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?

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

Maximize Profit

MR = MC

$MR = \frac{\Delta TR}{\Delta Q}$

$= \frac{8-0}{1-0} = 8$ #1

$= \frac{16-8}{2-1} = 8$ #2

$= \frac{24-16}{3-2} = 8$ #3

$\frac{56-48}{7-1} = 8$

$MC = \frac{\Delta TC}{\Delta Q}$

$= \frac{9-8}{1-0} = 1$

$\frac{27-19}{6-5} = 8$

* Ans

firm should produce

5 or 6 quantity

to get maximize

profit.

MR MC

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)?

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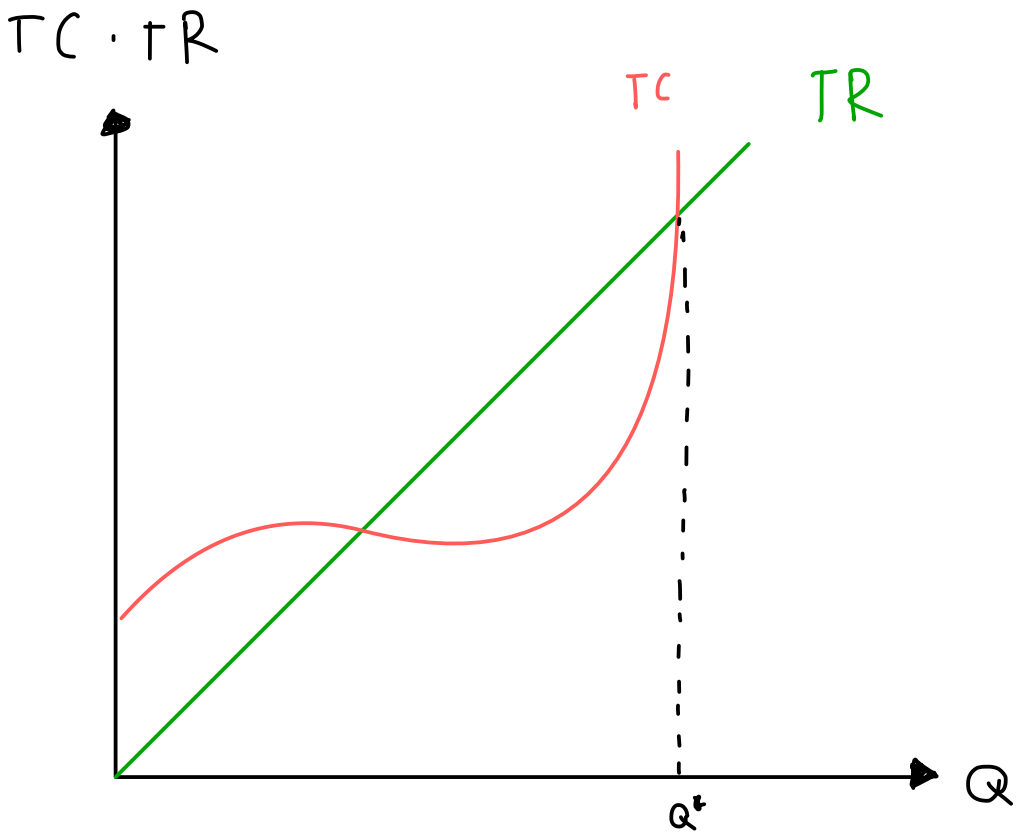

Ans. the point that the two graph across is the point show we can get maximum profit if we produce at Q^*

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?

Q = 100 unit ATC = $8

AR = $10 FC = $200

(a) $\pi = TR - TC$

$= 1000 - 800$

$= 200$ ✗

$AR = \frac{TR}{Q}$

$10 = \frac{TR}{100}$

$TR = 1000$

$ATC = \frac{TC}{Q}$

$8 = \frac{TC}{100}$

$TC = 800$

   b. What is its marginal cost?

(b) $MC = \frac{\Delta TC}{\Delta Q}$

* we can not answer how much marginal cost beaus we don't know previous TC and Q which this firm produce

c. What is its average variable cost?

(c) $AVC = \frac{VC}{Q}$

$= \frac{600}{100}$

$= 6$ ~~XX~~

$TC = FC + VC$

$800 = 200 + VC$

$VC = 600$

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

i.e. Is AC at its minimum?

ATC = MC

Not enough data to answer the question.