The Chain Rule (Prime Notation)
Lecture 18
Section 2.4

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Tue, Feb 21, 2017

Objectives

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- The Chain Rule.

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Let $f(x)$ and $g(x)$ be functions. The derivative of their composition $f(g(x))$ is

$$\frac{d}{dx}\left(f(g(x))\right) = f'(g(x)) \cdot g'(x).$$

Examples

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- $f(x) = \dfrac{1}{\sqrt{4 - x^2}}$

Exercise 66

At a certain factory, the cost of manufacturing q units is

$$C(q) = 0.2q^2 + q + 900$$

dollars. It has been determined that approximately

$$q(t) = t^2 + 100t$$

units are manufactured during the first t hours of a production run. Compute the rate at which the total manufacturing cost is changing with respect to time 1 hour after production begins.