Recitation 4

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Week 4 (9/18-9/24): Seller Choice

Recap of this week's most important concepts (Seller Choice):

- Production and costs (from tutorial):

  - Marginal product MP_L: compute it in a table, know its shape and why (labor specialization / diminishing marginal product)

  - Average product AP_L and relationship with marginal product

  - Costs:

    * Definition of costs: VC, FC, TC
    * Average costs AVC, AFC, ATC: compute in a table, with equations, and know shape of curves.
    * AFC is vertical distance between AVC and ATC curves
    * Marginal cost MC: relationship with AVC and ATC curves.

- Monopolistic competition:

  - Product differentiation: market demand vs. individual demand

  - Marginal revenue curve: twice the slope of demand if linear market demand ; MR = 0 where demand is unit elastic

  - Profit maximizing quantity such that $MR = MC$. Corresponding price and profit (graphically and mathematically)

  - Firm produces in the elastic portion of its demand curve

  - Short run profits can be positive or negative.

  - Producer surplus: area below price and above MC, but can also be calculated as $PS = TR - VC$ (so $\pi = PS - FC$)

  - Shut-down rule (if short-run loss, shut down if $TR < VC$ or $P < AVC$; operate otherwise).

  - Free entry implies zero profits (break-even) in the long run equilibrium (if positive SR profits: demand shifts in and becomes more elastic; if negative SR profits: demand shifts out and becomes less elastic, until it is tangent to ATC)

This week's group presentations:

- Group red: Question 5 Final Exam Fall 2015 (Modified)

  Seth produces and sells a differentiated product. Assume all fixed costs are sunk in the short-run. Seth has two short-run options: produce nothing, or produce and sell 1,000 units at a price of $10 per unit. If he produces 1,000 units, his average variable cost is $7 and his average fixed cost is $4. What should Seth do?

  a. Produce and sell 1,000 units at a price of $10, even though his profits will be negative

  b. Produce and sell zero units, even though his profits will be negative

  c. Produce and sell 1,000 units at a price of $10, making a profit because price is greater than average variable cost.

  d. There is not enough information

- Group green: Question 4 Midterm 2 Spring 2012

  We know that a firm with $MC = 0$ and $MR = 10 - 2q$ is producing at $q = 5$. Which of the following must be true?

  I. The firm is maximizing profit.

  II. The firm is maximizing its revenue.

  a. Only I

  b. Only II

  c. Both I and II

  d. Neither I nor II

- Group orange: Question 4 Final Exam Fall 2012 (Modified)

  Consider a profit maximizing firm selling a differentiated good and facing a positive marginal cost. If the firm were to increase its price by a small amount, which of the following would certainly occur?

  I. The firm's producer surplus would decrease.

  II. Consumer surplus would decrease.

  III. The firm's total revenue would decrease.

  Which of the above is (are) unambiguously correct?

  a. II

b. I and II

c. I and III

d. II and III

e. I, II and III

(If times allows)

1. Consider a firm selling smartphone, a differentiated product. The cost of producing one phone is $MC = 12q$ and the firm faces a demand of $P = 200 - 4q$ (where P is in dollars and q is in millions). How many phones should the profit-maximizing firm produce? What price should it charge per phone?

   a. $12,500,000$ phones at \$150 each

   b. $12,500,000$ phones at \$100 each

   c. $10,000,000$ phones at \$160 each

   d. $10,000,000$ phones at \$120 each

2. On Penn's campus there are a variety of restaurants (Allegro's, Greek Lady, etc.) that all aim to take advantage of students' poor reception of dining hall food. What can we say about this market?

   I. These firms are able to charge a price higher than their marginal cost.

   II. There are profits to be made in the long run.

   III. It's possible for new firms to enter the market.

   a. Only I.

   b. I. and III.

   c. II. and III.

   d. None of the above.

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The next questions are for your own practice.

3. The cost function of a firm is: $TC(q) = 6 + 4q^3 + q$. When the output is 2, which of the following is correct?

   I. $ATC = 20$

II. $AVC = 17$

III. $AFC = 6$

    a. I., II. and III.

    b. I. and II.

    c. II. and III.

    d. I. and III.

    e. Neither I., II. nor III.

4. A food truck produces 500 units of the meal "chicken and rice". The AVC of the dish at that point is 2 dollars but is 2.5 dollars at a quantity of 550. We thus know that from 500 to 550:

    I. MC is increasing

    II. MC is higher than AVC

    a. I. only

    b. II. only

    c. I. and II.

    d. Neither I. nor II.

5. In preparation for Hurricane Sandy, Ms. O'Malley has set up groups of high school kids to fill sand bags. She has found that by increasing the number of students per groups from 2 to 3 to 4 to 5, the number of sand bags filled per hour increases from 12 to 15 to 20 to 22. She deduces that:

    I. the marginal productivity is diminishing past the 4th student.

    II. the fifth student in each group should be sent home.

    a. Only I

    b. Only II

    c. Both I and II

    d. None of the above

6. Consider a firm facing the cost curves as below. *Note: Picture Not Drawn to Scale.*

A and B represent the two rectangles as indicated on the graph. Which of the following is true?

Cost per unit, $
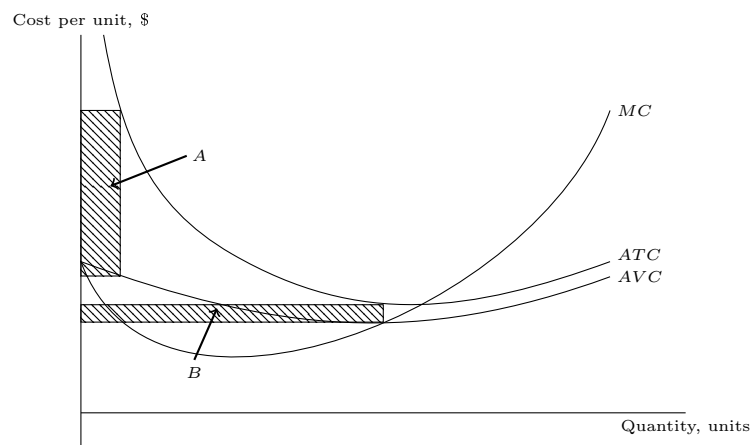
   I. $A > B$

  II. $A = B$

  II. $A < B$

 IV. Not enough information

7. Kate was originally producing at a quantity where she maximized her profits ($MR = MC$). She now wants to produce at the quantity where she maximizes her producer surplus. She will now produce:

  a. More than before

  b. Less than before

  c. The same amount as before

  d. not enough information to tell

8. Which of the following occur in a long-run equilibrium of a market characterized by monopolistic competition?

   I. The price charged to consumers is "marked up" above marginal cost

  II. There is free entry

 III. Firms make positive profits

  a. I. only

  b. II. only

  c. III. only

  d. I and II.

  e. I. and III.

    f. II. and III.

    g. I., II. and III.

9. We know that a firm with $MC = 0$ and $MR = 21 - 3q$ is producing at $q = 7$. Which of the following must be true?

    I. The firm is maximizing profit.

    II. The firm is maximizing its revenue.

    a. Only I

    b. Only II

    c. Both I and II

    d. Neither I nor II

10. Consider a differentiated firm whose goal is not maximizing profit, but rather maximizing revenue. Suppose the marginal cost is positive. We can deduce that the firm is:

    I. maximizing producer surplus.

    II. maximizing consumer surplus.

    III. maximizing total surplus.

    a. All three statements are correct.

    b. All three statements are false.

    c. Statement I may be correct, but II and III are false.

    d. Statement II may be correct, but I and III are false.

    e. Statement III may be correct, but I and II are false.