

## 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