

## 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