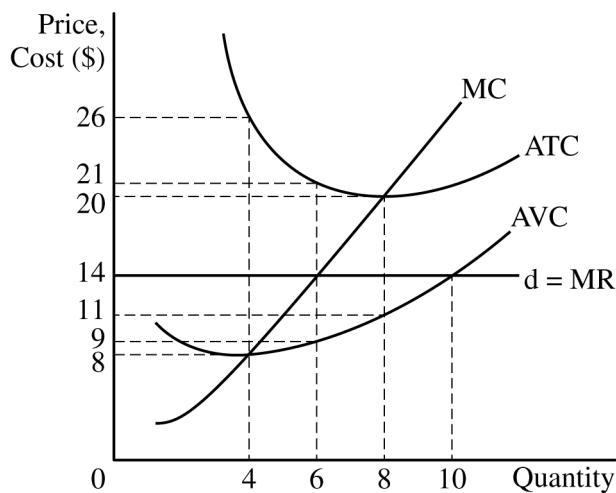


3. The graph provided shows the demand ( $d$ ), marginal revenue (MR), average total cost (ATC), average variable cost (AVC), and marginal cost (MC) curves for Hansel Hangout, a typical profit-maximizing firm in a perfectly competitive market producing Good X.



- (a) Calculate Hansel Hangout's total fixed cost. Show your work.
- (b) Identify the price and Hansel Hangout's profit-maximizing quantity of Good X.
- (c) Calculate Hansel Hangout's economic profit at the quantity identified in part (b). Show your work.
- (d) As the market for Good X adjusts to the long-run equilibrium, what will happen to the price of Good X? Explain.
- (e) Assume the cross-price elasticity of demand between Good X and Good C is positive. Given the change in the long-run price of Good X in part (d), will the quantity demanded of Good C increase, decrease, or remain the same? Explain.

---

**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 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**