

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

- Calculate profit for each quantity. How much should the firm produce to maximize profit?
- 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 \(a\)](#)?
- 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.

- What is its profit?
- What is its marginal cost?
- What is its average variable cost?
- 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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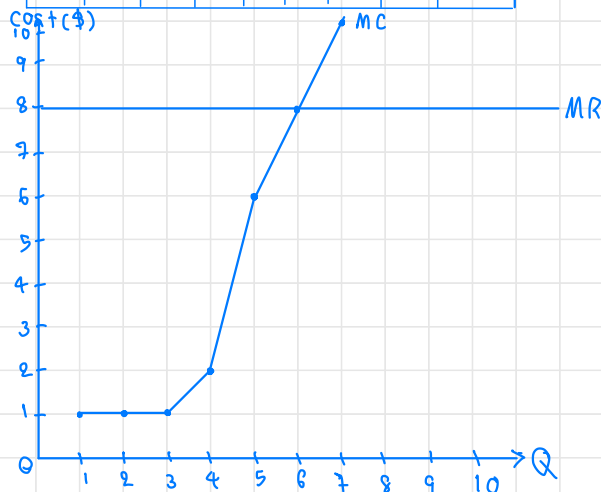
3). a)

Q	0	1	2	3	4	5	6	7
π	-8	-1	6	13	19	21	21	19

b) To find marginal cost : $MC = \frac{d}{dQ} TC(Q)$
 $= \frac{d}{dQ} (TFC(Q) + TVC(Q))$

Change in TC
change in Q

Q	0	1	2	3	4	5	6	7
MC	0	1	1	1	2	6	8	10
MR	8	8	8	8	8	8	8	8



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$$AR = \frac{TR}{Q} = \$10, \quad AC = \frac{TC}{Q} = \$8, \quad \text{fixed cost} = \$200, \quad Q = 100$$

$$a) \text{ Total Profit} = \text{Total Revenue} - \text{Total Cost}$$

$$\begin{array}{l|l} AR = \frac{TR}{Q} & AC = \frac{TC}{Q} \\ \$10 = \frac{TR}{100} & \$8 = \frac{TC}{100} \\ TR = 1000 & TC = 800 \end{array}$$

$$\pi = 1000 - 800 = \$200$$

- b) MC must equal to MR because AR is equal to MR which is \$10.

Therefore, MC is \$10 ✖

$$c) AVC = \frac{TVC}{Q}$$

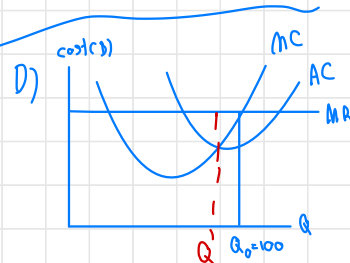
Find TVC by using $TC = TFC + TVC$

$$TC = TFC + TVC$$

$$800 = 200 + TVC$$

$$\therefore TVC = 600$$

$$\therefore AVC = \frac{TVC}{Q} = \frac{600}{100} = 6 \text{ ✖}$$



Because at $Q = 100$, $MC > AC$ ($\$10 > \8), so we must to make them equal

We must produce less than 100 units to adjust $MC = AC$. ✖

