Announcements

- No class Friday
- Homework 7 due next Monday, 10/15/2007
- Exam 2 on Friday 10/19/2007
  - Strauss sections 2.4 through 3.8
  - I'll give out sample exam problems on Monday
  - Discussions sections next week are exam review (no quiz)

Logarithmic Differentiation

- Using logarithms, we can trade differentiating products and quotients for differentiating sums and differences.
- Useful to handling complicated product or quotient functions and exponential functions where variables appear in both the base and the exponent.
- Take logarithm of both sides, then apply logarithm rules to simplify, then differentiate.

Related Rates

Many problems involve a functional relationship $y = f(x)$ in which both x and y are themselves functions of another variable, such as time t.

$$y(t) = f(x(t))$$

We can use implicit differentiation to relate the rate of change $\frac{dy}{dt}$ to the rate $\frac{dx}{dt}$.

General Procedure for Related Rates

1. Draw a figure if appropriate.
2. Assign variables to the quantities that vary.
3. Find a formula or equation that relates the variables.
4. Differentiate the equations (often *implicitly* with respect to time).
5. Substitute specific numerical values where known.
6. Solve algebraically for any required rate.