

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)

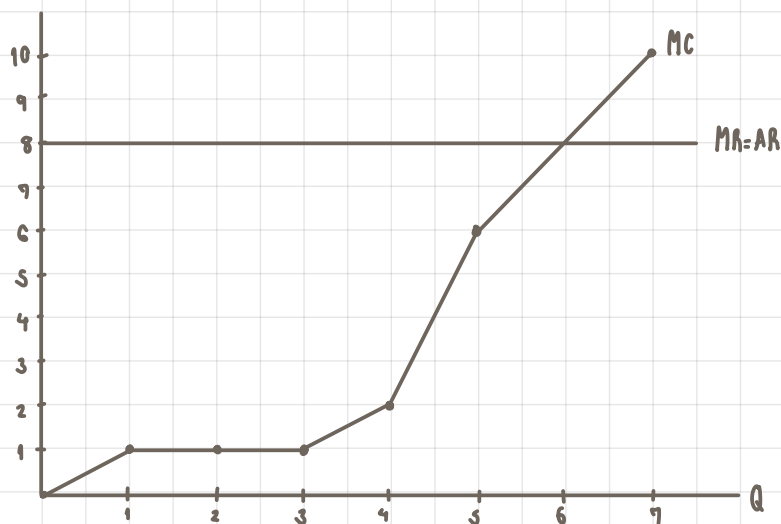
Q	0	1	2	3	4	5	6	7
Profit	-8	-1	6	13	19	21	21	19

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

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

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

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.

7.a) Profit = (Avg. Rev. - Avg. Cost) × Quantity
 = (10 - 8) × 100 units
 Profit = 200 \$

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

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

∴ 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.