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HW#11 Due November 24, 2020

3. Consider total cost and total revenue given in the following table:

Quantity	0	1	2	3	4	5	6	7
Total cost	$8	9	10	11	13	19	27	37
Total revenue	$0	8	16	24	32	40	48	56

a. Calculate profit for each quantity. How much should the firm produce to maximize profit?

b. Calculate marginal revenue and marginal cost for each quantity. Graph them. (*Hint*: Put the points between whole numbers. For example, the marginal cost between 2 and 3 should be graphed at $2\frac{1}{2}$.) At what quantity do these curves cross? How does this relate to your answer to part (a)?

c. Can you tell whether this firm is in a competitive industry? If so, can you tell whether the industry is in a long-run equilibrium?

7. A profit-maximizing firm in a competitive market is currently producing 100 units of output. It has average revenue of $10, average total cost of $8, and fixed cost of $200.

a. What is its profit?

b. What is its marginal cost?

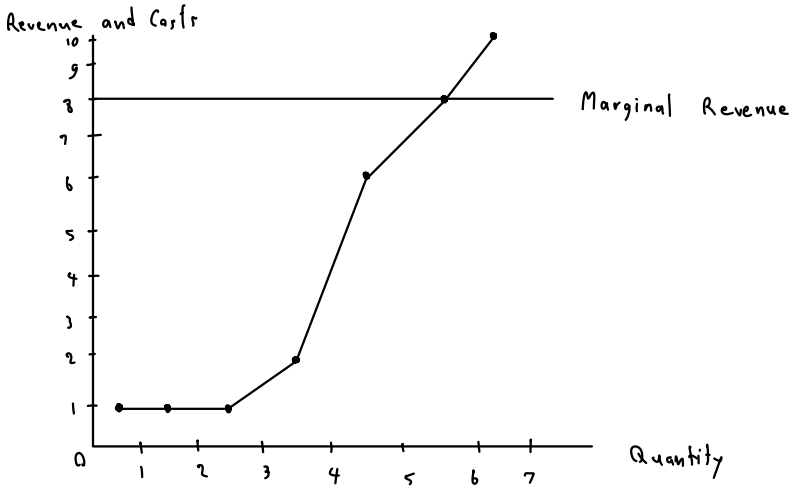
c. What is its average variable cost?

d. Is the efficient scale of the firm more than, less than, or exactly 100 units?

i.e. Is AC at its minimum?

3. a) The firm should produce 5 or 6 units to maximize profit since TR - TC is the largest. (40 - 19 = 21 and 48 - 27 = 21) at both 5 and 6.

b)



The curves cross at a quantity between 5 and 6 units, yielding the same answer as in part a).

c) The industry is competitive since marginal revenue is the same for each quantity. The industry is not in long-run equilibrium, since profit is positive.

7. a) The profit will be $200. It can be generated by deducting the average total cost (ATC) of $8 from the average revenue of $10 and multiplying the result with the output. $(10-8) \cdot 100 = \$200$

b) In a competitive market, marginal revenue (MR) = average revenue (AR). According to the profit maximization objective, marginal revenue (MR) = Marginal cost (MC). So, the marginal cost will be equal to the average revenue of $10.

c) The average fixed cost will be $2 as $200 is spread over 100 units of the product ($200/100 = \$2$). The average variable is generated by deducting the average fixed cost of $2 from the average total cost of $8. So, the average variable cost is $6.

d) The average total cost is $8. The marginal cost is $10. So, ATC is less than MC. So, an efficient scale of the production will be when the firm produces less than 100 units of output.