

Section 9.9- Applications of Derivatives in Business and Economics

Math 1100-4

Thursday, January 26, 2012

1 Marginal Revenue

If $R = R(x)$ is the revenue function for a product, then the **marginal revenue function** is $\overline{MR} = R'(x)$.

Example

The total revenue function for a kind of t-shirt is $R(x) = 16x - 0.01x^2$, where R is in dollars and x is the number of t-shirts sold. Find the following:

1. Find the revenue when 40 units are sold.
2. Find the marginal revenue function.
3. Find the marginal revenue at $x = 40$. What does the predict about the sale of the next unit?
4. Find $R(41) - R(40)$. What does this quantity represent?

2 Marginal Cost

If $C = C(x)$ is the cost function for a product, then its derivative, $\overline{MC} = C'(x)$, is the **marginal cost function**.

Example

Let $C(x) = 4x^2 - 16x + 40$.

1. Find the marginal cost function.

2. Find the marginal cost when 6 units are sold. What does this represent?

3 Marginal Profit

If $P = P(x)$ is the profit function for a product, then its derivative, $\overline{MP} = P'(x)$, is called the **marginal profit function**.

Example

Let $P(x) = 7x - 45$.

1. Find the marginal profit function.

2. What does the marginal profit represent?

Note

Since $P = R - C$, $\overline{MP} = \overline{MR} - \overline{MC}$ when the functions represent the profit, revenue, and cost of the same product.