B.E. International Program

Faculty of Economics, Thammasat University

EE 211 Principle of Microeconomics

Semester 1/2019

Exercise 8 - Answers

(Market Structure)

1. Consider total cost and total revenue from the following table.

Q	0	1	2	3	4	5	6	7
TC	8	9	10	11	13	19	27	37
TR	0	8	16	24	32	40	48	56

   a. Calculate the profit for each output level, and find the profit-maximizing quantity.
   b. Calculate marginal revenue (MR) and marginal cost (MC) for each output level. At which output level is MR equal to MC? How does this answer relate to the answer in (a)?

Q	0	1	2	3	4	5	6	7
TC	8	9	10	11	13	19	27	37
TR	0	8	16	24	32	40	48	56
Profit	-8	-1	6	13	19	21	21	19
MC		1	1	1	2	6	8	10
MR		8	8	8	8	8	8	8

Q* = 5.5. It is where MC=MR.

   c. Can you tell whether this firm is in perfectly competitive market?

Yes, this firm is in perfectly competitive market because the price is constant (P=8).

2. Considering the following information regarding output levels, costs, and market price for two perfectly competitive firms operating in different industries. Each firm has an upward-sloping marginal cost curve.

   Firm A: output = 5,000, price = $1.00
   TVC = $2,500, TFC = $2,000, MC= $1.2

   Firm B: output =5,000, price = $1.20
   Minimum ATC = $1.00

   a. Are these firms making profits?
      Yes, for both firms.

   b. If so, how much?
      Firm A: $500.
      Firm B: $1000.

   c. Are these firms making maximum profits?
      No, for both firms. Neither of them is producing where P=MC. (note that for firm B, MC = 1 because at minimum ATC, ATC = MC).

   d. Should these firms produce more, less, or the same output? Explain.
      Firm A should produce less output (since P < MC).
      Firm B should produce more output (since P > MC).

3. This exercise traces some of the long-run adjustments that take place in a perfectly competitive market in response to a change in demand (we ignore adjustments that current firms may make to plant size). Assume that each firm –currently in the industry as well as potential entrants – has the cost structure depicted in panel (i) below. Panel (ii) show the industry's short-run supply curve S and the current market demand curve D.

Figure (i) Typical Firm

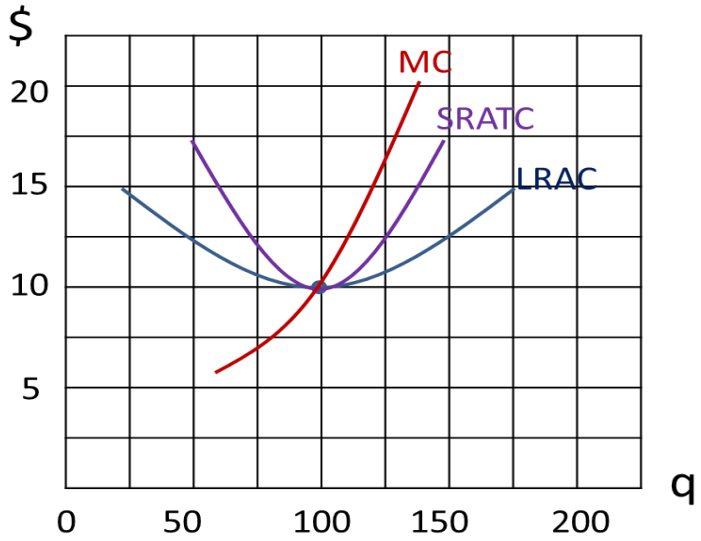
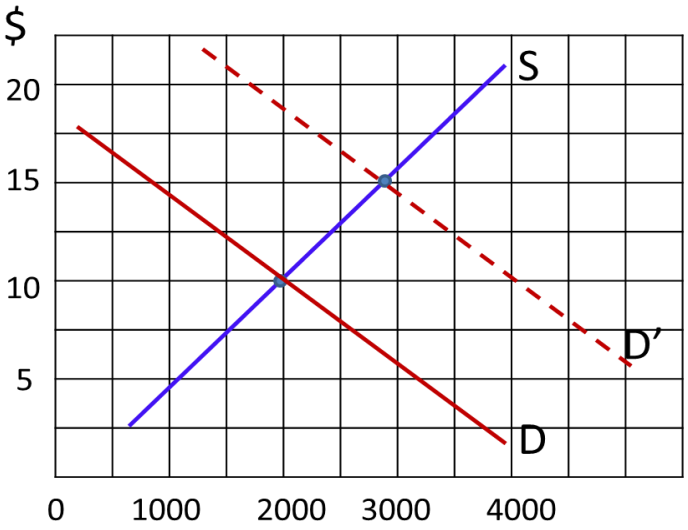


Figure (ii) Market



a. What are equilibrium price and quantity in this market?

$10 and 2000 units, respectively.

b. What is the output of each firm in this industry, and what is the resulting level of profit?

100 units.

Profit = 0 since P = SRATC.

c. How many firms are operating in this industry?

2000/100 = 20.

d. Is the industry in the long-run equilibrium? Explain.

Yes. The typical firm is producing where MC = MR on its LRAC curve. Thus, it is producing the profit-maximizing output at the lowest attainable cost.

e. Now suppose that the demand for this good shifts to D'. What are the new equilibrium market price and quantity in the short run?

$15 and 2800 units, respectively.

f. What is the short-run quantity response of each firm in the industry?

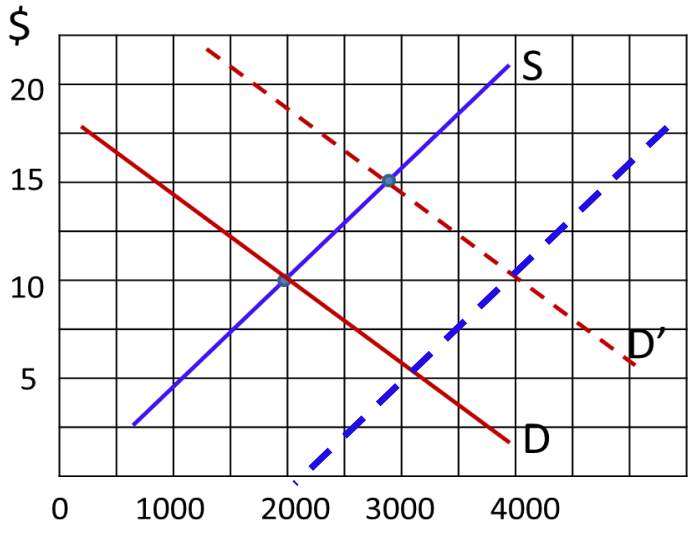
At P = $15, each firms' increases output to 120 units where P = MC.

g. What is each firm's short-run profit?

Profit = TR-TC = ($15x120) – ($12x120) = $360.

h. Explain what will happen to the industry short-run supply curve once sufficient time has elapsed for entry and exit to occur?

Since industry profits are positive, new firms will enter. The industry short-run supply curve will shift to the right, and thereby lowering price.



i. Once the new equilibrium is established, what are the market price and quantity?

Long-run equilibrium obtains when each firm is doing the best it can and there is no incentive for further entry. It happens when price is again equal to $10 and the associated quantity is 4000 units.

j. What are the level of output and associated profit of each firm in the new long-run equilibrium?

q=100 units and each earns 0 economic profit.

k. How many firms will be active in this industry?

4000/100 =40.

4. The following data relate to a monopolist and its product.

a. Calculate marginal cost (MC), marginal revenue (MR), total revenue (TR), and profit to complete the table.

Output	TC	Price	Quantity Demanded	TR	MR	MC	Profit
0	$20	$20	0	0			-20
1	24	18	1	18	18	4	-6
2	27	16	2	32	14	3	5
3	33	14	3	42	10	6	9
4	43	12	4	48	6	10	5
5	57	10	5	50	2	14	-7
6	75	8	6	48	-2	18	-27

b. Draw the AR, MR, and MC curves.

c. What is the profit-maximizing output (whole units)?

3 units.

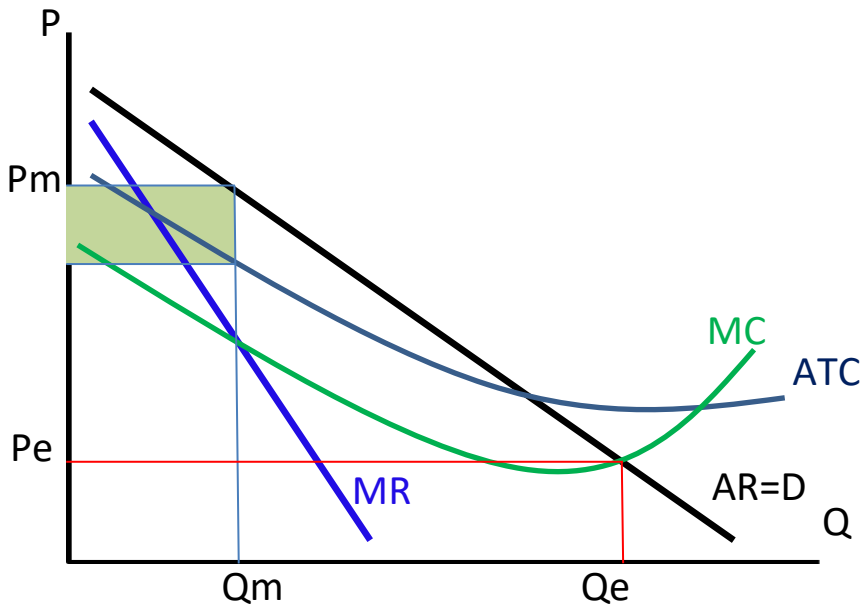
d. At what price will the monopolist sell the product (whole units)?

$14 (where MC=MR).

e. What are the monopolist's economic profits?

$9.

5. The following graph shows the cost and revenue curves for a monopolist.



   a. Illustrate on the graph the price the profit-maximizing monopolist will set and the quantity that will be sold (label the Pm and Qm).

      See above.

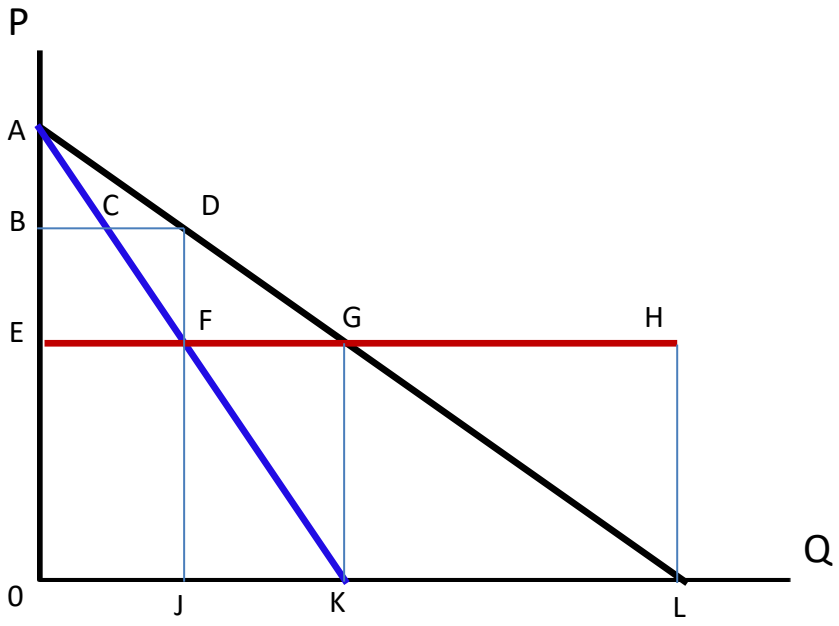
   b. Indicate monopoly profits by shading in the appropriate area.

      See above.

   c. Suppose that the monopolist, to be allocatively efficient, sets price equal to marginal cost. Label the price Pe and the output Qe. Would this output be sustainable in the long run? Explain.

      No, because the ATC exceeds the price, so business could not sustained for long.

6. The following graph applies to a monopoly. AL is the market demand curve and AK is the marginal revenue curve. EH is the long-run supply curve for the industry as well as the LRAC curve for the monopolist. (There are no economies of scale so that LRAC = LRMC).



a. Assume that the monopolist sets a price that maximizes the profits. Predict the following:
   i. The monopoly price _OB___ and output _OJ___.
   ii. Consumer surplus at that price _ABD____.
   iii. Economic profit at that price _BDEF___.

b. Suppose that the monopolist is regulated so that the price is set equal to LRMC. Predict the following:
   i. The monopoly price __ OE__ and output _ OK___.
   ii. Consumer surplus at that price __AEG___.
   iii. Economic profit at that price _Zero___.