

\* max profit  $\rightarrow$   $MR = MC$  \*

HW#11 Due November 24, 2020

3. Consider total cost and total revenue given in the following table:

<b>Quantity</b>	0	1	2	3	4	5	6	7
<b>Total cost</b>	\$8	9	10	11	13	19	27	37
<b>Total revenue</b>	\$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**?

*Find ATC  
 In long run equilibrium  $\rightarrow$  Profit  $\pi = 0$*

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.

*AC = 10*

*TC = 8*

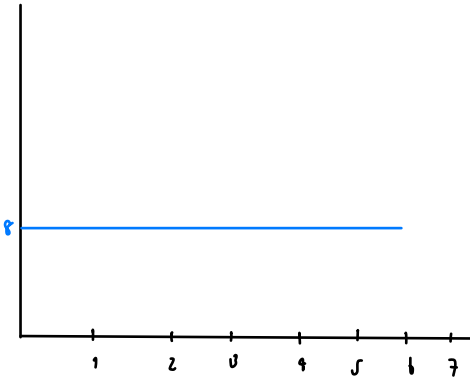
- What is its profit?
- What is its marginal cost?
- What is its average variable cost?
- Is the efficient scale of the firm more than, less than, or exactly 100 units?

*i.e. Is AC at its minimum?*

<b>Quantity</b>	0	1	2	3	4	5	6	7
<b>Total cost</b>	\$8	9	10	11	13	19	27	37
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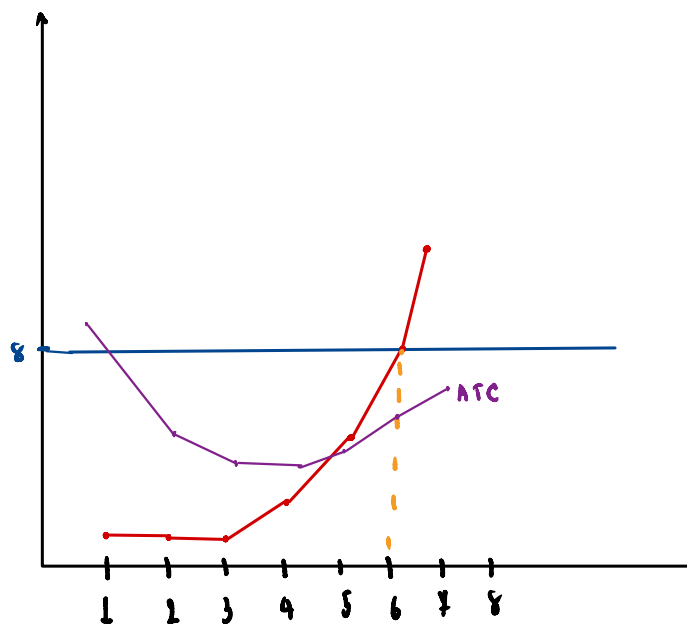
1a)

Q	TC	TR	$\left[\frac{\Delta TR}{\Delta Q}\right]$ MR	$\left[\frac{\Delta TC}{\Delta Q}\right]$ MC	Marginal profit	$\left[\frac{TC}{Q}\right]$ ATC
0	8	0	-	-	-	
1	9	8	8	1	7	9
2	10	16	8	1	7	5
3	11	24	8	1	7	3.7x
4	13	32	8	2	6	3.25x
5	19	40	8	6	2	3.8
6	27	48	8	8	0	4.5
7	37	56	8	10	-2	5.25x



max profit  
MP = MC

b.)



at  $Q=6$   $TR=48$   $TC=27$   $\therefore$  Profit = 21

Max profit is the point where  $MR = MC$ .

c) This firm is a price taker (ผู้ขายในตลาด)

$\therefore MR = 8 = P$  ทราบปริมาณที่ราคาเดิมเท่ากับ  $MR$  ราคาตลาด 8 บาท

Q=100

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.

- $P = AR = MR = 10$   $ATC = 8$   $100$
- 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?

A)  $\pi = TR - TC$   
 $= PQ - (ATC)Q$   
 $= 10(100) - (8)(100)$   
 $= 1000 - 800$   
 $= 200$

B)  $MC = MR = 10$

C)  $VC = Q(AVC)$   
 $AVC = ATC - AFC$   
 $= ATC - \frac{FC}{Q} = 8 - \frac{200}{100}$   
 $= 8 - 2$   
 $AVC = 6$

$VC = AVC(Q)$   
 $= 6(100)$   
 $= 600$

