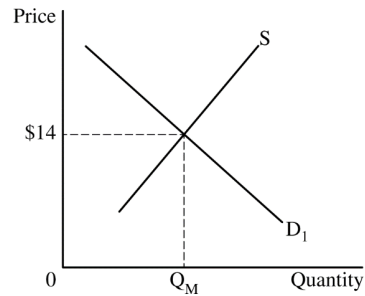


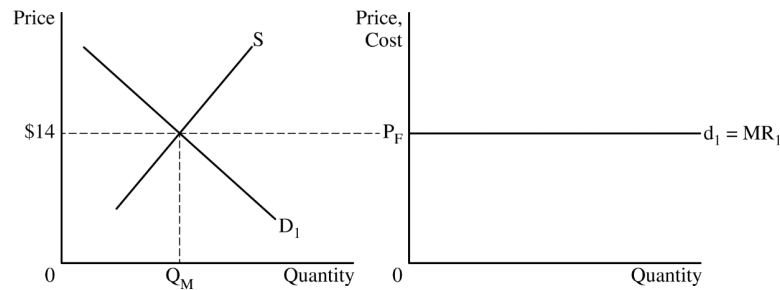
Question 1: Long

10 points

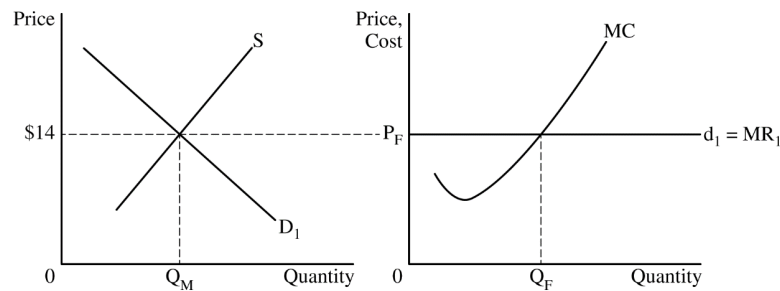
- (a) Draw a correctly labeled graph of the market for soybeans with a downward-sloping demand (D_1) curve and an upward-sloping supply (S) curve and label the market equilibrium price as \$14 and the market equilibrium quantity as Q_M . 1 point



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

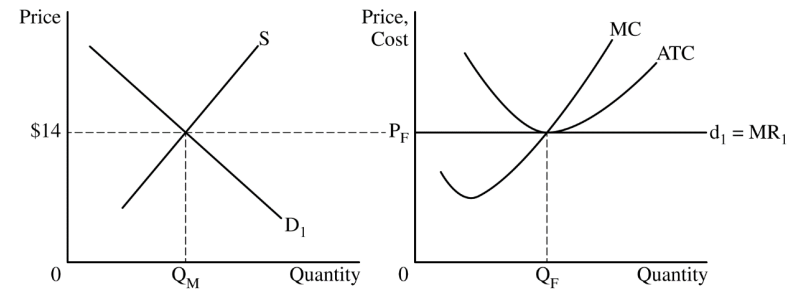


For the third point, the firm's graph must show a rising marginal cost (MC) curve, and show the profit-maximizing quantity, labeled Q_F where $MR = MC$. 1 point



①

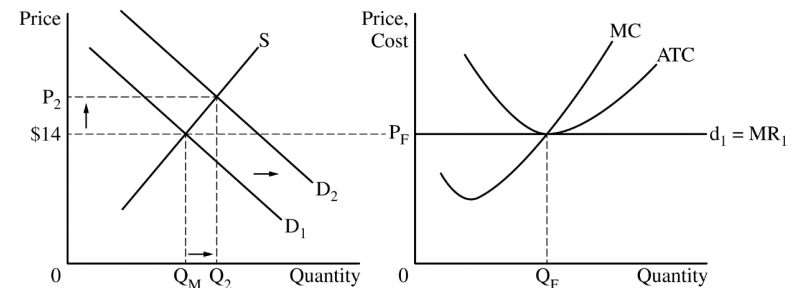
For the fourth point, the firm's graph must show the average total cost (ATC) curve tangent to the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve. 1 point



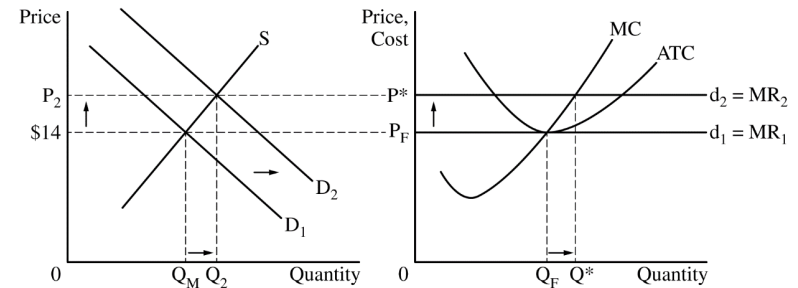
Total for part (a) 4 points

- (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



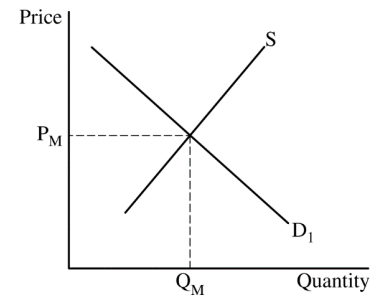
②

		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.	1 point	
	- 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.		
(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	

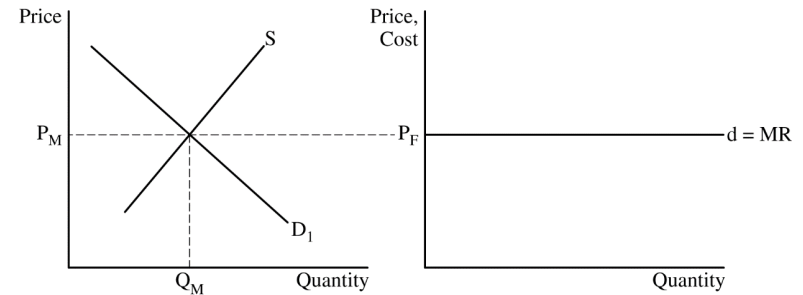
Question 1: Long

10 points

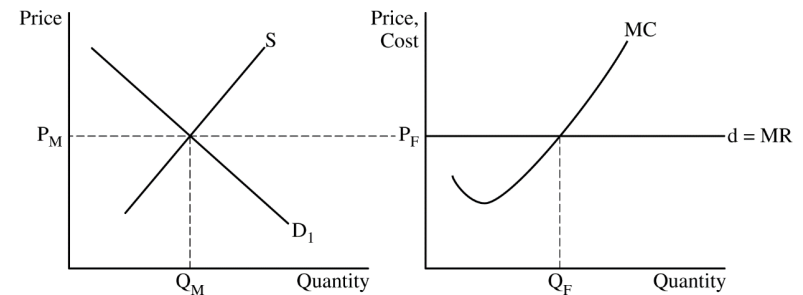
- (a) Draw a correctly labeled graph of the market for sugar and show the equilibrium price and quantity, labeled P_M and Q_M , respectively. 1 point



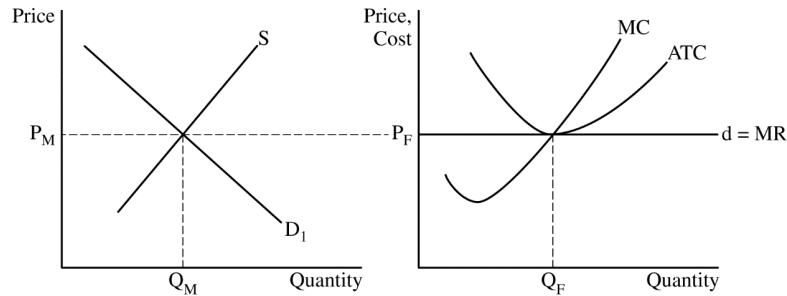
- For the second point, the graph must show a horizontal demand curve ($d = MR$) for Frank Sugar Co. and label the firm's profit-maximizing price P_F at P_M . 1 point



- 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

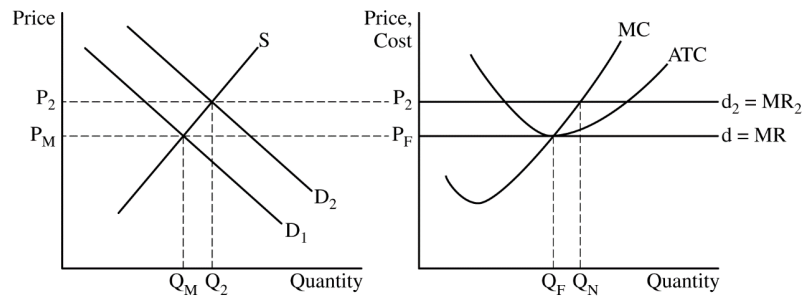


For the fourth point, the firm's graph must show the average total cost (ATC) curve tangent to the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve. **1 point**



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**

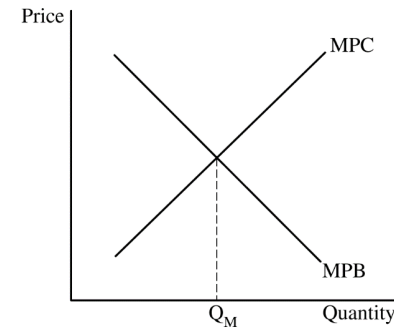


State that the profit earned by Frank Sugar Co. will increase in the short run. **1 point**

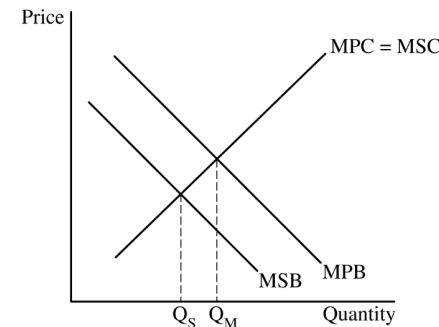
State that the market price in long-run equilibrium will be lower than P_2 and explain that new firms will enter the market, which increases the market supply, lowering the market price back to P_M where firms earn zero economic profit in the long run. **1 point**

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 2: Short

5 points

- (a) Calculate the consumer surplus in New Zealand before trade as \$4,500 and show your work. 1 point

$$\text{Consumer Surplus} = \frac{1}{2} \times 300 \times (\$70 - \$40) = \frac{1}{2} \times 300 \times \$30 = \frac{\$9,000}{2} = \$4,500$$

- (b) (i) State that New Zealand will export 400 units of wool. 1 point

- (ii) State that consumer surplus in New Zealand will decrease and explain with **ONE** of the following: 1 point

- The domestic price will increase to the world price, which decreases the domestic quantity demanded of wool.
- The consumer surplus decreased from \$4,500 before trade to \$500 after trade.

- (iii) State that total economic surplus in New Zealand will increase by \$4,000 and explain that producer surplus will increase by \$8,000 while consumer surplus will decrease by \$4,000, resulting in an increase in total economic surplus. 1 point

Total for part (b) 3 points

- (c) State that New Zealand's exports will decrease. 1 point

Total for question 2 5 points

2017

AP CollegeBoard

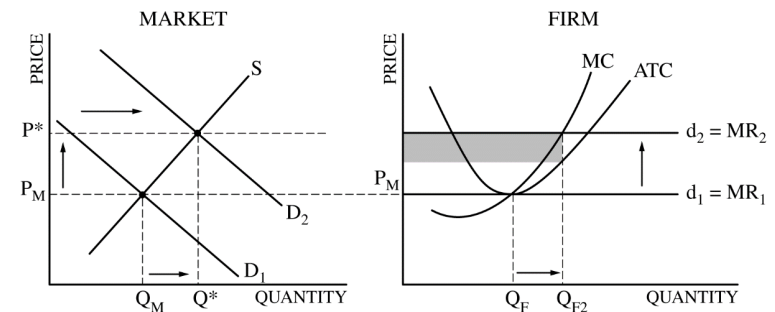
AP Microeconomics

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:

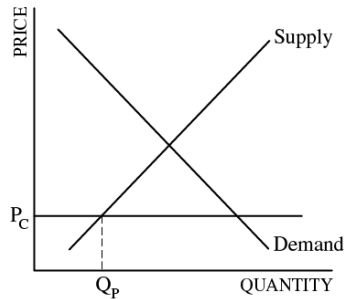
- One point is earned for stating that the market quantity will increase and the market's price will decrease in the long run, and for explaining that new corn farmers will enter the market, which will increase the market supply curve.

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

2016 Scoring Guidelines

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2016 SCORING GUIDELINES

Question 1

10 points (3+3+4)

(a) 3 points:

- One point is earned for stating that the quantity supplied exceeds the quantity demanded at the price floor or the price floor would result in a surplus because the price floor is binding or effective.
- One point is earned for correctly calculating the price elasticity of supply.
Students can use either the midpoint formula or the point elasticity formula.

$$E = (500/1250) / (0.2/1.1) = 2.2$$

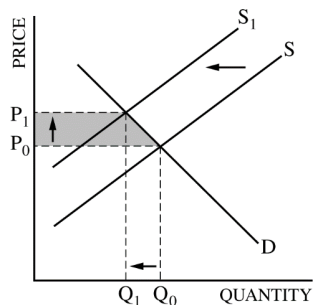
$$E = (50\%/20\%) = 2.5$$

$$E = (500/0.2) \times (1/1000) = 2.5$$

$$E = [(1500-1000)/1000] / [(1.2-1)/1] = 0.5/0.2 = 2.5$$

$$E = (500/0.2) \times (1.2/1500) = 2$$
- One point is earned for stating that the supply is elastic and for explaining that the percentage change in quantity supplied exceeds the percentage change in price or because price elasticity of supply is greater than one. (Other equivalent explanations are accepted.)

(b) 3 points:



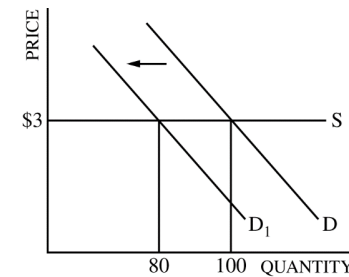
- One point is earned for drawing a correctly labeled graph and for showing the equilibrium price and quantity, labeled P_0 and Q_0 , respectively.
- One point is earned for shifting the supply curve to the left and for showing the new equilibrium price and quantity, labeled P_1 and Q_1 , respectively.
- One point is earned for completely shading on the graph the area representing the change in consumer surplus.

2016 SCORING GUIDELINES

Question 1 (continued)

(c) 4 points:

- One point is earned for stating that coffee and muffins are complementary goods.



- One point is earned for drawing a correctly labeled graph for the coffee market and showing a horizontal supply curve (S) and a downward sloping demand curve (D).
- One point is earned for shifting the demand curve to the left and for showing a decrease in the equilibrium quantity and no change in the equilibrium price of coffee.
- One point is earned for correctly calculating the new equilibrium quantity and showing the work.

$$\% \Delta Q = (10\% \times -2) = -20\%$$

$$\text{New Equilibrium Quantity} = 100 \times (-20\%) = 80$$
OR

$$\text{New Equilibrium Quantity} = 100 - (0.2 \times 100) = 80$$

(Using the midpoint formula is also acceptable.)

2016 SCORING GUIDELINES

Question 2

7 points (1+1+1+3)

(a) 1 point:

- One point is earned for stating that the marginal benefit is \$1.

(b) 1 point:

- One point is earned for correctly calculating the total consumer surplus from consuming 5 units of X.

$$CS = (\$16 - \$4) + (\$12 - \$4) + (\$8 - \$4) + (\$4 - \$4) + (\$1 - \$4) = \$21$$

OR

$$CS = \$41 - \$20 = \$21$$

(c) 1 point:

- One point is earned for explaining that this combination of X and Y is not optimal because the marginal benefit per dollar of good X ($MB_X/P_X = \$4/\$4 = 1$) is less than the marginal benefit per dollar of good Y ($MB_Y/P_Y = \$8/\$2 = 4$). (This can also be stated as $MB_X/MB_Y < P_X/P_Y$.)

($MB_X/P_X = 1$) is not equal to ($MB_Y/P_Y = 4$) is acceptable.

MB_X/P_X is less than MB_Y/P_Y is acceptable.

MB_Y/P_Y is greater than MB_X/P_X is acceptable.

(d) 1 point:

- One point is earned for stating that Martha's optimal combination is 3 units of X and 4 units of Y.

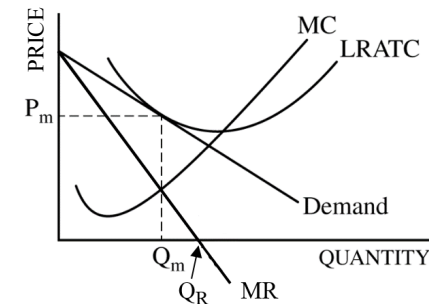
(e) 3 points:

- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will decrease.
- One point is earned for stating that the optimal quantity of good Y will stay the same.

2016 SCORING GUIDELINES

Question 3

6 points (4+1+1)



(a) 4 points:

- One point is earned for drawing a correctly labeled graph showing a downward sloping demand curve with MR curve below the demand curve.
- One point is earned for showing the quantity, Q_m , at $MC=MR$.
- One point is earned for showing the price, P_m , on the demand curve above Q_m .
- One point is earned for showing the long-run average total cost tangent to the demand curve at Q_m .

(b) 1 point:

- One point is earned for showing Q_R at $MR=0$.

(c) 1 point:

- One point is earned for stating that firms in this market are experiencing economies of scale in long-run equilibrium because LRATC is decreasing OR because Q_m is to the left of the minimum point of the LRATC.