

HW#10 Due November 10, 2020

4. Nimbus, Inc., makes brooms and then sells them door-to-door. Here is the relationship between the number of workers and Nimbus's output during a given day:

| Workers | Output | Marginal<br>Product | Total Cost | Average<br>Total Cost | Marginal<br>Cost |
|---------|--------|---------------------|------------|-----------------------|------------------|
| 0       | 0      |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 1       | 20     |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 2       | 50     |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 3       | 90     |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 4       | 120    |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 5       | 140    |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 6       | 150    |                     | —          | —                     |                  |
|         |        | —                   |            |                       | —                |
| 7       | 155    |                     | —          | —                     |                  |

- Fill in the column of marginal products. What pattern do you see? How might you explain it?
  - A worker costs \$100 a day, and the firm has fixed costs of \$200. Use this information to fill in the column for total cost.
  - Fill in the column for average total cost. (Recall that  $ATC = TC/Q$ .) What pattern do you see?
  - Now fill in the column for marginal cost. (Recall that  $MC = \Delta TC / \Delta Q$ .) What pattern do you see?
5. You are the chief financial officer for a firm that sells gaming consoles. Your firm has the following average-total-cost schedule:

| Quantity     | Average Total<br>Cost |
|--------------|-----------------------|
| 600 consoles | \$300                 |
| 601          | 301                   |

Your current level of production is 600 consoles, all of which have been sold. Someone calls, desperate to buy one of your consoles. The caller offers you \$550 for it. Should you accept the offer? Why or why not?

4. Nimbus, Inc., makes brooms and then sells them door-to-door. Here is the relationship between the number of workers and Nimbus's output during a given day:

| Workers | Output | Marginal Product | Total Cost | Average Total Cost | Marginal Cost |
|---------|--------|------------------|------------|--------------------|---------------|
| 0       | 0      |                  | 200        | 0                  |               |
|         |        | 20               |            |                    | 5             |
| 1       | 20     | 30               | 300        | 15                 | 3.33          |
|         |        | 40               |            |                    | 2.1           |
| 2       | 50     | 30               | 400        | 8                  | 3.33          |
|         |        | 20               |            |                    | 5             |
| 3       | 90     | 30               | 500        | 5.56               | 10            |
|         |        | 10               |            |                    | 20            |
| 4       | 120    | 20               | 600        | 5                  |               |
|         |        | 10               |            |                    |               |
| 5       | 140    | 10               | 700        | 5                  |               |
|         |        | 5                |            |                    |               |
| 6       | 150    | 5                | 800        | 5.33               |               |
|         |        |                  |            |                    |               |
| 7       | 155    |                  | 900        | 5.81               |               |

- Fill in the column of marginal products. What pattern do you see? How might you explain it?
- A worker costs \$100 a day, and the firm has fixed costs of \$200. Use this information to fill in the column for total cost.
- Fill in the column for average total cost. (Recall that  $ATC = TC/Q$ .) What pattern do you see?
- Now fill in the column for marginal cost. (Recall that  $MC = \Delta TC / \Delta Q$ .) What pattern do you see?

2. From the question above, it show that first Marginal Product increase constantly but after it equal to 30, its decrease constantly,

C. As there are more workers, there are an decline in ATC, but then it start to increase resulting in a shape of parabola graph.

d. It also has a shape of parabola graph.

$$\begin{aligned} 5. \text{ Total Cost} &= 601 \times 301 = 180,901 \\ &600 \times 300 = 180,000 \end{aligned}$$

$$\begin{aligned} \text{Marginal Cost} &= 180,901 - 180,000 \\ &= 901 \end{aligned}$$

$\therefore$  No, because the marginal cost exceed the marginal benefit.