

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 Product	Total Cost	Average Total Cost	Marginal 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 increases at first until, at some points, the marginal product starts to decrease according to the characteristic of diminishing
- b) In the table
- c) The average total cost is a V-shaped. ATC is less than MC as MC increases and more than MC as MC decreases
- d) The marginal cost is V-shaped too. It intersects ATC at the minimum point.

⑤ At the output of 600, total cost is

$$\begin{aligned} TC &= 600 \times 300 \\ &= \$ 18,000 \end{aligned}$$

At the output of 601, total cost is

$$\begin{aligned} TC &= 601 \times 301 \\ &= \$ 180,901 \end{aligned}$$

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

So, you should not affect the offer of selling at \$ 550

because the marginal cost is \$ 901 *