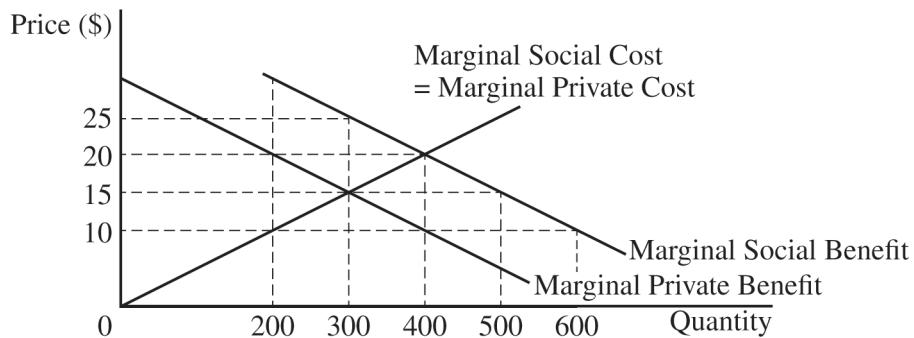


1. Soja Farm is a typical profit-maximizing firm that produces and sells soybeans in a constant-cost, perfectly competitive market that is in long-run equilibrium. The market equilibrium price of soybeans is \$14 per bushel.
- (a) Draw correctly labeled side-by-side graphs for the soybean market and for Soja Farm, and show each of the following.
- (i) The market equilibrium price and quantity, labeled  $P_M$  and  $Q_M$ , respectively
  - (ii) Soja Farm's profit-maximizing price and quantity, labeled  $P_F$  and  $Q_F$ , respectively
  - (iii) Soja Farm's average total cost curve consistent with a long-run equilibrium, labeled ATC
- (b) If Soja Farm is the only firm in the market that chooses to increase its price of soybeans to \$15 per bushel, will Soja Farm's total revenue increase by \$1, remain the same, or decrease to \$0? Explain.
- (c) Soybeans are used as an input in the production of tofu. Tofu now becomes a more popular food option among consumers. On your graphs in part (a), show the short-run effect of the increased popularity of tofu on each of the following.
- (i) The new market equilibrium price and quantity of soybeans, labeled  $P_2$  and  $Q_2$ , respectively
  - (ii) Soja Farm's new profit-maximizing quantity, labeled  $Q^*$
- (d) Given the increase in popularity of tofu in part (c), what will happen to the number of firms in the soybean market in the long run? Explain.
- (e) Suppose a 25% increase in the market price of quinoa causes a 5% decrease in the quantity demanded of quinoa and a 10% increase in the quantity demanded for tofu.
- (i) Is the demand for quinoa elastic, inelastic, or unit elastic? Explain using numbers.
  - (ii) Calculate the cross-price elasticity of demand between quinoa and tofu. Show your work.

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**Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.**

2. Good X is produced and sold in a perfectly competitive market. The provided graph shows the market for Good X.



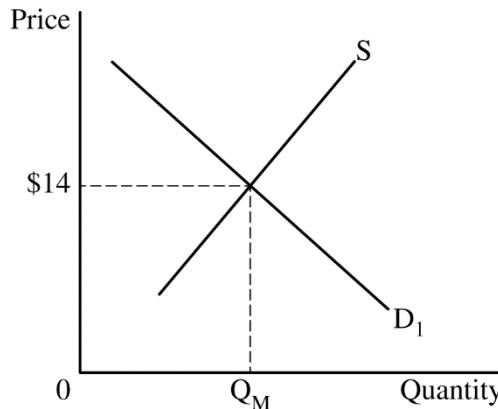
- (a) Identify the market equilibrium price and quantity.
- (b) Calculate the deadweight loss at the market equilibrium. Show your work.
- (c) Suppose the government wants to eliminate the deadweight loss in the market for Good X.
- Which of the following will achieve the government's objective: a per-unit tax on consumers or a per-unit subsidy to consumers? Explain.
  - What is the dollar value of the per-unit tax or per-unit subsidy identified in part (c)(i) ?
- (d) Suppose instead the government imposes a price ceiling of \$10. Will the price ceiling achieve the socially optimal quantity of Good X? Explain.

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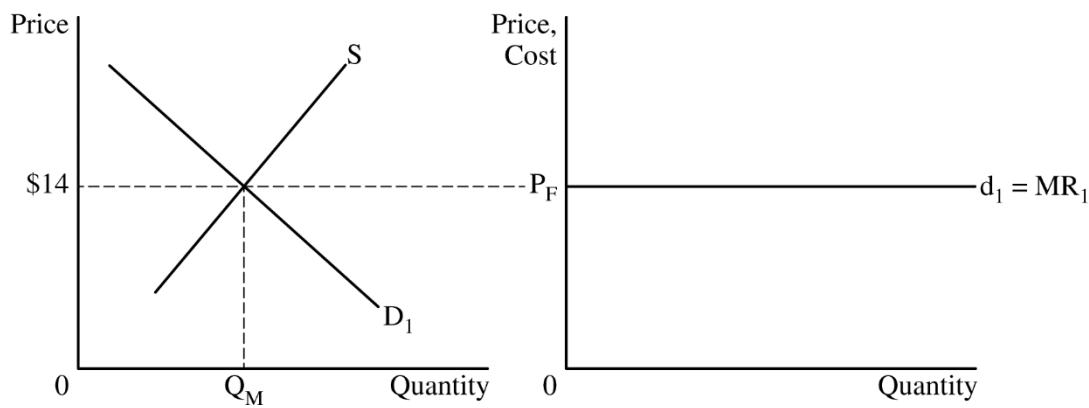
**Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.**

**Question 1: Long****10 points**

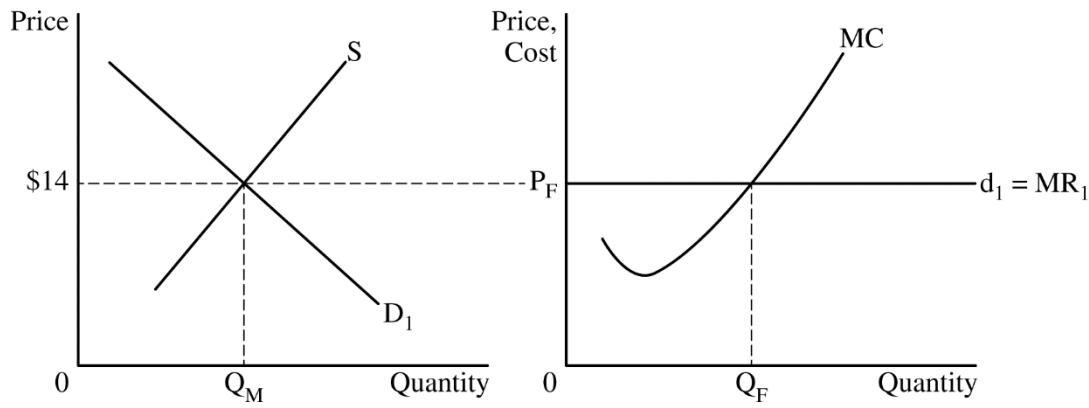
- (a) Draw a correctly labeled graph of the market for soybeans with a downward-sloping demand ( $D_1$ ) curve and an upward-sloping supply ( $S$ ) curve and label the market equilibrium price as \$14 and the market equilibrium quantity as  $Q_M$ . **1 point**



- 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**



	<b>Total for part (c) 2 points</b>
(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.	<b>1 point</b>
(e) (i) State that demand for quinoa is inelastic and explain with <b>ONE</b> of the following.	<b>1 point</b>
• 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.	<b>1 point</b>
Cross Price Elasticity of Demand = $\frac{\% \text{ Change in } Q_D \text{ of Tofu}}{\% \text{ Change in Price of Quinoa}} = \frac{10\%}{25\%} = 0.4$	
	<b>Total for part (e) 2 points</b>
	<b>Total for question 1 10 points</b>