

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?

3. a)

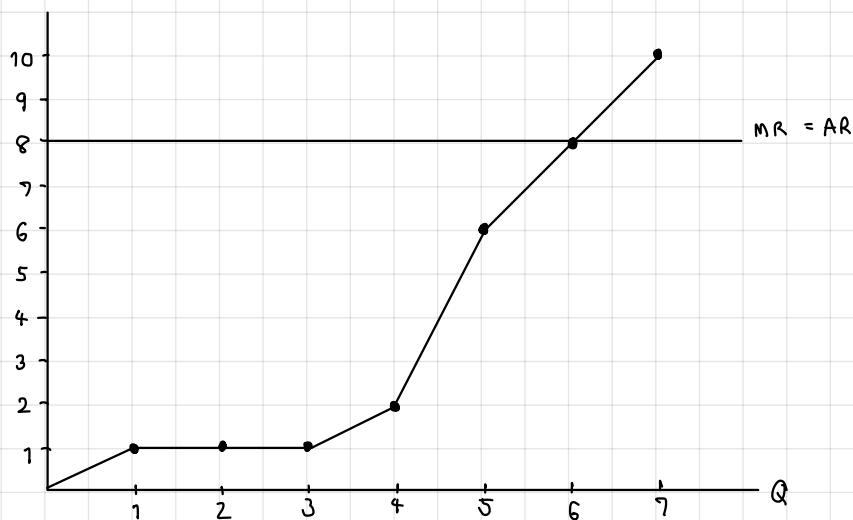
Q	0	1	2	3	4	5	6	7
Profit	-8	-1	6	13	19	21	21	19

Firm should produce 6 unit in order to maximize profit at 21.

3. b) $MR = \frac{\Delta TR}{\Delta Q}$ or $\frac{d TR}{dQ}$

$MC = \frac{\Delta TC}{\Delta Q}$ or $\frac{d TC}{dQ}$

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



MC = MR at quantity 6 which is the equilibrium

3. c) This firm is in a competitive industry. This firm isn't in the long-run equilibrium because it has fixed cost.

$$\begin{aligned} 7. a) \quad \text{Profit} &= (\text{Avg. Rev.} - \text{Avg. Costs}) \times \text{Quantity} \\ &= (10 - 8) \times 100 \text{ units} \\ \text{Profit} &= 200 \text{ \$} \end{aligned}$$

7. b) Marginal cost is equal to 2 \$

$$\begin{aligned} 7. c) \quad \text{Average variable cost} &= \frac{\text{Total cost} - \text{Total fixed cost}}{\text{Quantity}} \\ &= \frac{800 - 200}{100} = 6 \end{aligned}$$

Average variable cost is equal to 6 \$

7. d) AC will be at its minimum when $MC = AC$ but in this case MC is 10 \$ and AC is 8 \$. So, AC is not at its minimum.

