Kitanut Jinjetporn 6204641747

Example 2.I: A monopolist firm faces the market demand given by $P = 10 - Q$. Consider the following questions if the cost function $C(Q) = 4Q$.

- What is the revenue-maximizing level of output?

R (Q) = Price per unit × unit of output

P × Q

$= (10 - Q)Q$

$= 10Q - Q^2$; revenue f² is "quadratic funtion"

$= \frac{-b}{2a} \rightarrow Q$

$= \frac{-10}{2(-1)} = 5$

$= R(Q)$

$= 10(5) - (5)^2$

$= 50 - 25 = 25$ #

- What is the break-even output?

$(\pi = 0)$

$\pi = R - C$

$= (10Q - Q^2) - (4Q)$

$= 10Q - Q^2 - 4Q = 0$

$6Q - Q^2 = 0$

$Q(6 - Q) = 0$

$Q = 0, 6$ #

- What is the profit-maximizing level of output?

$\pi(Q) = 6Q - Q^2$

$a = -1$; $b = 6$, $c = 0$

$(Q) = \frac{-b}{2a} \rightarrow \frac{-6}{2(-1)} = 3$ unit

Maximizing profit $= \pi(3)$

$= 6(3) - 3^2$

$= 9$