

UNIVERSITY OF WISCONSIN

Economics 101 – Spring 2007

Professor Brown

Problem Set 8

Due by March 28-30, 2007

Cost Curves

- 1) A wheat farmer has total production costs given by the equation $TC=600+2Q$, where Q is output, measured in bushels of wheat.
 - a. What is the farmer's marginal cost (MC) of production?
 - b. What is the farmer's fixed cost? Give some examples of what costs might be fixed for a wheat farmer.
 - c. Write the equation giving the farmer's variable cost as a function of quantity. What are examples of variable costs for a farmer?
 - d. Write the equations for the farmer's average total cost (ATC) and average variable cost (AVC).
 - e. Show the ATC, AVC, and MC on one graph. Explain what is happening to average fixed costs as Q increases, and explain how this relates to what you see in your graph.

- 2) A local microbrewery has total costs of production given by the equation $TC=500+10Q+5Q^2$. This implies that the firm's marginal cost is given by the equation $MC = 10 + 10Q$ (you do not need to be able to show this).
 - a. Write the equations showing the brewery's average total cost and average variable cost, each as a function of Q .
 - b. Show the firm's MC, ATC and AVC on one graph.
 - c. What is the quantity produced at which the firm's ATC is minimized?
 - d. What is the quantity produced at which the firm's AVC is minimized?

Cost Curves: Multiple Choice.

- 3) If a firm produces nothing, which of the following costs must be zero?
- a. total cost
 - b. fixed cost
 - c. opportunity cost
 - d. variable cost
- 4) When marginal cost is less than average total cost,
- a. marginal cost must be falling
 - b. average fixed cost must be rising
 - c. average total cost must be falling
 - d. average total cost must be rising
- 5) The firm's efficient scale is the quantity of output that minimizes
- a. average total cost
 - b. average fixed cost
 - c. average variable cost
 - d. marginal cost
- 6) The marginal cost curve crosses the average total cost curve at
- a. the efficient scale
 - b. the minimum point on the average total cost curve
 - c. a point where the marginal cost curve is rising
 - d. all of the above are correct