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?

a. Since Total Profit = Total Revenue − Total Cost

Then,

Total revenue	$0 −	8 −	16 −	24 −	32 −	40 −	48 −	56 −
Total cost	$8	9	10	11	13	19	27	37
	−8	−1	6	13	19	21	21	19

Therefore, the firm should produce at 40 − 48 units.

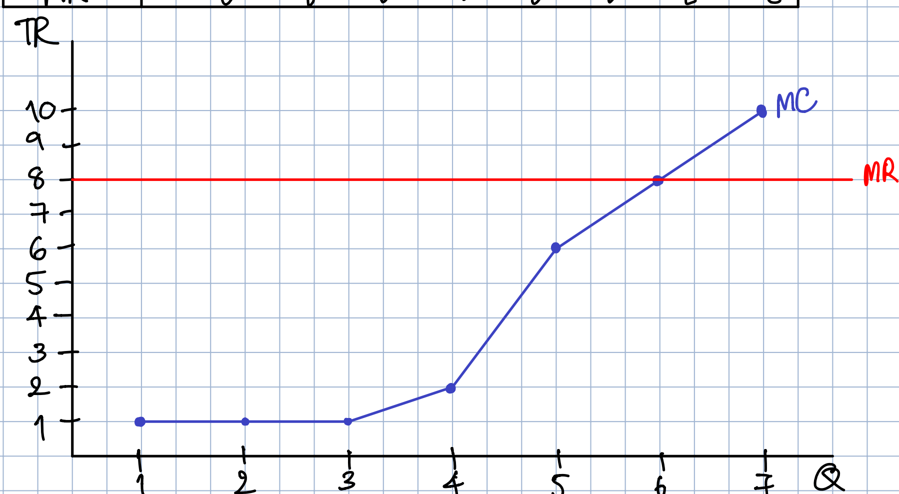
b.

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

MC, marginal cost = change in cost

MR, marginal revenue = change in revenue

MC	0	1	1	1	2	6	8	10
MR	0	8	8	8	8	8	8	8



The curves cross at 6 units. MR and MC related to a answer because it illustrated the change of that categories: Cost and Revenue.

(c.) To be in canpetitive industry
Marginal Revenue = Average Revenue
8 = 8
∴ This firm is in competitive industry
∴ The company is not in long-run equilibrium because the AC (average cost) should be equal to price but it is not in this case.

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?

(a.) As Output = 100
Average Revenue = 10
Average Total Cost = 8
Fixed Cost = 200
We find profit by
Total Profit = Total Revenue − Total Cost
= 100 (10 − 8)

because we got average information of Revenue & Cost we should multiply it with output : 100

Total Profit = 200

(b.) This firm is profit-maximizing firm then the Marginal Cost and Marginal Revenue should be equal (MC = MR)

Moreover, in competitive market Marginal Revenue will be equal to Average Revenue (MR = AR)

$\therefore$ AR = MR

10 = MR

MR = MC

10 = MC

$\therefore$ Marginal cost is 10

(c) Average Variable Cost (AVC) can be find by $\frac{\text{Total Variable Cost}}{\text{Out put}}$

We can find TVC by

TC = TFC + TVC

TVC = TC - TFC

TVC = 100(8) - 200

TVC = 800 - 200

TVC = 600

$\therefore$ AVC = $\frac{600}{10}$

AVC = 6

(d) As Marginal Cost (= 10) is higher than Average Total Cost (= 8)   MC > AC

But in Efficient Scale of production MC should be equal to AC. Therefore, the Efficient Scale of the firm is less than 100 units.