

Microeconomics: Monika Köppl – Turyna

Additional Problems: Costs

Suppose you are the owner of small company that prints t-shirts. Your production function is given by the equation: $Q = 10K^{0.7}L^{0.3}$. The price of labor is \$10, while the price of capital is \$20. Currently the firm is operating in the short-run, when capital is fixed at 10 units.

1. The variable costs of producing an output, Q, of 200 would be equal to:
 - A. \$70
 - B. \$50
 - C. \$100
 - D. \$1,000

2. The average fixed costs of producing an output, Q, of 200 would equal to:
 - A. \$1
 - B. \$20
 - C. \$0.5
 - D. \$200

3. A firm that is trying to produce a given level of output Q_0 at the lowest possible cost will
 - A. Select the input combination at which an isocost line is tangent to the Q_0 isoquant
 - B. Select the input combination at which an isocost line is above the Q_0 isoquant
 - C. Select the input combination at which an isocost line is below the Q_0 isoquant
 - D. Choose to produce at a level where variable costs are less than or equal to fixed costs

4. Output for a simple production process is given by $Q = 2KL$, where K denotes capital, and L denotes labor. The price of capital is \$25 per unit and capital is fixed at 8 units in the short run. The price of labor is \$5 per unit. What is the total cost of producing 80 units of output?
 - A. \$525
 - B. \$200
 - C. \$233
 - D. \$225

5. Average variable cost is
 - A. The ratio of total variable cost to the quantity of output produced
 - B. The ratio of variable cost to total cost
 - C. The ratio of variable cost to fixed cost
 - D. The difference between variable and fixed cost

6. Marginal cost is defined as
 - A. The rate at which average cost changes with output
 - B. The rate at which total variable cost changes with output
 - C. The rate at which fixed cost changes with output
 - D. Total cost minus variable cost

7. When marginal cost is greater than average total cost,
 - A. Average total cost must be increasing with output
 - B. Average variable cost must be decreasing with output
 - C. Average fixed cost must be increasing with output
 - D. Marginal cost must be increasing with output

8. If the total cost function is $TC = 10Q^3 - 50Q^2 + 1000Q + 500$, what are the equations for ATC, MC, AFC and AVC

9. When costs are at a minimum,
 - A. The ratio of the $MP_L/MP_K < \text{Price L/Price K}$
 - B. $MP_L = MP_K$
 - C. The extra output we get from the last dollar spent on an input must be the same for all inputs
 - D. Price L = Price K

10. Suppose labor and capital are both used to produce output. In the long run, if the wage rate rises while the rental rate on capital remains unchanged,
 - A. The process will become more labor intensive
 - B. The process will become more capital intensive
 - C. Market forces will come into play to bring the prices back to their earlier relationship
 - D. The marginal product of capital will rise and the marginal product of labor will fall