

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 U-shaped. ATC is less than MC as MC increases and more than MC as MC decreases.

d) The marginal cost is U-shaped too. It intersects ATC at the minimum point.

⑤ At the output of 600, total cost is

$$\begin{aligned} TC &= 600 \times 300 \\ &= \$180,000 \end{aligned}$$

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 accept the offer of selling at \$550 because the marginal cost is \$901.