

Marginal Revenue and Profit

Lecture 21
Section 2.5

Robb T. Koether

Hampden-Sydney College

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Objectives

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- Use derivatives to approximate increments.
- Study marginal revenue and marginal profit.

Approximations

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Let $f(x)$ be a function. If Δx is small relative to x , then

$$\Delta f \approx f'(x)\Delta x.$$

Marginal Revenue and Profit

Definition (Marginal Revenue)

Let $R(x)$ represent the revenue received from selling x units of a commodity. The **marginal revenue** of selling x units is $R'(x)$.

Definition (Marginal Profit)

Let $P(x)$ represent the cost of producing x units of a commodity. The **marginal cost** of producing x units is $P'(x)$.

Example 2.5.1

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A manufacturer estimates that when x units of a particular commodity are produced, the total cost will be $C(x) = \frac{1}{8}x^2 + 3x + 98$ dollars, and furthermore, that all x units will be sold when the price is $p(x) = \frac{1}{3}(75 - x)$ dollars per unit.

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- Find the marginal cost and the marginal revenue functions.
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- Use the marginal revenue function to estimate the revenue derived from the sale of the 37th unit.

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