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HW#11 Due April 29, 2021

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      | 0                   | 200        | ∞                     | —                |
| 1       | 20     | 20                  | 300        | 15                    | 5                |
| 2       | 50     | 30                  | 400        | 8                     | 3.33             |
| 3       | 90     | 40                  | 500        | 5.56                  | 2.5              |
| 4       | 120    | 30                  | 600        | 5                     | 3.33             |
| 5       | 140    | 20                  | 700        | 5                     | 5                |
| 6       | 150    | 10                  | 800        | 5.33                  | 10               |
| 7       | 155    | 5                   | 900        | 5.81                  | 20               |

- 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 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) a) The marginal product increase until 40 then marginal product starts to decrease according the characteristic of diminishing

c) V-shaped ATC less than MC as MC increases and more than MC as MC decrease

d) V-shaped, intersect ATC at the minimum point

5) at  $Q = 600$

$$\begin{aligned} TC &= 600 \times 300 \\ &= 18000 \end{aligned}$$

At  $Q = 601$

$$\begin{aligned} TC &= 601 \times 301 \\ &= 180901 \end{aligned}$$

$$\begin{aligned} MC &= \frac{dTC}{dQ} \\ &= \frac{901}{1} \\ &= 901 \end{aligned}$$

should not accept the offer of  
selling at 350 because the  
MC is 901.