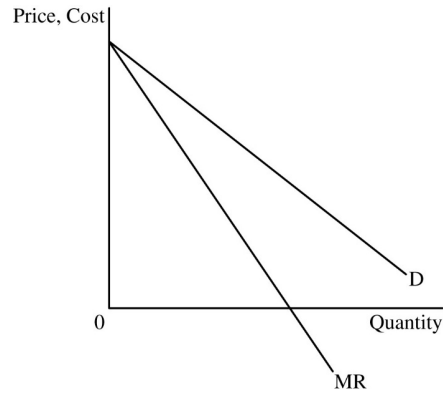


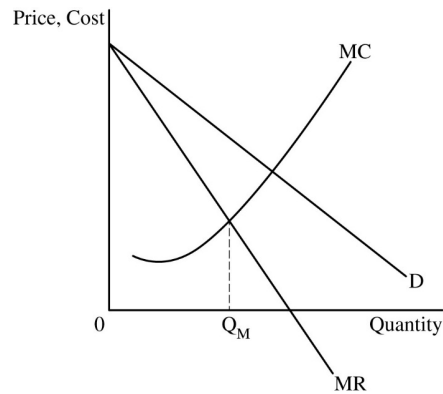
Question 1: Long

10 points

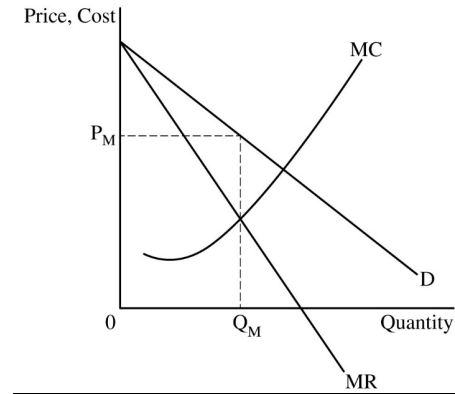
- A** Draw a correctly labeled graph for Voda Reservoir with a downward-sloping demand (D) curve and a downward-sloping marginal revenue (MR) curve with the MR curve below the D curve. **1 point**
- Point 1



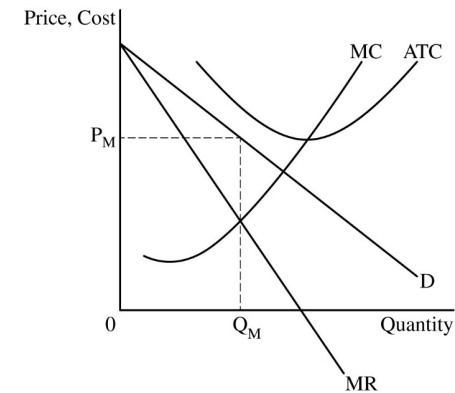
- Point 2 The graph must show a rising marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_M , where $MR = MC$. **1 point**



- Point 3 The graph must show the profit-maximizing price, labeled P_M , from the D curve at Q_M . **1 point**

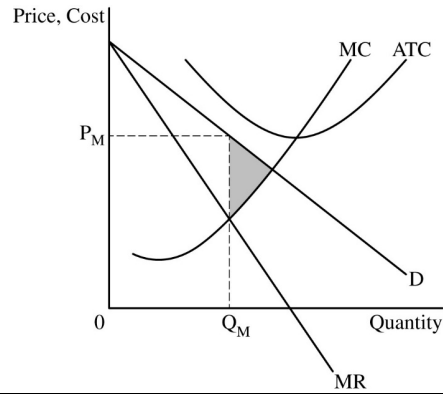


- Point 4 The graph must show the average total cost (ATC) curve above the D curve and show the MC curve passing through the minimum point of the ATC curve. **1 point**



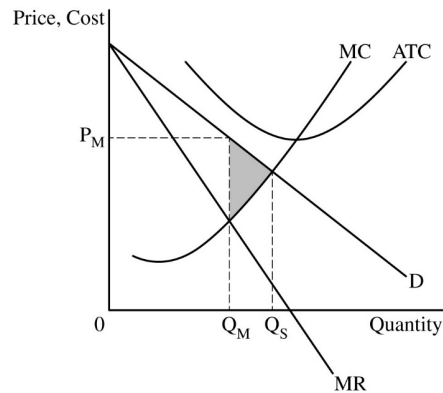
Point 5 The graph must show the area of deadweight loss, shaded completely.

1 point



B The graph from part A must show the socially optimal quantity of bottled water, labeled Q_S , from the intersection of the D and MC curves.

1 point



C State that Voda Reservoir's profit-maximizing quantity of bottled water will increase and explain with **ONE** of the following:

1 point

Point 7

- The per-unit subsidy decreases the firm's marginal cost, which shifts the MC curve to the right (down), intersecting the MR curve at a greater quantity.
- The per-unit subsidy increases the firm's marginal revenue, which shifts the MR curve to the right, intersecting the MC curve at a greater quantity.

D State that the demand for Voda Reservoir's bottled water will become more elastic.

1 point

Point 8

E (i) State that Voda Reservoir's demand for labor will increase and explain that the increase in demand for bottled water will increase the price and marginal revenue of bottled water, increasing the marginal revenue product of labor.

1 point

(ii) State that the market wage will increase in the short run and explain that the new regulation will decrease the supply of workers.

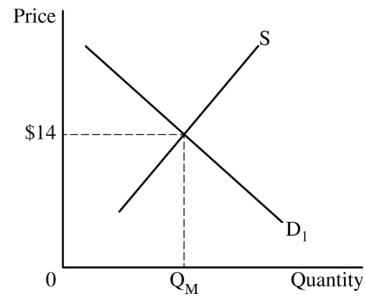
1 point

Point 10

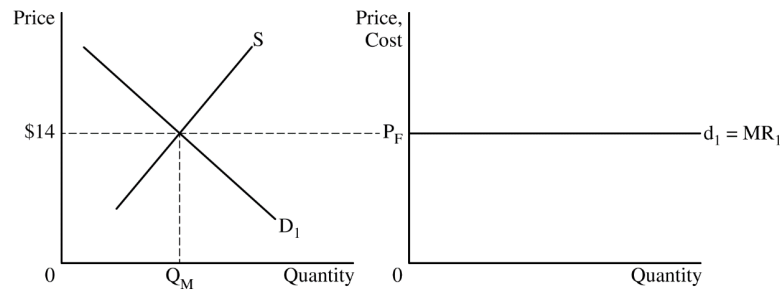
Question 1: Long

10 points

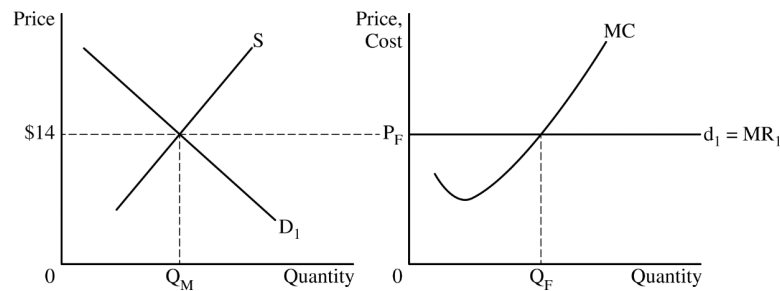
- (a) Draw a correctly labeled graph of the market for soybeans with a downward-sloping demand (D_1) curve and an upward-sloping supply (S) curve and label the market equilibrium price as \$14 and the market equilibrium quantity as Q_M . 1 point



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

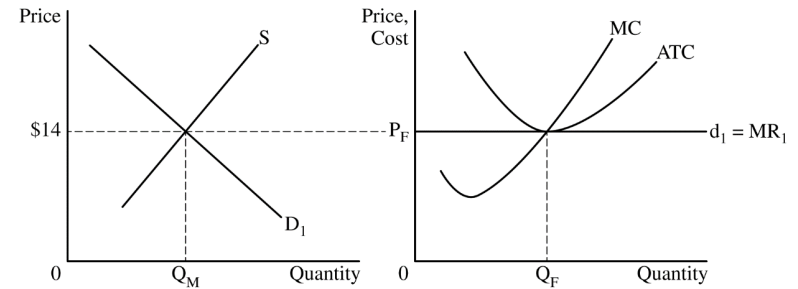


For the third point, the firm's graph must show a rising marginal cost (MC) curve, and show the profit-maximizing quantity, labeled Q_F where $MR = MC$. 1 point



5

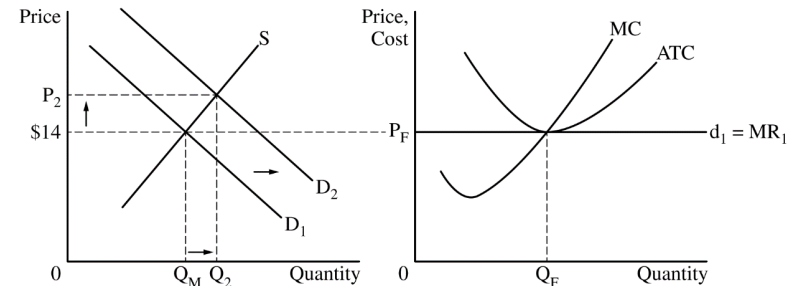
For the fourth point, the firm's graph must show the average total cost (ATC) curve tangent to the firm's demand curve at Q_F and show the MC curve passing through the minimum point of the ATC curve. 1 point



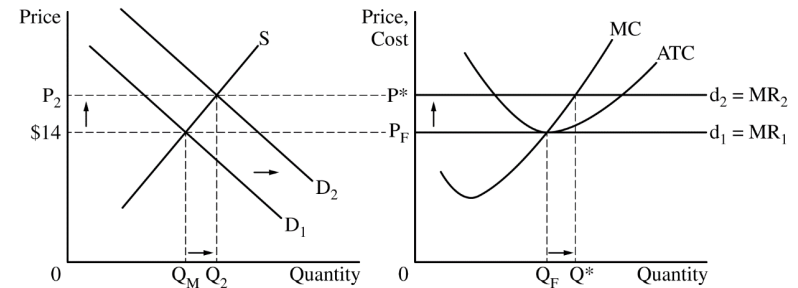
Total for part (a) 4 points

- (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

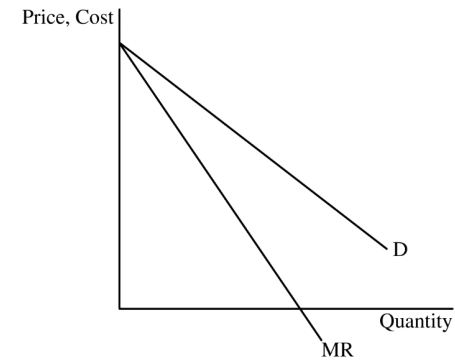


6

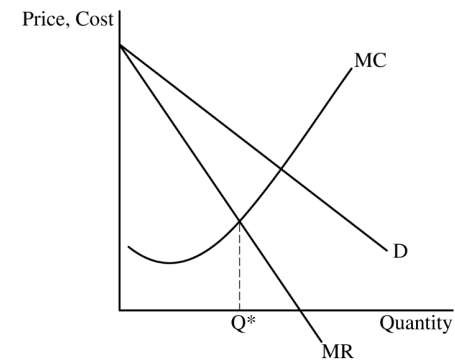
		Total for part (c)	2 points
(d)	State that the number of firms will increase in the long run and explain that the positive economic profits earned by soybean producers will encourage new firms to enter the market.	1 point	
(e) (i)	State that demand for quinoa is inelastic and explain with ONE of the 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**

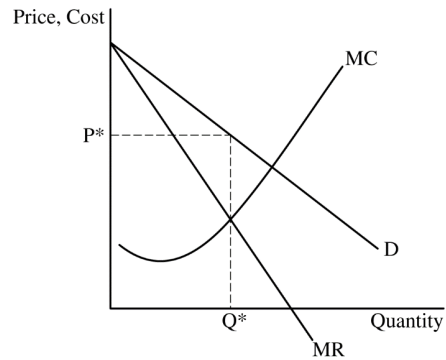
- (a)** Draw a correctly labeled graph of Arzeve Pharma with a downward-sloping demand (D) curve and a downward-sloping marginal revenue (MR) curve with the MR curve below the D curve. **1 point**



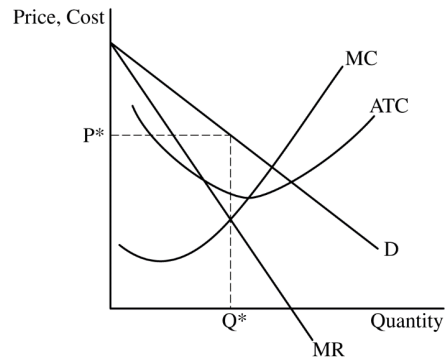
- For the second point, the graph must show a rising marginal cost (MC) curve and the profit-maximizing quantity, labeled Q^* , where $MR = MC$. **1 point**



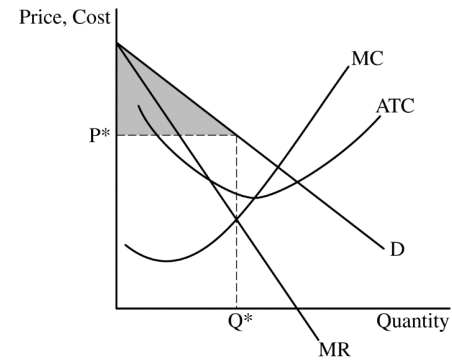
For the third point, the graph must show the profit-maximizing price, labeled P^* , from the downward-sloping demand curve at Q^* . **1 point**



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**

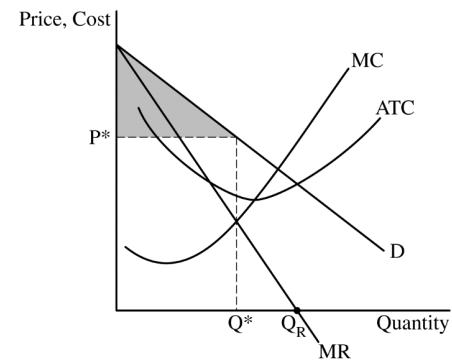


For the fifth point, the graph must show the area of consumer surplus, shaded completely. **1 point**



Total for part (a) 5 points

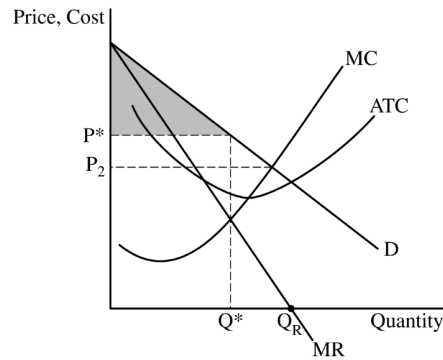
(b) (i) The graph from part (a) must show the quantity that maximizes total revenue, labeled Q_R , where marginal revenue equals 0. **1 point**



(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 Arzeeye 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 Arzeeye is able to charge the maximum price each consumer is willing to pay. **1 point**

Total for part (c) 2 points

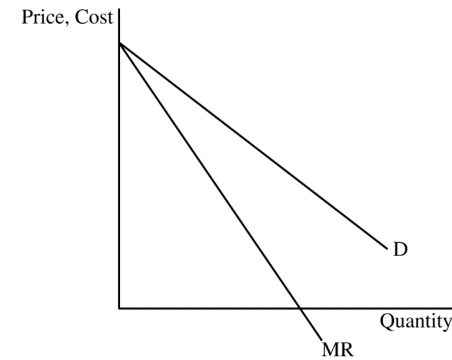
- (d) State that Arzeeye Pharma's demand will become more elastic and explain that as the patent expires more firms will enter the market which increases the number and availability of substitutes, causing consumers to be more responsive to changes in the price of eye treatments. **1 point**

Total for question 1 10 points

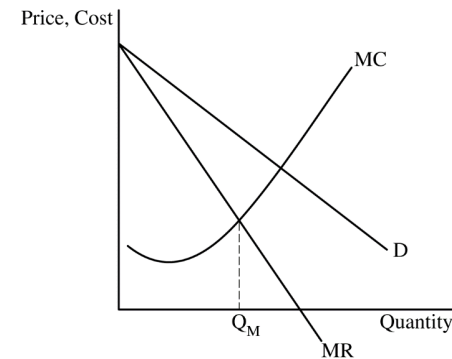
Question 1: Long

10 points

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

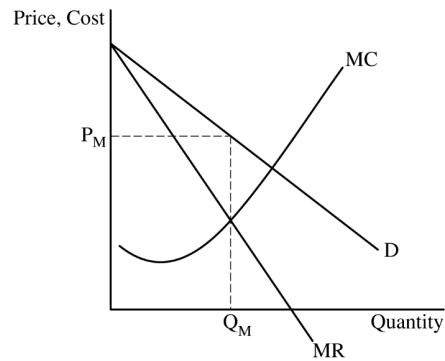


For the second point, the graph must show the marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_M , where $MR=MC$. **1 point**



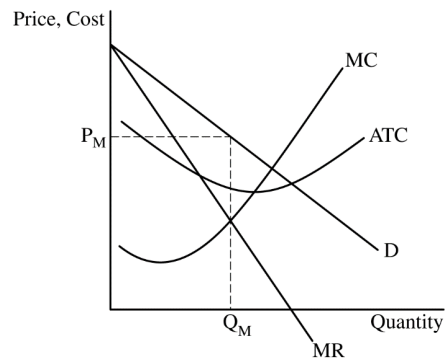
For the third point, the graph must show the profit-maximizing price, labeled P_M , from the demand curve at Q_M .

1 point



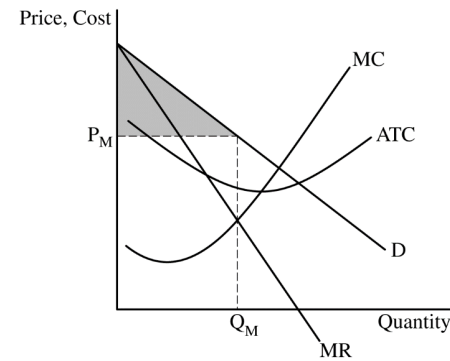
For the fourth point, the graph must show the average total cost (ATC) curve below the demand curve at Q_M and show the MC curve passing through the minimum point of the ATC curve.

1 point



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

1 point



Total for part (a)

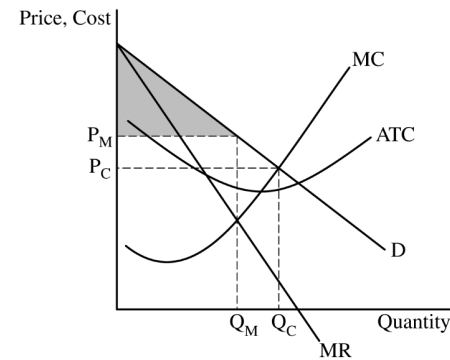
5 points

(b)(i) State no and explain that a per-unit tax would shift the MC curve upward and intersect the MR curve at a lower quantity, which decreases the firm's profit-maximizing quantity, not increases it to the socially optimal quantity where $MC=D$.

1 point

(ii) On your graph from part (a), show the socially optimal quantity labeled as Q_C and the price ceiling labeled as P_C at $MC=D$.

1 point



- (iii) State that the firm is earning positive economic profit and explain that ATC is less than P_c at Q_c , as shown. **1 point**

Scoring Note: The answer should be consistent with the position of the ATC curve with respect to the demand curve at Q_c on the graph drawn in part (b)(ii). The firm will not earn positive economic profit if the ATC curve is drawn such that $ATC > P_c$ or $ATC = P_c$ at Q_c .

Total for part (b) 3 points

- (c) (i) State that marginal revenue will be negative and explain that after total revenue is maximized, TR decreases since the firm moves onto the inelastic portion of the demand curve. **1 point**

- (ii) State that the percentage increase in quantity demanded will be less than 10%. **1 point**

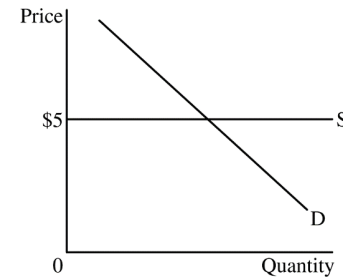
Total for part (c) 2 points

Total for question 1 10 points

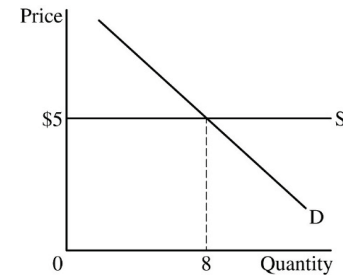
Question 3: Short

5 points

- (a) Draw a correctly labeled graph of the market with a downward-sloping demand (D) curve and a perfectly elastic supply (S) curve at a price of \$5. **1 point**



For the second point, the graph must show the equilibrium quantity as 8 units. **1 point**



Total for part (a) 2 points

- (b) (i) Calculate the magnitude of the price elasticity of demand as 1.25 and show your work. **1 point**

$$\begin{aligned} \text{Price Elasticity of Demand} &= \frac{\text{Percentage Change in Quantity Demanded}}{\text{Percentage Change in Price}} \\ &= \frac{\left| \frac{4-8}{8} \right| \times 100}{\left| \frac{7-5}{5} \right| \times 100} = \frac{50\%}{40\%} = 1.25 \end{aligned}$$

OR

$$= \frac{\left(\frac{4-8}{8} \right) \times 100}{\left(\frac{7-5}{5} \right) \times 100} = \frac{-50\%}{40\%} = -1.25$$

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

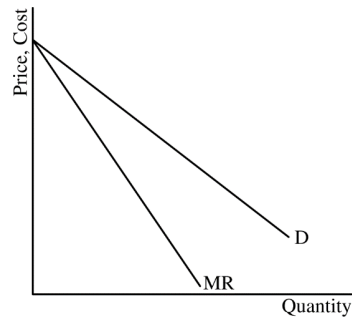
Total for part (b) 2 points

- (c) State no and explain that Emily's marginal benefit should be greater than or equal to the price she is willing to pay (\$7) for the second unit. **1 point**

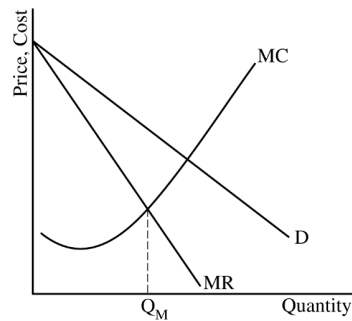
Total for question 3 5 points

Question 1: Long**10 points**

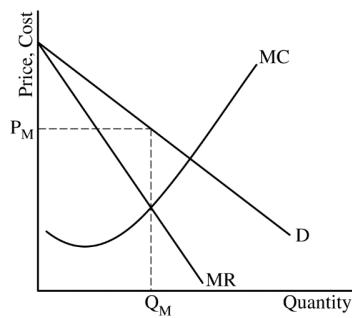
- (a) Draw a correctly labeled graph for SkyRunner Airlines showing downward sloping demand (D) and marginal revenue (MR) curves with the MR curve below the demand curve. **1 point**



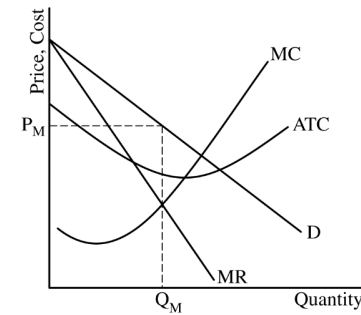
For the second point, the graph must show the marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_M , where $MR=MC$. **1 point**



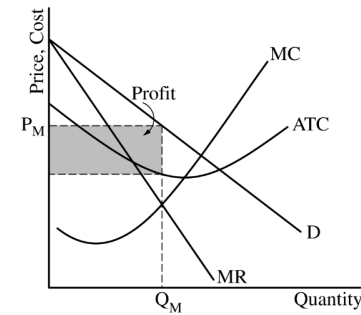
For the third point, the graph must show the profit-maximizing price, labeled P_M , from the demand curve at Q_M . **1 point**



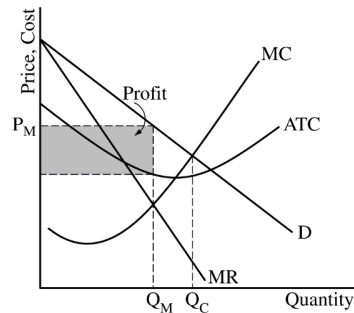
For the fourth point, the graph must show the ATC curve below the demand curve at Q_M with the MC curve rising and intersecting the ATC at its minimum point. **1 point**



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

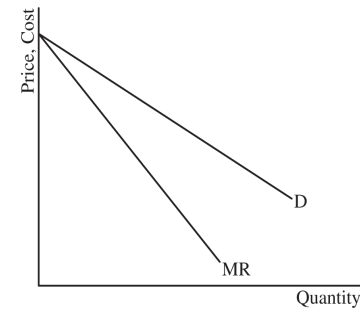
Total for part (c) 4 points

Total for question 1 10 points

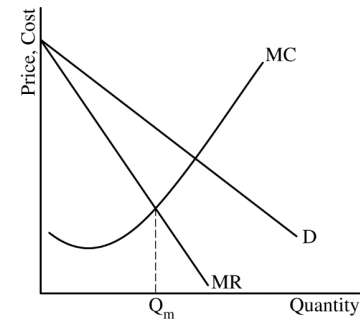
Question 1: Long

10 points

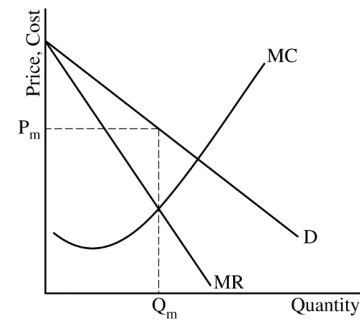
- (a) Draw a correctly labeled graph for NCHart showing downward-sloping demand (D) and marginal revenue (MR) curves with the marginal revenue curve below the demand curve. **1 point**



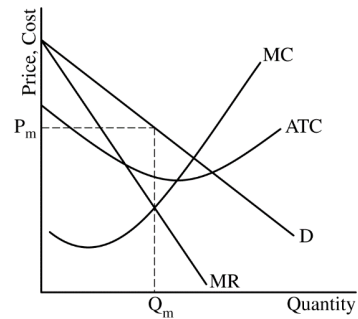
For the second point, the graph must show the marginal cost (MC) curve and the profit-maximizing quantity, labeled Q_m , where $MR=MC$. **1 point**



For the third point, the graph must show the profit-maximizing price, labeled P_m , above Q_m from the demand curve. **1 point**

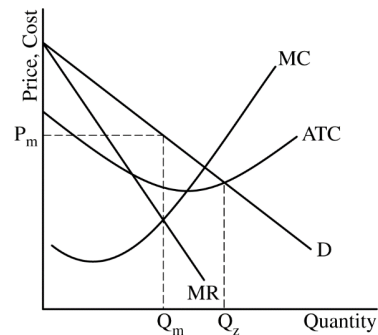


For the fourth point, the graph must show the ATC below the demand curve at Q_m with the MC curve rising and intersecting the ATC curve at its minimum.

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

(b) State that demand is elastic and explain that MR is positive at Q_m or that Q_m is less than the quantity at which marginal revenue equals zero. **1 point**

(c) (i) On your graph from part (a), show the quantity that is consistent with the goal of NCHart generating enough revenue to cover its total costs labeled as Q_z . **1 point**



(ii) State there is a deadweight loss at Q_z and explain that P (or D) < MC , as shown. **1 point**

Note: Deadweight loss will exist at Q_z if the demand is drawn such that the quantity at which $D=ATC$ is less than the quantity at which $D=MC$, because P (or D) > MC .

Note: Deadweight loss will NOT exist at Q_z if the demand is drawn such that the quantity at which $D=ATC$ is equal to the quantity at which $D=MC$, because P (or D) = MC .

Total for part (c) 2 points

(d) (i) State that no, TXDrug does not have a dominant strategy, and explain that if NCHart chooses Q_m , then TXDrug's best response is to Enter because $\$1 > \0 , but if NCHart chooses Q_z , then TXDrug's best response is to Stay Out because $\$0 > -\1 . **1 point**

(ii) State that the best response for NCHart is to produce Q_m . **1 point**

(iii) Identify the Nash equilibrium as NCHart produces Q_m and TXDrug chooses to Enter. **1 point**

Total for part (d) 3 points**Total for question 1 10 points****2019****AP** CollegeBoard

AP[®] Microeconomics

Scoring Guidelines

Set 2

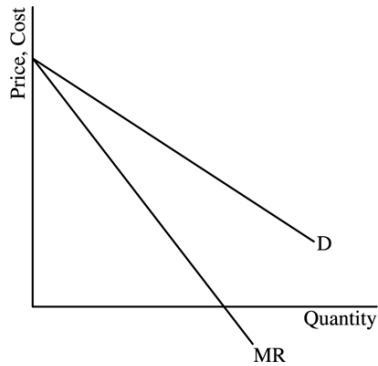
2019 SCORING GUIDELINES

Question 1

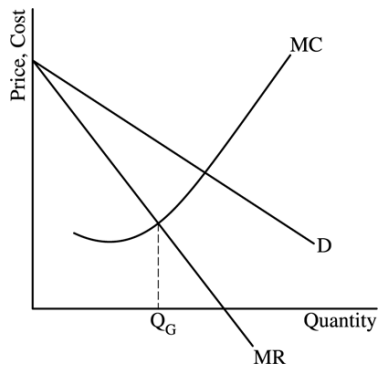
9 points (5 + 2 + 2)

(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.



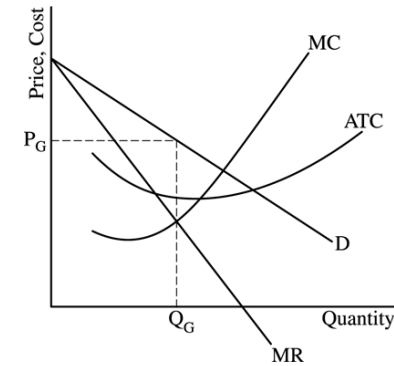
- One point is earned for showing the profit-maximizing quantity, labeled Q_G , where $MR=MC$.



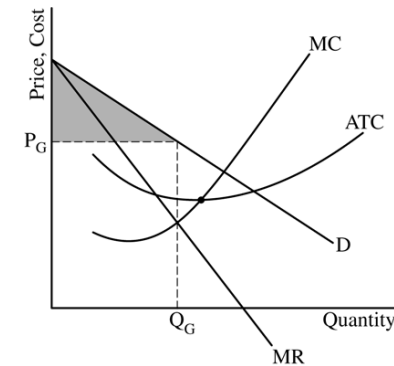
2019 SCORING GUIDELINES

Question 1 (continued)

- One point is earned for both showing the profit-maximizing price, labeled P_G , from the demand curve at Q_G , and above the average total cost (ATC) curve.
- One point is earned for showing the marginal cost (MC) curve rising and passing through the minimum point of the ATC curve.



- One point is earned for completely shading the area of the consumer surplus.



2019 SCORING GUIDELINES**Question 1 (continued)**

(b) 2 points

- One point is earned for stating that Gigantic Pharmaceutical Corporation's demand for warehouse workers will increase and for explaining that the marginal revenue product of labor increases because of the increase in the product price.
- One point is earned for stating that the wage rate Gigantic pays to its warehouse workers will not change and the number of workers hired will increase.

(c) 2 points

- One point is earned for stating that Gigantic's producer surplus will decrease.
- One point is earned for stating that the consumer surplus will increase and for explaining that because of the increased competition the price will decrease and the quantity will increase.

2019 SCORING GUIDELINES**Question 2****5 points (2 + 2 + 1)**

(a) 2 points

- One point is earned for identifying the after-tax price paid by consumers as P_3 and the after-tax quantity as Q_2 .
- One point is earned for identifying the area representing the total tax revenue as:
 P_1P_3SZ , or
 $(P_3 \times Q_2) - (P_1 \times Q_2)$, or
 $(P_3 - P_1) \times Q_2$

(b) 2 points

- One point is earned for stating that the price paid by consumers will be higher.
- One point is earned for stating that the tax revenue received by the government will be higher because the tax does not reduce the quantity purchased when the demand is perfectly inelastic, while the quantity does fall when demand is downward sloping (i.e., $Q_3 > Q_2$).

(c) 1 point

- One point is earned for stating that the producer surplus will stay the same, and for explaining that this is because both the price received by sellers (P_2) and the quantity sold (Q_3) do not change. It is also acceptable to explain that producer surplus stays the same because the consumer bears the full burden of the tax.

2019 SCORING GUIDELINES**Question 3****6 points (1 + 1 + 1 + 1 + 2)**

(a) 1 point

- One point earned for stating that Jackpot Florist's dominant strategy is to close at 6 p.m.

(b) 1 point

- One point is earned for stating that this is not the profit-maximizing action by Boulevard Gardens and for explaining that Boulevard will earn \$30 by choosing Delivery instead of \$20 choosing No Delivery.

(c) 1 point

- One point is earned for identifying the profit for Boulevard Gardens in the Nash equilibrium as \$30.

(d) 1 point

- One point is earned for stating that they would choose to close at 9 p.m. and offer No Delivery.

(e) 2 points

- One point is earned for redrawing the payoff matrix showing the effect of the agreement.

		Boulevard	
		Delivery	No Delivery
Jackpot	6 p.m.	\$35,\$30	\$43,\$32
	9 p.m.	\$37,\$38	\$45,\$40

- One point is earned for stating that Boulevard will agree to Jackpot's proposal and for explaining that Boulevard will be better off because this will increase the payoff from \$30 to \$40.

AP Microeconomics

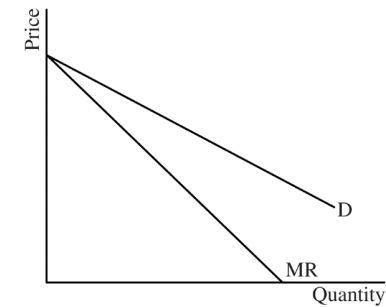
Scoring Guidelines

2018 SCORING GUIDELINES

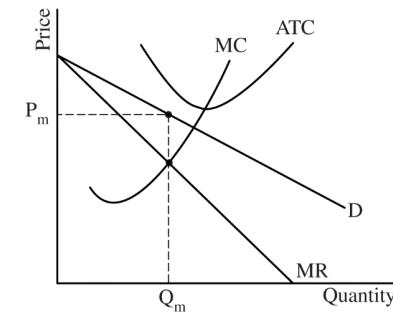
Question 1

9 points (5 + 1 + 1 + 2)

(a) 5 points:



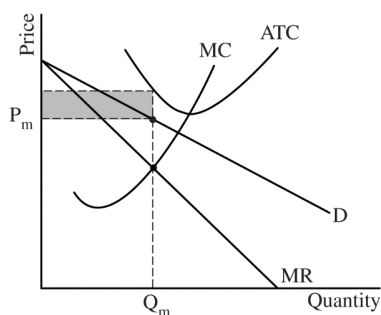
- One point is earned for drawing a correctly labeled graph for a monopoly showing a downward sloping demand (D) curve with the marginal revenue (MR) curve below the demand curve.



- One point is earned for showing the marginal cost (MC) curve rising and passing through the minimum of the average total cost (ATC) curve.
- One point is earned for showing the profit-maximizing quantity, Q_m , where $MR = MC$.
- One point is earned for showing the price, P_m , from the demand curve at Q_m .

2018 SCORING GUIDELINES

Question 1 (continued)



- One point is earned for completely shading the area representing negative economic profit and showing the ATC curve above the demand curve for all quantities.

(b) 1 point:

- One point is earned for stating that the price must be greater than average variable cost, OR total revenue must be greater than total variable cost, OR the firm's current economic loss is less than its fixed cost, which is equal to the firm's loss if it shuts down.

(c) 1 point:

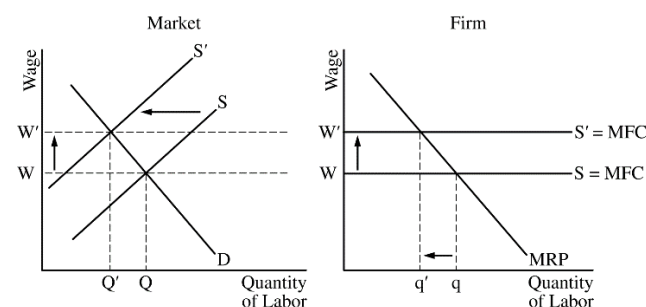
- One point is earned for stating that total revenue will decrease and explaining with one of the following reasons.
 - The monopolist is operating on the elastic portion of the demand curve.
 - The quantity effect is greater than the price effect.
 - The percentage change in quantity demanded is greater than the percentage change in price.
 - MR is positive.

(d) 2 points:

- One point is earned for stating or graphically showing that the wage rate will increase because the market supply of labor decreases (shifts left).
- One point is earned for stating the marginal revenue product (MRP) of the last worker hired will increase and explaining with one of the following reasons.
 - The firm is hiring fewer workers now and therefore the marginal product of the last worker hired increases (diminishing marginal product).
 - The market wage (marginal factor cost or MFC) increased and the profit-maximizing firm will hire where $MRP = MFC$.
 - There is an upward movement along the firm's MRP curve as wage or MFC increases (shifts up).

2018 SCORING GUIDELINES

Question 1 (continued)



2018 SCORING GUIDELINES

Question 2

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

(a) 1 point:

- One point is earned for stating positive externality, and for explaining that either marginal social benefit is greater than marginal private benefit ($MSB > MPB$) or the equilibrium quantity is less than the socially optimal quantity.

(b) 1 point:

- One point is earned for identifying the market equilibrium price as \$6 and the market equilibrium quantity as 16 units.

(c) 1 point:

- One point is earned for identifying the area of the deadweight loss as DEF.

(d) 1 point:

- One point is earned for identifying \$4 as the dollar value of the per-unit subsidy.

(e) 2 points:

- One point is earned for identifying 8 units.
- One point is earned for stating no and explaining with one of the following reasons:
 - The quantity exchanged in the market will be less than the socially optimal quantity.
 - $MSB > MSC$ at a quantity of 8 units.
 - Deadweight loss increased after the price floor.

AP Microeconomics 2018 SCORING GUIDELINES

Question 3

5 Points (1 + 1 + 1 + 1 + 1)

(a) 1 point:

- One point is earned for correctly calculating the gain, 20 points.

(b) 1 point:

- One point is earned for correctly calculating the opportunity cost, 6 points for that hour (or 6/20).

(c) 1 point:

- One point is earned for stating that the opportunity cost increases and for using one the following explanations:
 - The expected score on microeconomics decreases at an increasing rate with each additional hour spent studying history.
 - The marginal cost is rising (expected score on microeconomics decreases) for each additional hour spent studying history.

(d) 1 point:

- One point is earned for stating that Nirali should spend 2 hours on studying microeconomics and 3 hours on studying history to maximize the sum of expected scores.

(e) 1 point:

- One point is earned for stating that Nirali will spend the additional hour studying microeconomics because studying microeconomics will increase her expected total score by 8 points compared to 5 points if spent studying history.

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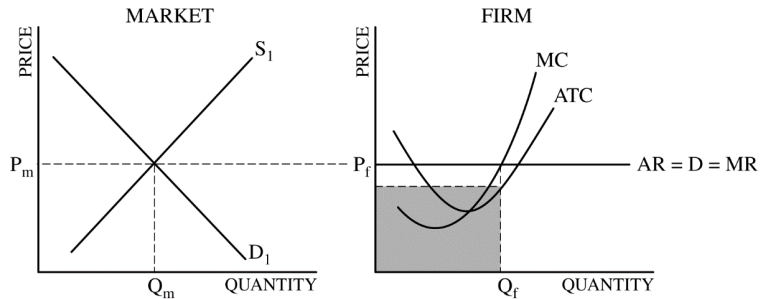
2015 SCORING GUIDELINES

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.

AP[®] Microeconomics

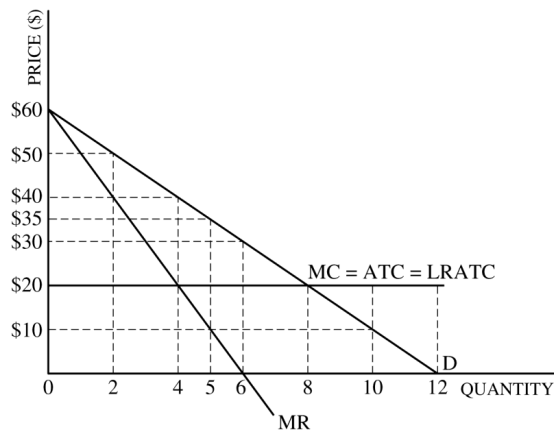
2014 Scoring Guidelines

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2014 SCORING GUIDELINES

Question 1

10 points (3 + 1 + 3 + 1 + 2)



3 points:

- One point is earned for identifying the profit-maximizing quantity, $Q = 4$.
- One point is earned for identifying the profit-maximizing price, $P = \$40$.
- One point is earned for identifying the allocatively efficient output, $Q = 8$.

1 point:

- One point is earned for stating that the firm is not experiencing economies of scale and for explaining that the LRATC is not downward sloping as output increases or LRATC remains constant as output increases.

3 points:

- One point is earned for correctly showing the calculation for the monopolist's economic profit.

$$\pi = (P - ATC) \times Q = (\$40 - \$20) \times 4 = \$80$$

Or loss of \$100
Other correct calculations are acceptable.

- One point is earned for correctly showing the calculation of consumer surplus.
 $CS = 1/2 (\$60 - \$10) \times 10 = \$250$
Other correct calculations are acceptable.

- One point is earned for correctly showing the calculation of the deadweight loss.
 $DWL = 1/2 (\$20 - \$10) \times (10 - 8) = \$10$
Other correct calculations are acceptable.

2014 SCORING GUIDELINES

Question 1 continued

1 point:

- One point is earned for identifying the quantity at which demand is unit elastic, 6.

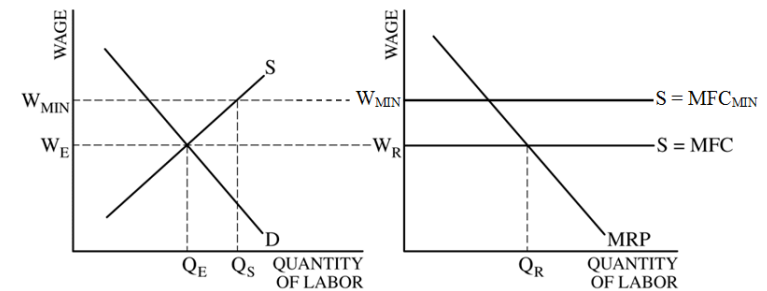
2 points:

- One point is earned for correctly determining the monopolist's profit.
 $1/2 [(\$60 - \$20) \times 8] = \$160$
- One point is earned for correctly determining the consumer surplus as zero.

2014 SCORING GUIDELINES

Question 2

6 points (2 + 1 + 3)



2 points:

- One point is earned for drawing a correctly labeled graph of the labor market with an upward-sloping labor supply curve and a downward-sloping labor demand curve and for correctly identifying the equilibrium wage, W_E , and quantity, Q_E .
- One point is earned for drawing a correctly labeled graph showing Ray's Stable demand curve for labor and a horizontal labor supply curve and showing the equilibrium wage, W and quantity, Q_R .

1 point:

- One point is earned for stating that Ray's Stable's marginal factor cost is equal to $W_{\min}$ and for explaining that the firm is a wage taker in the labor market and/or the market sets the wage.

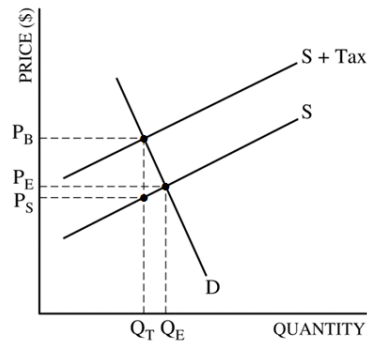
3 points:

- One point is earned for showing the minimum wage, $W_{\min}$, on the graph in part (a) above the equilibrium wage W_E .
- One point is earned for showing the quantity supplied of unskilled labor, Q_S , derived from the supply curve at $W_{\min}$.
- One point is earned for stating that the marginal revenue product of the last worker hired will increase.

2014 SCORING GUIDELINES

Question 3

6 points (1 + 3 + 1 + 1)



1 point:

- One point is earned for drawing a correctly labeled graph of the gasoline market showing the equilibrium price, P_E , and quantity, Q_E .

3 points:

- One point is earned for showing P_B above P_E , derived from the D curve at Q_T .
- One point is earned for showing P_S below P_E , derived from the S curve at Q_T .
- One point is earned for showing Q_T less than Q_E .

Note: It is not necessary to draw the S + Tax curve; a “tax wedge” approach is acceptable.

1 point:

- One point is earned for correctly calculating the total tax revenue based on the labeling of the graph.

All of the following are acceptable when P_B and P_S are correct:

- $(P_B \times Q_T) - (P_S \times Q_T)$
- $(P_B - P_S) \times Q_T$
- $2 \times Q_T$
- $\text{Tax} \times Q_T$

1 point:

- One point is earned for explaining that the tax burden will fall more on buyers and less on sellers because the demand curve is more inelastic than the supply curve.