Guidelines
Set 2

Question 1: Long — 10 points

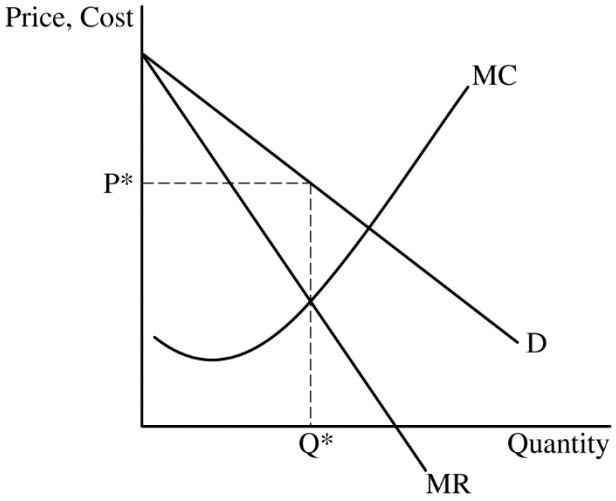
(a) Draw a correctly labeled graph of Arzeye Pharma with a downward-sloping demand (D) curve and a downward-sloping marginal revenue (MR) curve with the MR curve below the D curve. **1 point**



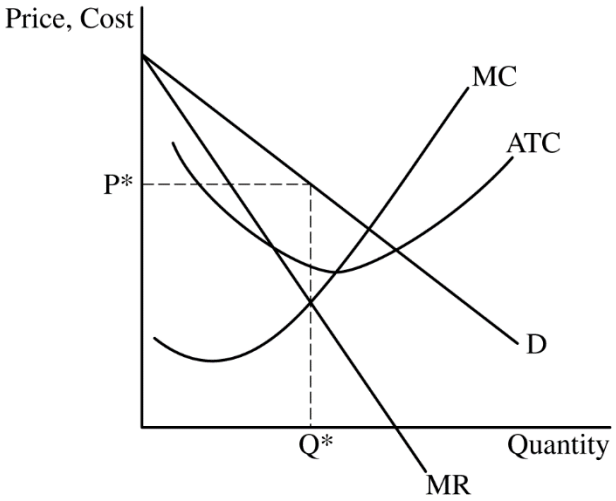
For the second point, the graph must show a rising marginal cost (MC) curve and the profit-maximizing quantity, labeled Q*, where MR = MC. **1 point**



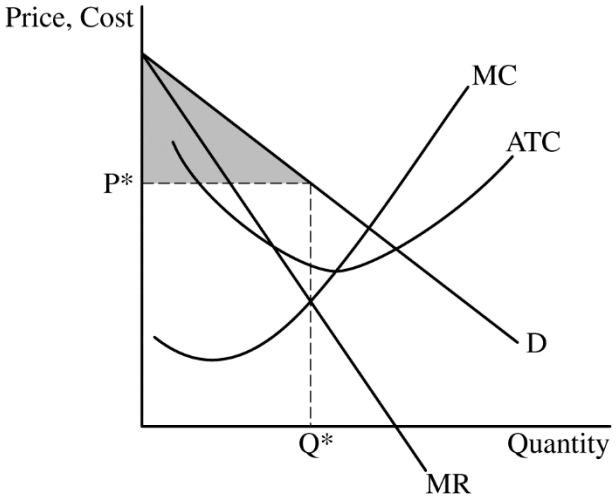
For the third point, the graph must show the profit-maximizing price, labeled P*, from the downward-sloping demand curve at Q*. **1 point**



For the fourth point, the graph must show the average total cost (ATC) curve below P* at Q* and the marginal cost curve passing through the minimum point of the ATC curve. **1 point**

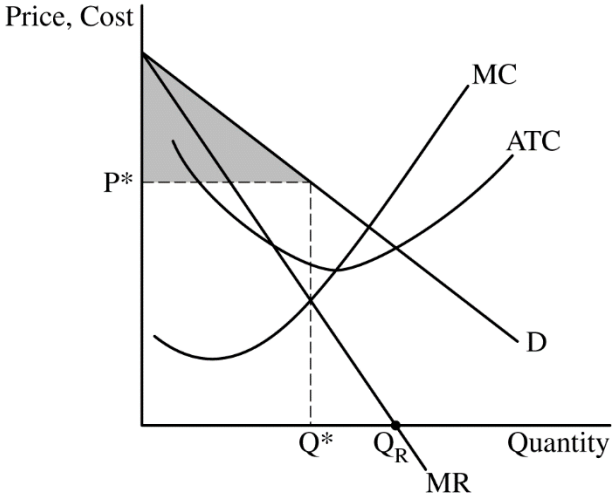


For the fifth point, the graph must show the area of consumer surplus, shaded completely. **1 point**



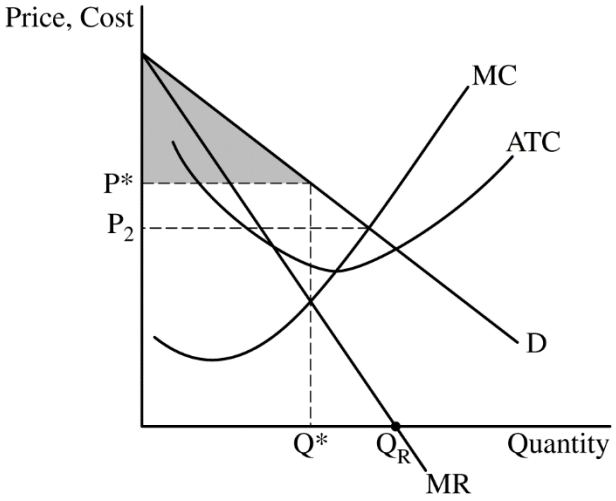
Total for part (a) 5 points

(b) (i) The graph from part (a) must show the quantity that maximizes total revenue, labeled Q_R, where marginal revenue equals 0. **1 point**



(ii) State that demand is unit elastic. **1 point**

Total for part (b) 2 points

(c) (i)	The graph from part (a) must show the lowest price that Arzeye Pharma would charge if it engaged in perfect price discrimination, labeled P_2, from the intersection of the demand and marginal cost curves. 	**1 point**
(ii)	State that consumer surplus would decrease to \$0 and explain that Arzeye is able to charge the maximum price each consumer is willing to pay.	**1 point**
	Total for part (c)	**2 points**
(d)	State that Arzeye Pharma's demand will become more elastic and explain that as the patent expires more firms will enter the market which increases the number and availability of substitutes, causing consumers to be more responsive to changes in the price of eye treatments.	**1 point**
	Total for question 1	**10 points**

Question 2: Short — 5 points

(a)	Calculate the average fixed cost of \$3 and show the work. $\text{Average Fixed Cost} = \frac{\text{Total Fixed Cost}}{\text{Quantity of Output}}$ $\text{Average Fixed Cost} = \frac{\$90}{30} = \$3$	**1 point**
(b)	Calculate the marginal cost as \$6 and show the work. $\text{Marginal Cost} = \frac{\text{Change in Total Variable Cost}}{\text{Change in Output}}$ $\text{Marginal Cost} = \frac{(\$108 - \$90)}{(30 - 27)} = \frac{\$18}{3} = \$6$ OR $\text{Marginal Cost} = \frac{\text{Change in Total Cost}}{\text{Change in Output}}$ $\text{Marginal Cost} = \frac{(\$198 - \$180)}{(30 - 27)} = \frac{\$18}{3} = \$6$	**1 point**
(c)	State that diminishing marginal returns to labor begin with the hiring of the 3rd worker and explain that the marginal product of the 1st worker is 5 bags, the marginal product of the 2nd worker increases to 7 bags, and the marginal product of the 3rd worker decreases to 6 bags.	**1 point**
(d)	State that the profit-maximizing number of workers is 7 and explain that the marginal revenue product (MRP) of the 7th worker (\$20) is greater than the marginal factor cost (MFC) of the 7th worker (wage = \$18), and that the hiring of the 8th worker would decrease profits because the MRP of the 8th worker (\$10) is less than the MFC of the 8th worker (wage = \$18).	**1 point**
(e)	State that Gato Food will experience diseconomies of scale and explain that as output increases from 40 to 50 units, long-run average total cost increases from \$15 to \$18 per unit.	**1 point**
	Total for question 2	**5 points**

Question 3: Short — 5 points

(a)	Calculate the total economic surplus as \$960 and show the work. $\text{Total Economic Surplus} = \frac{1}{2} \times (\$150 - \$30) \times (16 - 0) = \frac{1}{2} \times \$120 \times 16 = \$960$	**1 point**
(b)	State that the quantity of backpacks purchased will decrease and explain that the price ceiling causes a decrease in the quantity supplied of backpacks and the quantity purchased in the market will be limited by the quantity supplied (8), which is less than the equilibrium quantity (16).	**1 point**
(c) (i)	State the price consumers pay per backpack after the per-unit subsidy is \$75.	**1 point**
(ii)	Calculate the total cost of the subsidy to the government as \$600 and show the work. $\text{Total Cost of Subsidy to the Government} = \text{Per-unit Subsidy} \times \text{Quantity of Backpacks}$ $\text{Total Cost of Subsidy to the Government} = \$30 \times 20 = \$600$	**1 point**
(iii)	State the deadweight loss will increase and explain with **ONE** of the following. • The per-unit subsidy causes the new equilibrium quantity (20 backpacks) to be greater than the allocatively efficient quantity (16 backpacks). • The per-unit subsidy causes the marginal cost (\$105) to be greater than the marginal benefit (\$75) at the new equilibrium quantity (20 backpacks).	**1 point**
	Total for part (c)	**3 points**
	Total for question 3	**5 points**