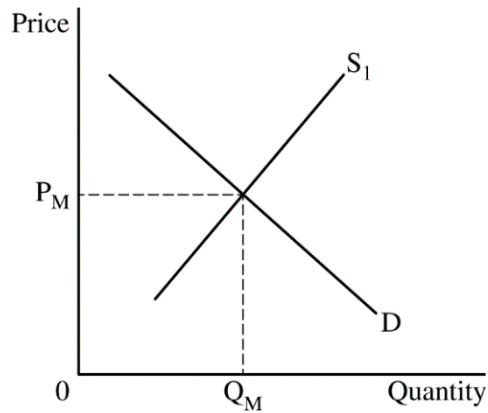
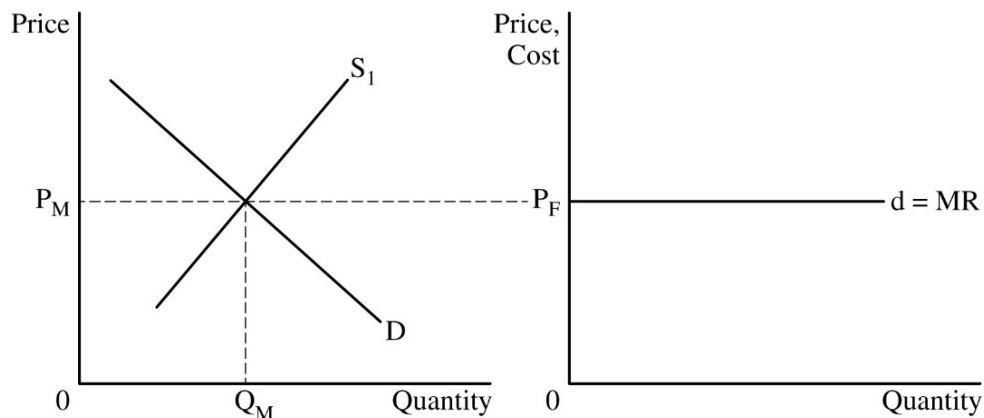


Question 1: Long**10 points**

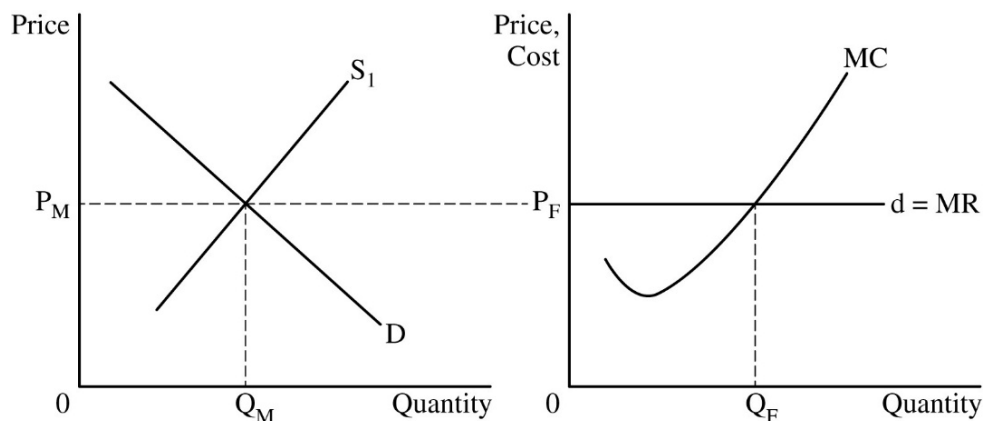
- A** Draw a correctly labeled graph of the market for wooden desks with a downward-sloping demand (D) curve and an upward-sloping supply (S_1) curve and label the market equilibrium price as P_M and the market equilibrium quantity as Q_M . **1 point**
- Point 1



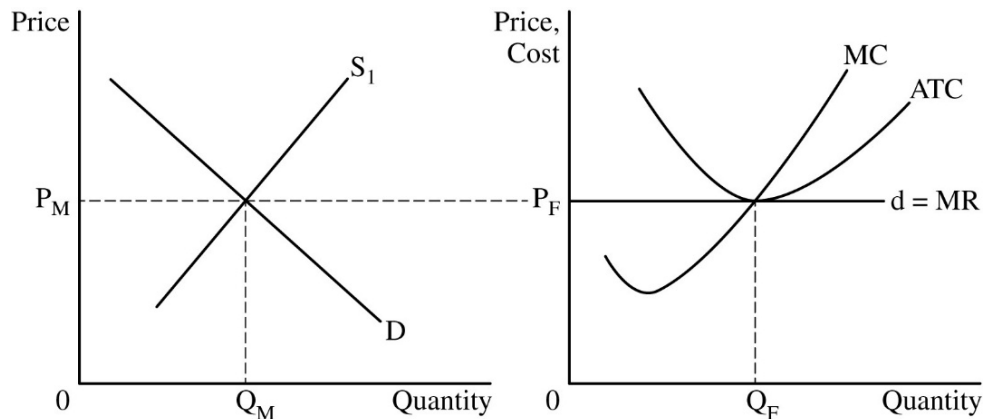
- Point 2 Draw a correctly labeled graph for Deskward that shows the firm's horizontal demand and marginal revenue ($d = MR$) curve extended from the market equilibrium price (P_M) and label the firm's price as P_F . **1 point**



- Point 3 The firm's graph must show a rising marginal cost (MC) curve, and show the firm's profit-maximizing quantity, labeled Q_F , where $MR = MC$. **1 point**



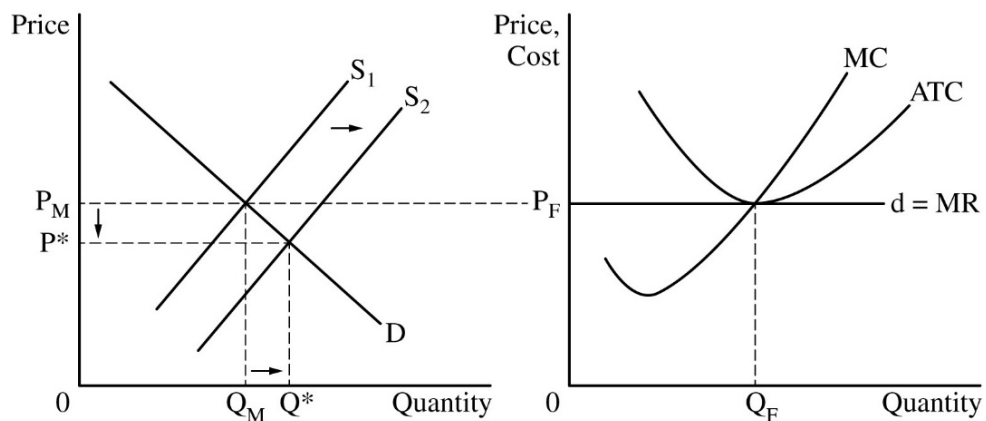
- Point 4 The firm's graph must show the average total cost (ATC) curve tangent to the firm's $d = MR$ curve at Q_F and show the MC curve passing through the minimum point of the ATC curve.

1 point

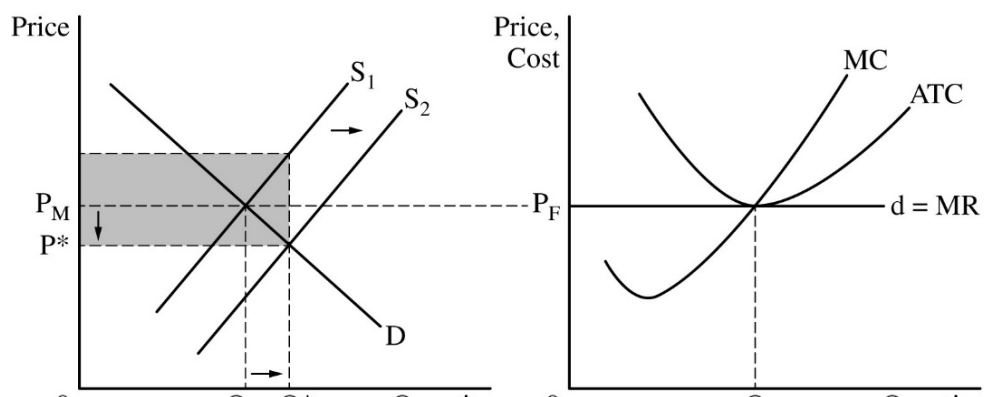
- B** State that Deskward's profit-maximizing quantity will not change in the short run and explain that a change in a fixed cost does not affect the firm's marginal cost or marginal revenue.
- Point 5

1 point

- C (i)** The market graph from part A must show a rightward shift of the market supply curve and show the new market equilibrium price of wooden desks, labeled P^* , and the new market equilibrium quantity of wooden desks, labeled Q^* .
- Point 6

1 point

- (ii)** The market graph from part A must show the area representing the total cost of the subsidy to the government, shaded completely.
- Point 7

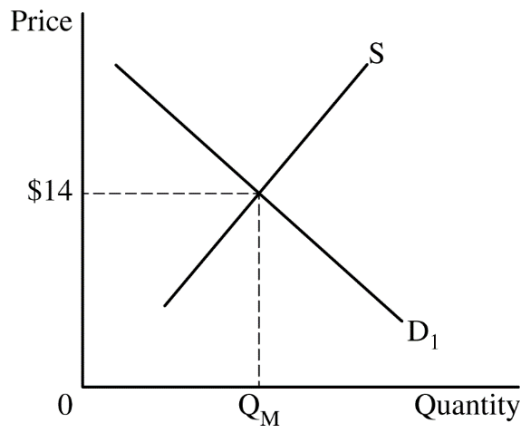


D Point 8	State that the price floor will result in a surplus of wooden desks and explain that the binding price floor is set above the market equilibrium price, which causes the quantity supplied of wooden desks to be greater than the quantity demanded of wooden desks.	1 point
E Point 9	(i) Calculate the long-run average total cost (LRATC) as \$160 per chair and show your work. $\text{LRATC at 500 chairs} = \frac{\$80,000}{500} = \$160$	1 point
E Point 10	(ii) State that Deskward is experiencing diseconomies of scale and explain that as output increases from 500 to 600 chairs, its LRATC increases from \$160 to \$180 (= \$108,000/600) per chair.	1 point

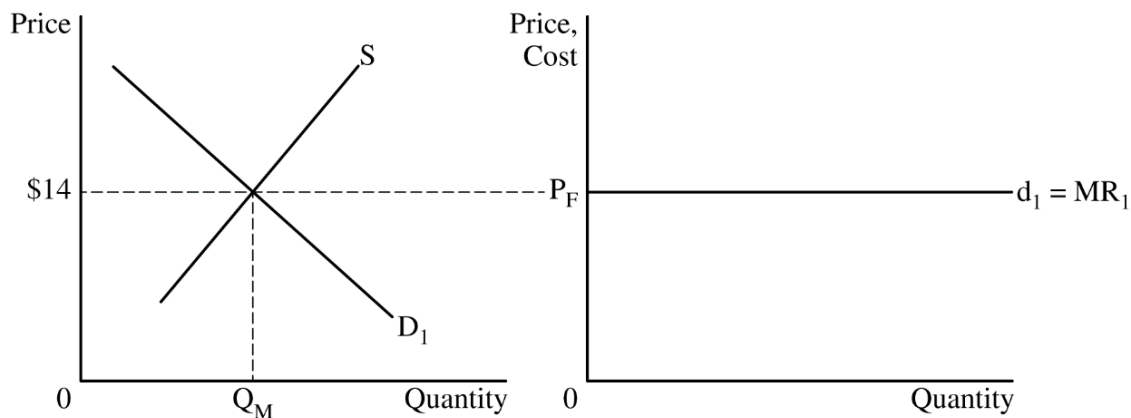
Question 1: Long

10 points

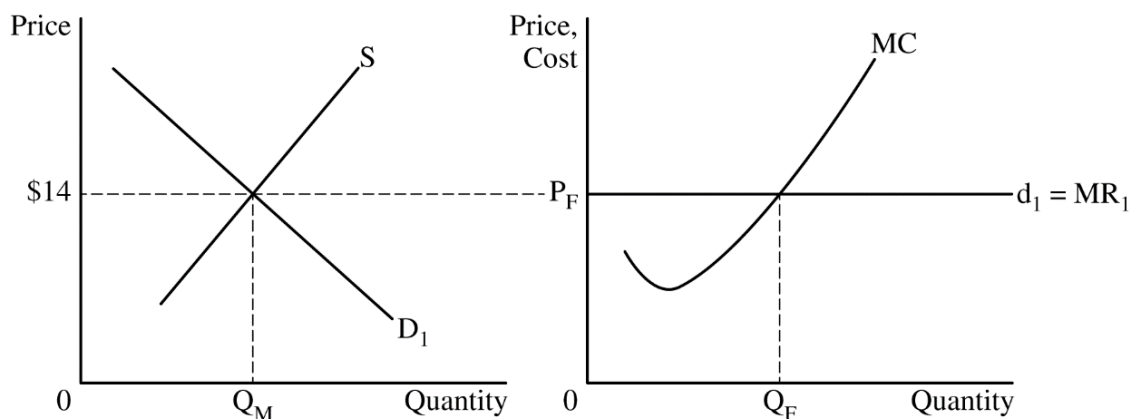
- (a) Draw a correctly labeled graph of the market for soybeans with a downward-sloping demand (D_1) curve and an upward-sloping supply (S) curve and label the market equilibrium price as \$14 and the market equilibrium quantity as Q_M . 1 point



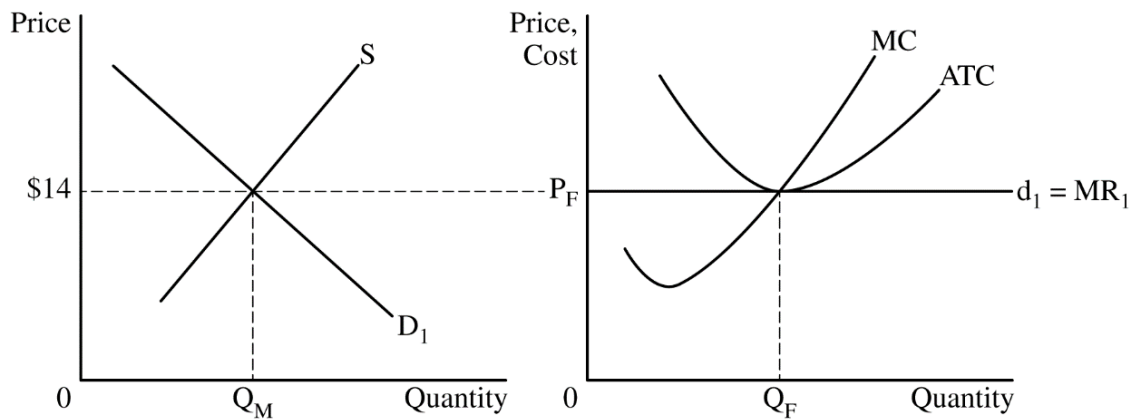
- For the second point, draw a correctly labeled graph of Soja Farm and show the firm's horizontal demand and marginal revenue ($d_1 = MR_1$) curve extended from the market equilibrium price and label the firm's price as P_F . 1 point



- For the third point, the firm's graph must show a rising marginal cost (MC) curve, and show the profit-maximizing quantity, labeled Q_F where $MR = MC$. 1 point



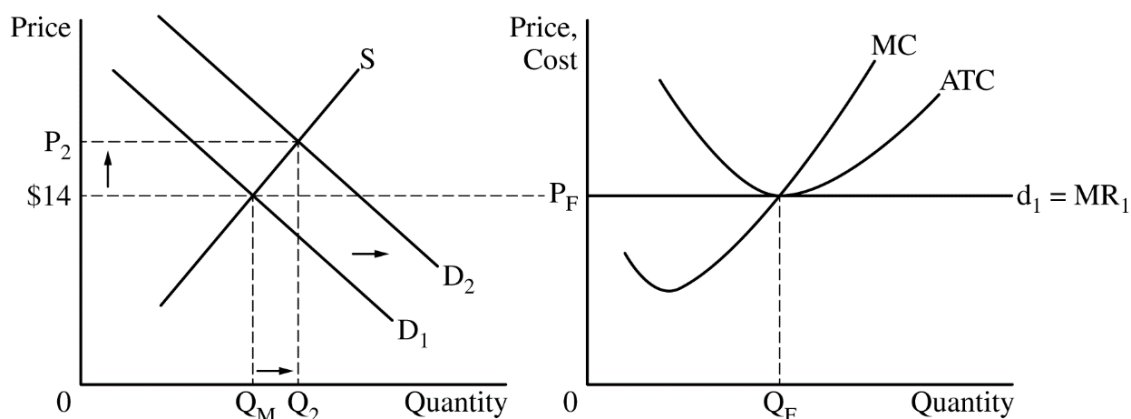
For the fourth point, the firm's graph must show the average total cost (ATC) curve tangent to the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve.

1 point**Total for part (a) 4 points**

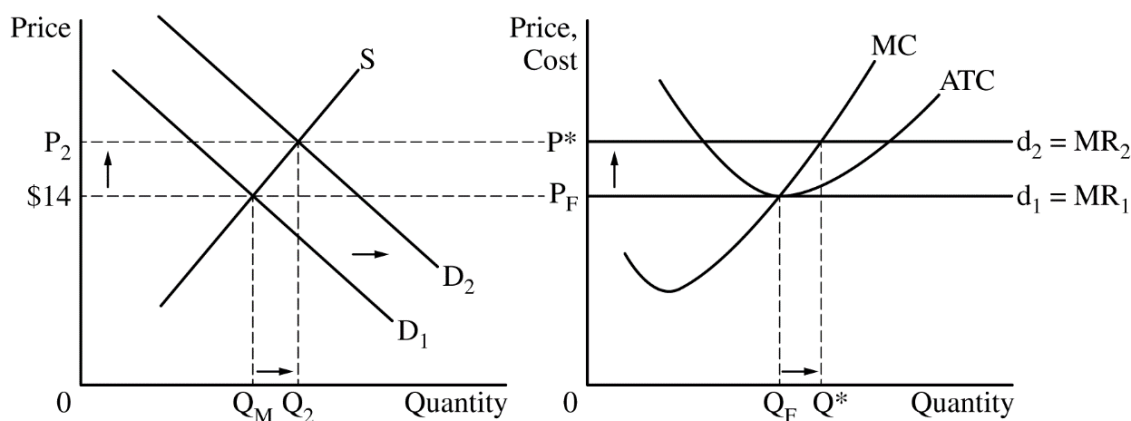
- (b)** State that Soja Farm's total revenues would decrease to \$0 and explain that all consumers of soybeans would buy soybeans from other sellers who charge the market price of \$14.

1 point

- (c) (i)** The market graph from part (a) must show a rightward shift of the market demand curve and the new equilibrium price labeled P_2 and the new equilibrium quantity labeled Q_2 .

1 point

- (ii)** The firm's graph from part (a) must show an upward shift in the firm's marginal revenue (demand) curve at P_2 and the new profit-maximizing quantity for Soja Farms, labeled Q^* .

1 point

		Total for part (c)	2 points
(d)	State that the number of firms will increase in the long run and explain that the positive economic profits earned by soybean producers will encourage new firms to enter the market.		1 point
(e) (i)	State that demand for quinoa is inelastic and explain with ONE of the following. - The absolute value of the price elasticity of demand for quinoa is 0.2. - The 5% decrease in the quantity demanded of quinoa is less than the 25% increase in the price of quinoa.		1 point
(ii)	Calculate the cross-price elasticity of demand as 0.4 and show your work.		1 point
Cross Price Elasticity of Demand = $\frac{\% \text{ Change in } Q_D \text{ of Tofu}}{\% \text{ Change in Price of Quinoa}} = \frac{10\%}{25\%} = 0.4$			
		Total for part (e)	2 points
		Total for question 1	10 points

Question 3: Short**5 points**

- (a)** Calculate the total fixed cost as \$72 and show your work. **1 point**

$$\text{Total Fixed Cost} = (\text{Average Total Cost} - \text{Average Variable Cost}) \times \text{Quantity}$$

$$\text{Total Fixed Cost} = (\$26 - \$8) \times 4 = (\$18 \times 4) = \$72$$

OR

$$\text{Total Fixed Cost} = (\$21 - \$9) \times 6 = (\$12 \times 6) = \$72$$

OR

$$\text{Total Fixed Cost} = (\$20 - \$11) \times 8 = (\$9 \times 8) = \$72$$

- (b)** Identify the price as \$14 and the profit-maximizing quantity as 6 units. **1 point**

- (c)** Calculate Hansel Hangout's economic profit at the profit-maximizing quantity as -\$42 and show your work. **1 point**

$$\text{Economic Profit} = (\text{Price} - \text{Average Total Cost}) \times \text{Quantity}$$

$$= (\$14 - \$21) \times 6 \text{ units} = (-\$7 \times 6) = -\$42$$

OR

$$\text{Economic Profit} = \text{Total Revenue} - \text{Total Cost}$$

$$= (\$14 \times 6) - (\$21 \times 6) = \$84 - \$126 = -\$42$$

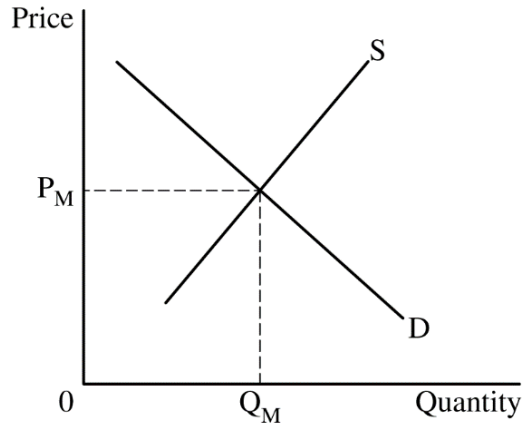
- (d)** State that the market price of Good X will increase in the long run and explain that some firms will exit the market due to the negative economic profits, causing the market supply curve to shift to the left, increasing the market equilibrium price. **1 point**

- (e)** State that the quantity demanded of Good C will increase and explain that a positive cross-price elasticity of demand indicates that the two goods are substitutes in consumption, and an increase in the price of Good X will increase the demand for Good C, causing an increase in the quantity demanded of Good C. **1 point**

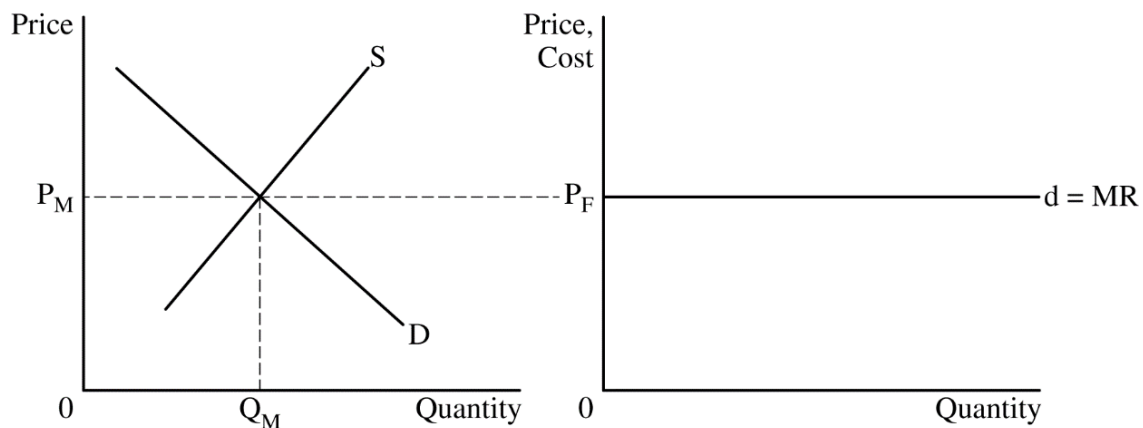
Total for question 3 5 points

Question 1: Long**10 points**

- (a) State that Anderson Company's accounting profit must be greater than its economic profit. **1 point**
- (b) Draw a correctly labeled graph of the market for Good G with a downward-sloping demand (D) curve and upward-sloping supply (S) curve and label the market equilibrium price as P_M and the market equilibrium quantity as Q_M . **1 point**

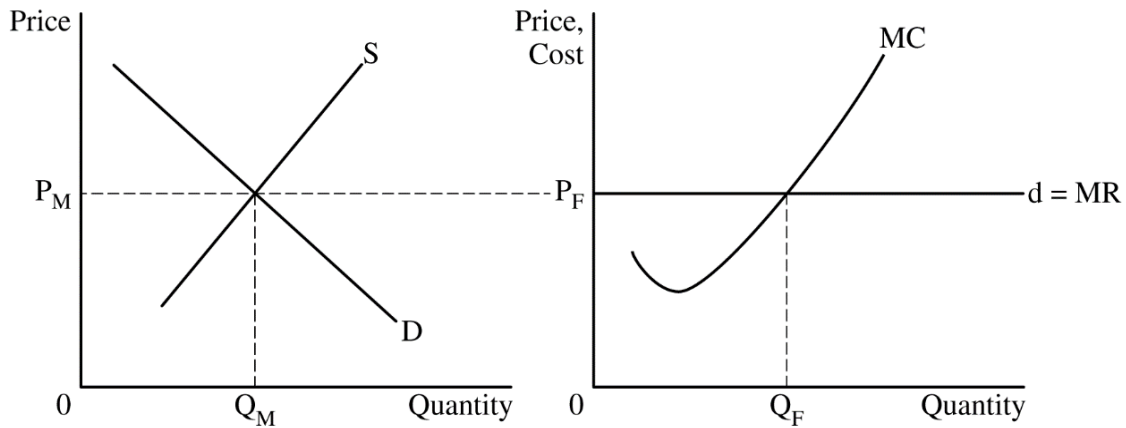


For the second point, draw a correctly labeled graph for the firm and show the firm's horizontal demand and marginal revenue ($d=MR$) curve extended from the market equilibrium price (P_M), and label the firm's price as P_F .

1 point

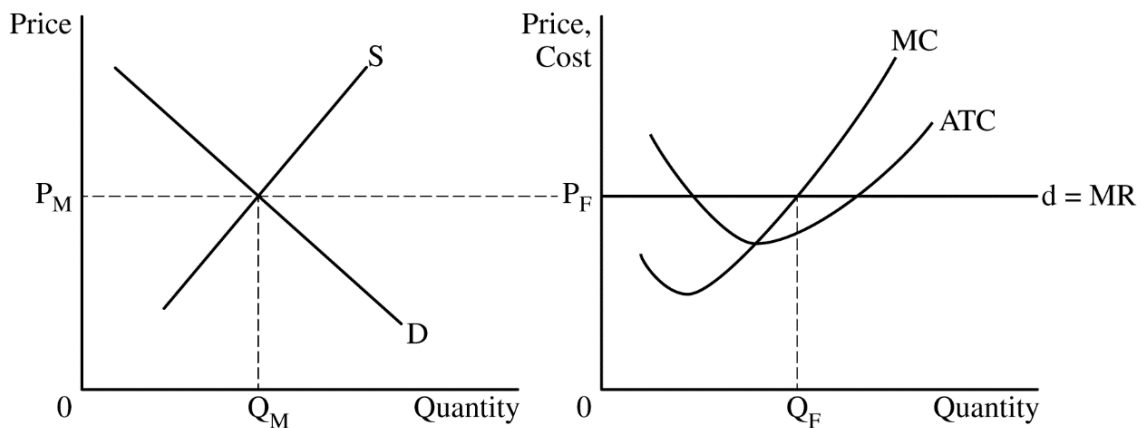
For the third point, the firm's graph must show a rising marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_F where $MR = MC$.

1 point



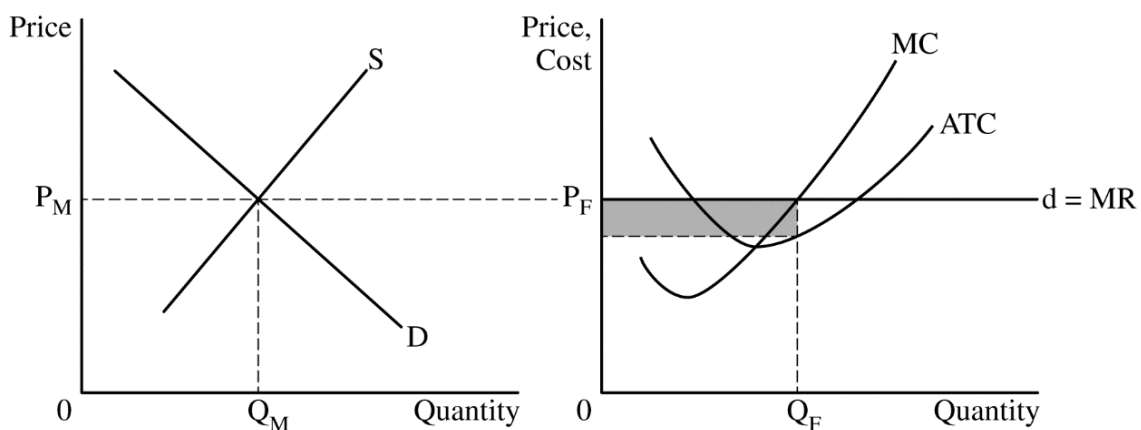
For the fourth point, the firm's graph must show the average total cost (ATC) curve below the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve.

1 point



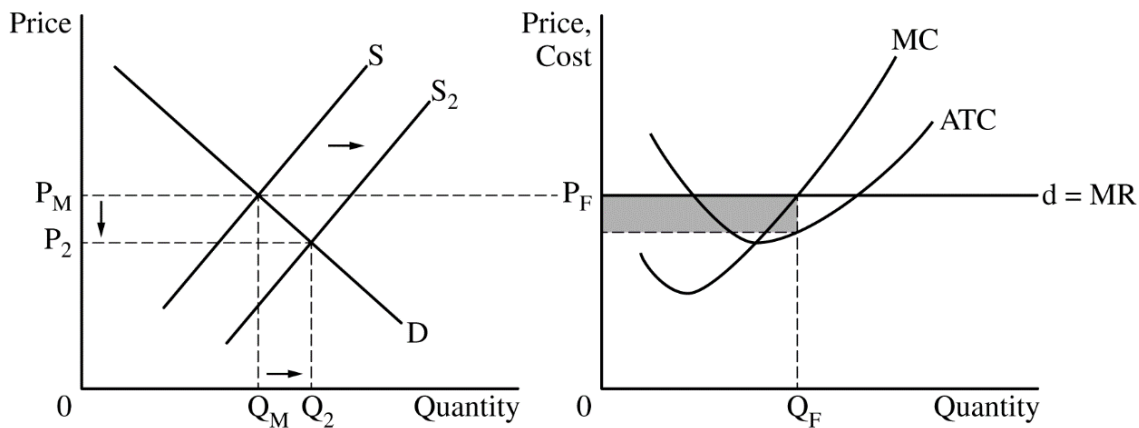
For the fifth point, the firm's graph must show the area representing positive economic profit, shaded completely.

1 point

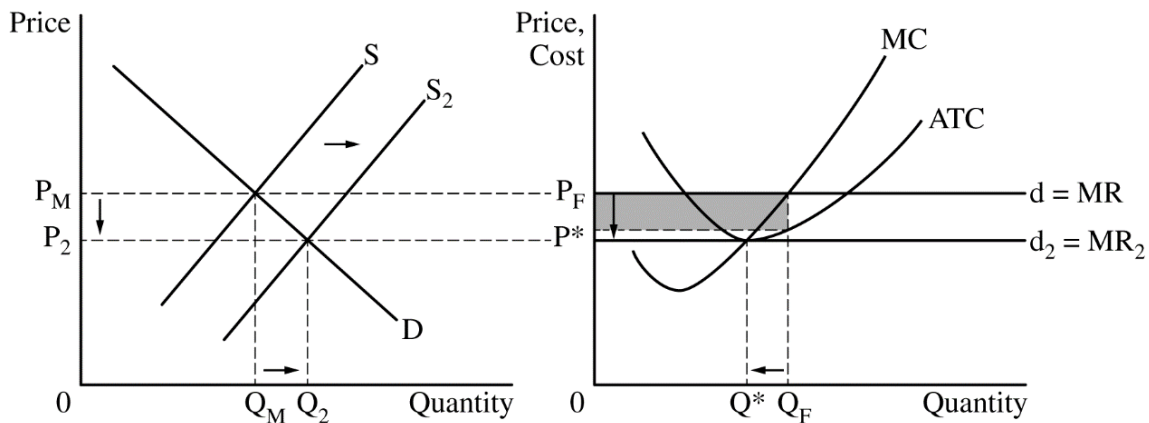


Total for part (b) 5 points

- (c)(i) On the market graph from part (a), show a rightward shift in the market supply curve, resulting in a lower market equilibrium price, labeled P_2 , and a greater market equilibrium quantity, labeled Q_2 . **1 point**



- (ii) On the firm's graph from part (a), show a lower price, labeled P^* , extended from the new market equilibrium price, P_2 , and show a lower quantity produced, Q^* , at the new intersection point of $P^* = MR_2 = MC = \text{minimum ATC}$. **1 point**



Total for part (c) 2 points

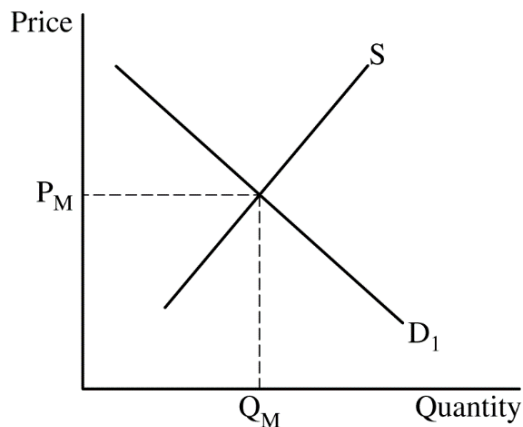
- (d)(i) State that the market equilibrium quantity will be less than the allocatively efficient quantity and explain that the positive externality in production causes the marginal social cost to be less than the marginal private cost ($MSC < MPC$) at the market equilibrium. **1 point**
- (ii) State that total economic surplus will increase and explain with **ONE** of the following: **1 point**
- The quantity produced will increase to the allocatively efficient quantity.
 - Deadweight loss will decrease to \$0.
 - The marginal private cost will equal the marginal social cost, causing the externality to be internalized.

Total for part (d) 2 points

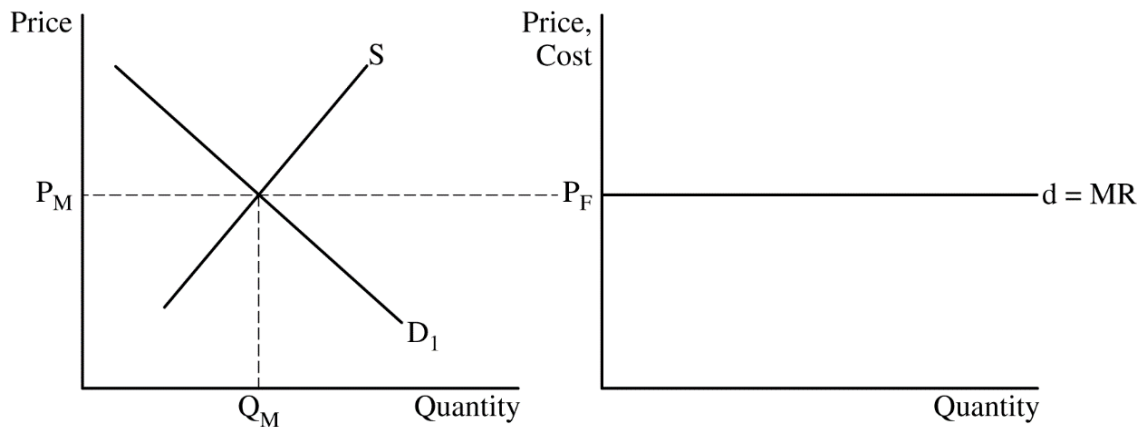
Total for question 1 10 points

Question 1: Long**10 points**

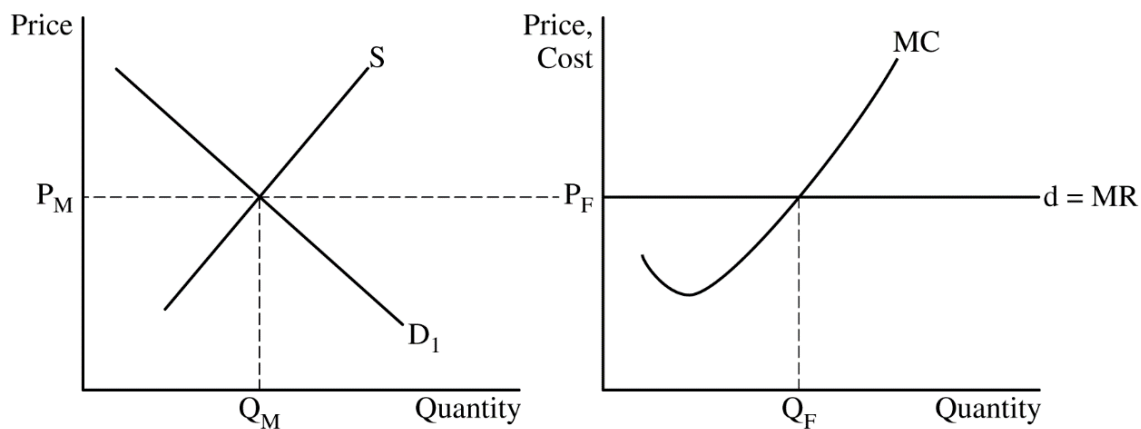
- (a) Draw a correctly labeled graph of the market for sugar and show the equilibrium price and quantity, labeled P_M and Q_M , respectively. **1 point**



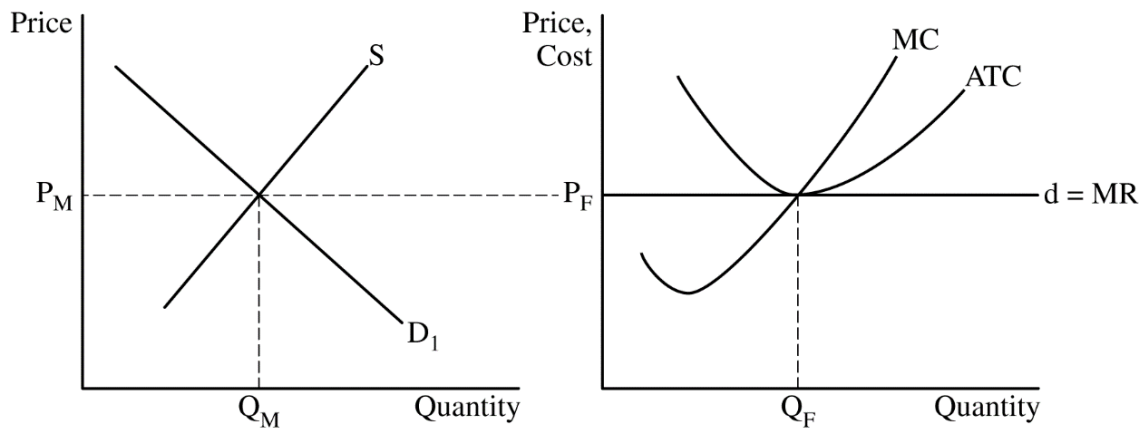
- For the second point, the graph must show a horizontal demand curve ($d = MR$) for Frank Sugar Co. and label the firm's profit-maximizing price P_F at P_M . **1 point**



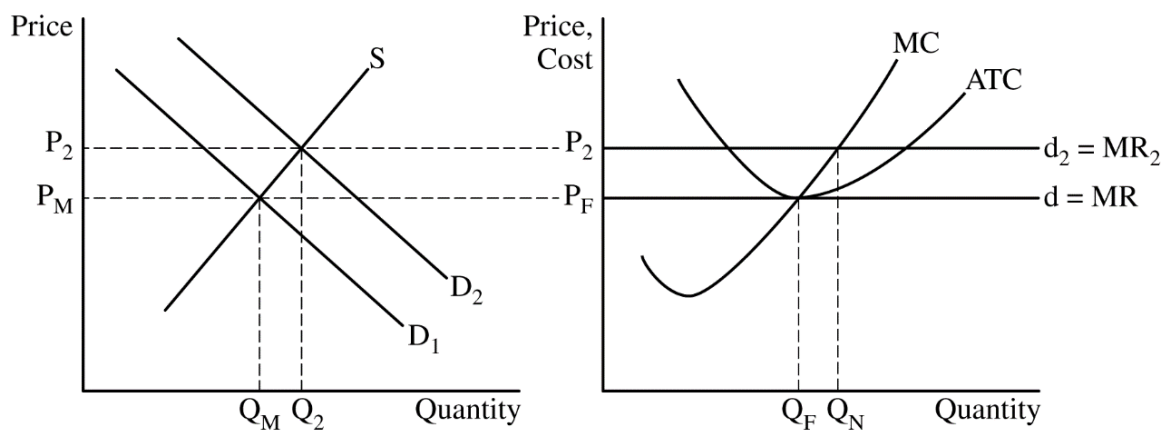
- For the third point, the firm's graph must show the marginal cost (MC) curve and show the profit-maximizing quantity, labeled Q_F where $MR = MC$. **1 point**



For the fourth point, the firm's graph must show the average total cost (ATC) curve tangent to the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve.

1 point**Total for part (a) 4 points**

- (b) On your market graph from part (a), show a rightward shift in the market demand curve with a higher market price, labeled P_2 , and show an upward shift in the firm's demand curve with a greater quantity sold by Frank Sugar Co., labeled Q_N .

1 point

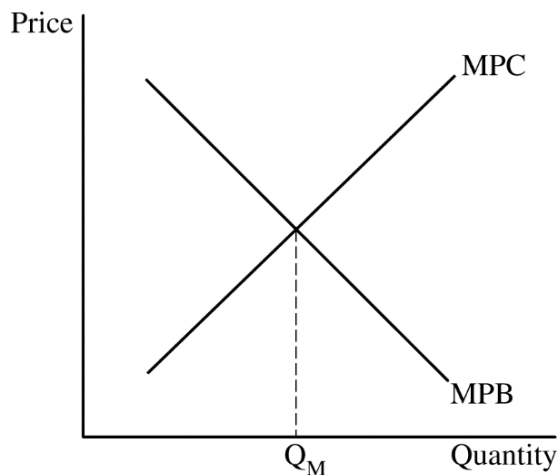
State that the profit earned by Frank Sugar Co. will increase in the short run.

1 point

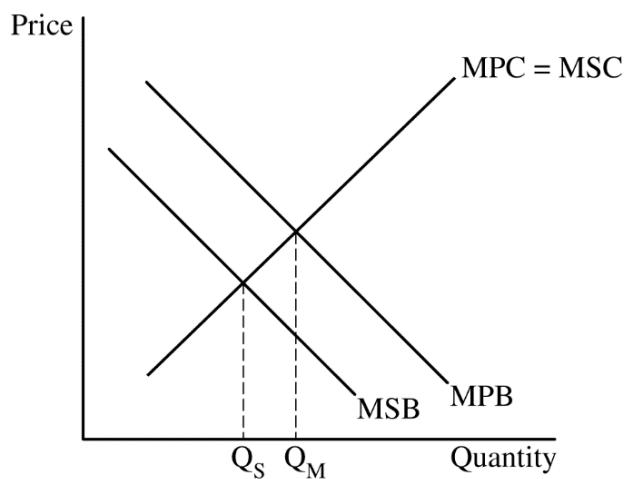
State that the market price in long-run equilibrium will be lower than P_2 and explain that new firms will enter the market, which increases the market supply, lowering the market price back to P_M where firms earn zero economic profit in the long run.

1 point**Total for part (b) 3 points**

- (c) Draw a correctly labeled graph with an upward-sloping supply curve, labeled MPC, a downward-sloping demand curve, labeled MPB, and show the market equilibrium quantity, labeled Q_M at the intersection of the MPB and MPC curves. **1 point**



- For the second point, the graph must show a downward-sloping marginal social benefit (MSB) curve below the MPB curve, label the upward sloping curve $MPC = MSC$, and show the socially optimal quantity, labeled Q_S , at the intersection of the MSB and MSC curves. **1 point**



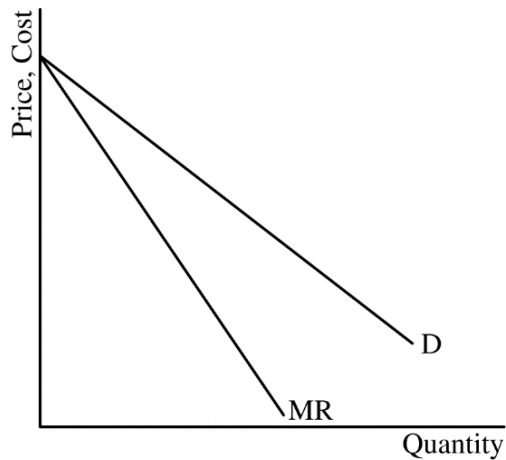
Total for part (c) 2 points

- (d) State that the government would impose a per-unit tax and explain that the tax would raise the price paid per unit **AND** decrease market equilibrium quantity to move it closer to the socially optimal quantity. **1 point**

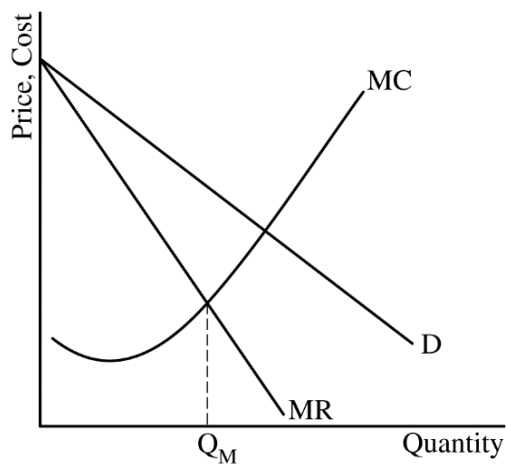
Total for question 1 10 points

Question 1: Long**10 points**

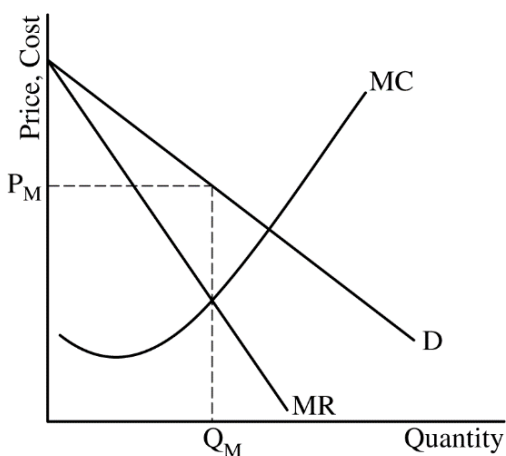
- (a) Draw a correctly labeled graph for SkyRunner Airlines showing downward sloping demand (D) and marginal revenue (MR) curves with the MR curve below the demand curve. **1 point**



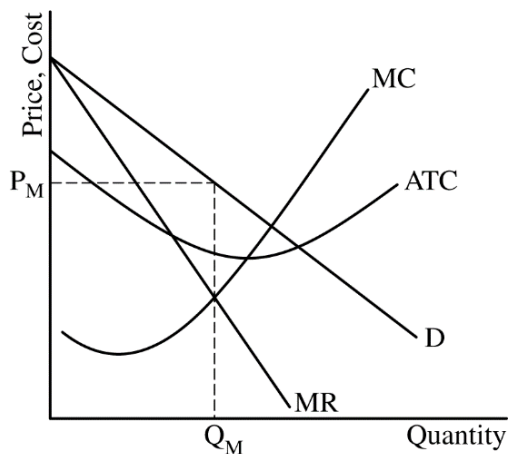
For the second point, the graph must show the marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_M , where $MR=MC$. **1 point**



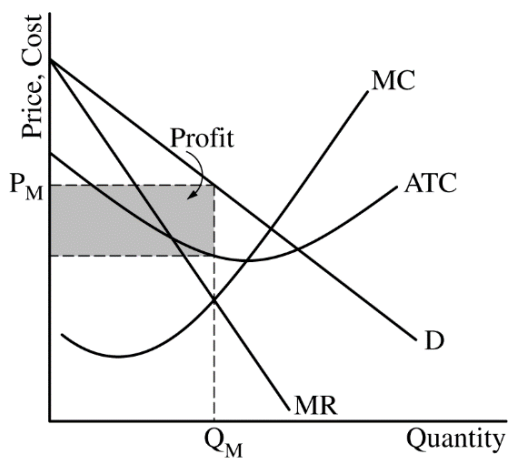
For the third point, the graph must show the profit-maximizing price, labeled P_M , from the demand curve at Q_M . **1 point**



For the fourth point, the graph must show the ATC curve below the demand curve at Q_M with the MC curve rising and intersecting the ATC at its minimum point. **1 point**

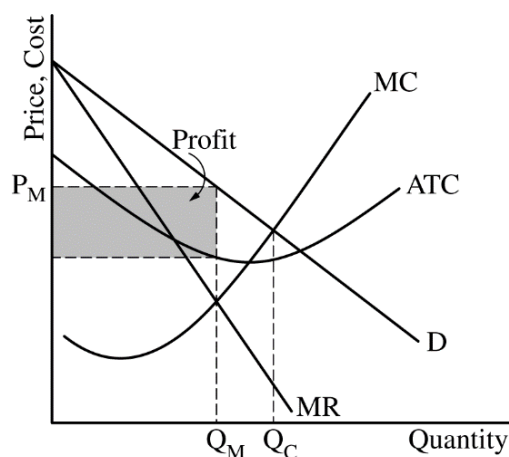


For the fifth point, the graph must show a completely shaded area of profit representing $(P_M - \text{ATC at } Q_M) \times Q_M$. **1 point**



Total for part (a) 5 points

- (b) On your graph from part (a), show the quantity that is consistent with the goal of eliminating all deadweight loss as Q_C . **1 point**



- (c) (i) State that the number of tickets SkyRunner sells will decrease and explain that the entry of new firms will reduce the demand for SkyRunner's service. **1 point**
- (ii) State that the price elasticity of demand for SkyRunner Airlines' service will increase and explain that the entry of new firms will increase the number of substitutes available to consumers. **1 point**
- (iii) State that SkyRunner Airlines' profit will be zero or decrease toward zero. **1 point**
- (iv) State that the deadweight loss will decrease and explain that the entry of new firms increases the total market output (services provided) and moves the output closer to the socially optimal output. **1 point**

Total for part (c) 4 points

Total for question 1 10 points

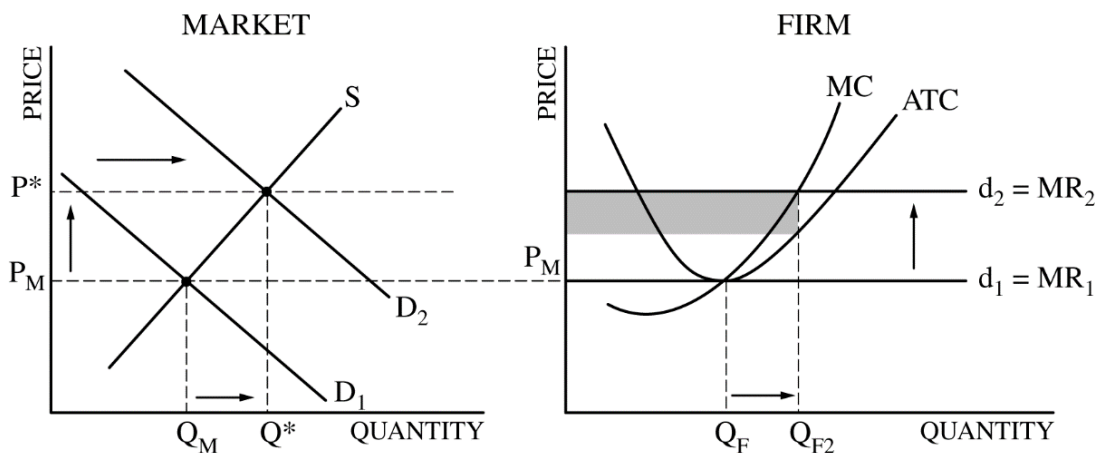
AP Microeconomics

Scoring Guidelines

2017 SCORING GUIDELINES

Question 1

10 points (4 + 2 + 1 + 1 + 2)



(a) 4 points:

- One point is earned for drawing a correctly labeled graph of the corn market with P_M and Q_M . The market demand curve must be downward sloping and the market supply curve must be upward sloping.
- One point is earned for showing a horizontal demand curve on the firm's graph extended from the market equilibrium price, P_M .
- One point is earned for identifying the firm's profit-maximizing quantity, Q_F , at marginal cost equal to marginal revenue ($MC=MR_1$).
- One point is earned for showing the firm's average total cost (ATC) curve and marginal cost (MC) passing through the minimum point of ATC, and $P = ATC = MC$ at Q_F .

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

(b) 2 points:

- One point is earned for showing a rightward shift of the market demand curve and a higher price and quantity, P^* and Q^* .
- One point is earned for completely shading the area representing the profit for a representative corn farmer.

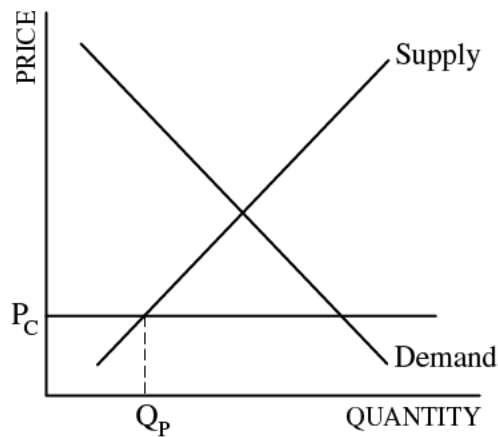
(c) 1 point:

- One point is earned for stating that the market quantity will increase and the market's price will decrease in the long run, and for explaining that new corn farmers will enter the market, which will increase the market supply curve.

2017 SCORING GUIDELINES**Question 1 (continued)**

(d) 1 point:

- One point is earned for stating that the price of soybeans in the next planting season will increase, and for explaining that the supply of soybeans will decrease because the higher price of corn encourages farmers to substitute corn for soybeans in production.



(e) 2 points:

- One point is earned for showing a correctly labeled graph of the corn market, with the price ceiling, P_C , below the equilibrium price of corn.
- One point is earned for showing the quantity purchased by consumers in the corn market labeled as Q_P where P_C intersects the supply curve.

2017 SCORING GUIDELINES

Question 2

5 points (1 + 4)

(a) 1 point:

- One point is earned for stating that the firm would be operating with increasing returns to scale and for explaining that doubling inputs will more than double output (output increases from 10 units to 50 units as a result of doubling labor and capital) **or** for explaining that average total cost decreases from \$27.50 to \$11 when labor and capital double.

(b) 4 points:

- One point is earned for correctly calculating the marginal product (MP) for the third unit of labor as 25 units and showing the work: $\frac{75-50}{3-2} = 25$.
- One point is earned for answering yes and for explaining that the MP of the third unit of labor (25 units) is less than the MP of the second unit of labor (30 units).
- One point is earned for correctly calculating the firm's average total cost (ATC) and showing the work: $\frac{75 \cdot 2}{75} + \frac{200 \cdot 3}{75} = 2 + 8 = \10 **or** $\frac{(75 \cdot 2) + (200 \cdot 3)}{75} = \frac{750}{75} = \10 .
- One point is earned for identifying the lowest output price as \$8 at which the third unit of labor would be hired.

2017 SCORING GUIDELINES**Question 3****7 points** (2 + 1 + 1 + 2 + 1)

(a) 2 points:

- One point is earned for correctly identifying the monopolist's profit-maximizing quantity, Q_3 .
- One point is earned for correctly identifying the monopolist's profit-maximizing price, P_4 .

(b) 1 point:

- One point is earned for stating that $MSC > MPC$ **or** that the MSC curve exceeds, is above, or is greater than the MPC curve.

(c) 1 point:

- One point is earned for correctly identifying the socially optimal quantity, Q_3 .

(d) 2 points:

- One point is earned for correctly identifying the dollar value of the tax, $P_4 - P_1$.
- One point is earned for correctly identifying the profit-maximizing quantity associated with the tax, Q_2 .

(e) 1 point:

- One point is earned for correctly stating that the deadweight loss increases because the monopolist's profit-maximizing quantity is equal to the socially optimal quantity before the tax and is less than the socially optimal quantity after the tax.

AP[®] Microeconomics 2015 Scoring Guidelines

© 2015 The College Board. College Board, Advanced Placement Program, AP, AP Central, and the acorn logo are registered trademarks of the College Board.

Visit the College Board on the Web: www.collegeboard.org.

AP Central is the official online home for the AP Program: apcentral.collegeboard.org.

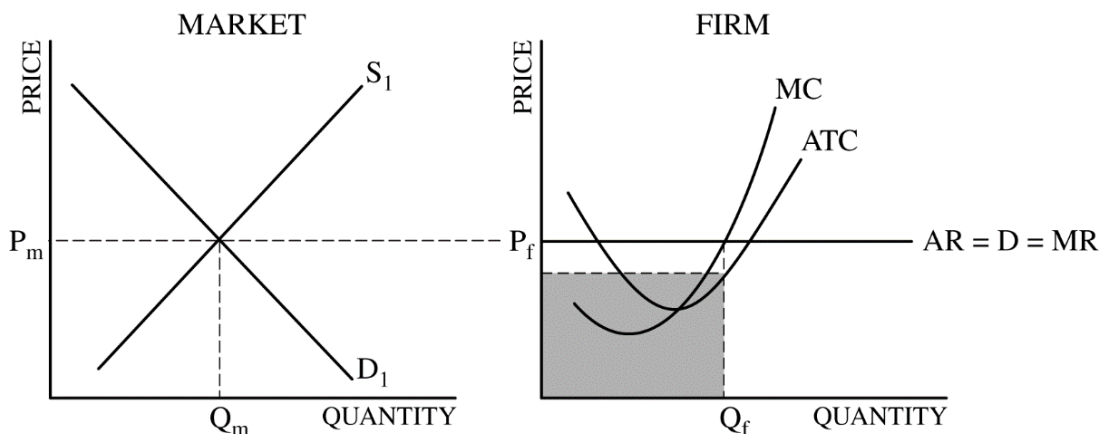
2015 SCORING GUIDELINES

Question 1

10 points (1+5+1+3)

(a) 1 point:

- One point is earned for stating that the firm's price is equal to the market price because the firm is a price taker.



(b) 5 points:

- One point is earned for drawing a correctly labeled graph of the market with P_m , Q_m , a downward-sloping demand curve, and an upward-sloping supply curve.
- One point is earned for identifying the firm's profit-maximizing quantity, Q_f at marginal cost (MC) equal to price or demand, or marginal revenue, or average revenue.
- One point is earned for showing the firm's average revenue curve, labeled AR , which is horizontal at the price determined by the market.
- One point is earned for showing the firm's average total cost (ATC) curve, such that the MC curve is passing through the minimum of the ATC curve, and $P > ATC$.
- One point is earned for showing the area representing total cost shaded completely.

(c) 1 point:

- One point is earned for stating that the firm's total revenue will fall to zero, because quantity decreases to zero, or because the firm is a price taker, or because the firm is facing a perfectly elastic demand, or the firm loses all of its customers, or the firm has no market power.

(d) 3 points:

- One point is earned for stating that the firm's quantity will remain the same in the short run and for explaining that MR or MC will not change in the short run. (Or, because the lump sum subsidy has no effect on marginal revenue and/or marginal cost, or that only fixed costs will be affected.)
- One point is earned for stating that the market price will decrease and the quantity will increase.
- One point is earned for the explanation that positive profits lead to entry of new firms that will increase the industry supply.

2015 SCORING GUIDELINES

Question 2

5 points (1+1+3)

(a) 1 point:

- One point is earned for stating that Breadbasket has a dominant strategy of setting a low price but Quicklunch does not have a dominant strategy.

(b) 1 point:

- One point is earned for correctly identifying the profit for Breadbasket is \$120 and the profit for Quicklunch is \$80.

(c) 3 points:

- One point is earned for redrawing the payoff matrix with the subsidy:

		Quicklunch	
		High Price	Low Price
Breadbasket	High Price	\$105, \$110	\$40, \$150
	Low Price	\$140, \$80	\$95, \$90

- One point is earned for stating that Quicklunch will choose a low price strategy and for explaining that with the subsidy Quicklunch will earn higher profits if it charges a lower price than if it charges a higher price. (The explanation has to include $\$90 > \80 or profits increase by \$10.)
- One point is earned for stating that Breadbasket's profits will decrease from \$120 to \$95.

2015 SCORING GUIDELINES

Question 3

6 points (1+1+1+1+2)

(a) 1 point:

- One point is earned for calculating the total producer surplus as $(1/2 \times 20 \times 20) = \200 .

(b) 1 point:

- One point is earned for stating that imposing a price floor at \$16 is ineffective and will not create a surplus or a shortage in the market because it is set below the equilibrium price, or because it is not binding.

(c) 1 point:

- One point is earned for stating that imposing a price ceiling at \$12 will create a shortage because quantity demanded is greater than quantity supplied, or because the price ceiling is binding.

(d) 1 point:

- One point is earned for calculating the deadweight loss as \$150 and for showing:

$$(1/2 \times 30 \times 10)$$

or

$$(1/2 \times 10 \times 10) + (1/2 \times 20 \times 10)$$

or

$$\$50 + \$100$$

(e) 2 points:

- One point is earned for calculating the price elasticity of demand as $[(24-20)/20 / (12-20)/20] = -0.5$, or for correctly using the midpoint formula.
- One point is earned for stating that in this price range the demand is relatively inelastic.