

**Fall 2004 Math 151**  
**Stewart: Chapters & Sections**  
**Fri, 09/Jul/2004** **Art Belmonte**

**1 Introduction to Vectors and Vector Functions**

- 1.1 Vectors
- 1.2 The Dot Product
- 1.3 Vector Functions

**2 Limits and Rates of Change**

- 2.1 The Tangent and Velocity Problems
- 2.2 The Limit of a Function
- 2.3 Calculating Limits Using the Limit Laws
- 2.4 The Precise Definition of a Limit [omitted]
- 2.5 Continuity
- 2.6 Limits at Infinity; Horizontal Asymptotes
- 2.7 Tangents, Velocities, and Other Rates of Change

**3 Derivatives**

- 3.1 Derivatives
- 3.2 Differentiation Formulas
- 3.3 Rates of Change in the Natural and Social Sciences
- 3.4 Derivatives of Trigonometric Functions
- 3.5 The Chain Rule
- 3.6 Implicit Differentiation
- 3.7 Derivatives of Vector Functions
- 3.8 Higher Derivatives
- 3.9 Slopes and Tangents of Parametric Curves
- 3.10 Related Rates
- 3.11 Differentials; Linear and Quadratic Approximations
- 3.12 Newton's Method

**4 Inverse Functions**

- 4.1 Exponential Functions and Their Derivatives
- 4.2 Inverse Functions
- 4.3 Logarithmic Functions
- 4.4 Derivatives of Logarithmic Functions
- 4.5 Exponential Growth and Decay
- 4.6 Inverse Trigonometric Functions
- 4.7 Hyperbolic Functions
- 4.8 Indeterminate Forms and L'Hospital's Rule

**5 Applications of Differentiation**

- 5.1 What Does  $f'$  Say About  $f$ ?
- 5.2 Maximum and Minimum Values
- 5.3 Derivatives and the Shapes of Curves
- 5.4 Graphing with Calculus *and* Calculators
- 5.5 Applied Maximum and Minimum Problems
- 5.6 Applications to Economics [omitted]
- 5.7 Antiderivatives

**6 Integrals**

- 6.1 Sigma Notation
- 6.2 Area
- 6.3 The Definite Integral
- 6.4 The Fundamental Theorem of Calculus
- 6.5 The Substitution Rule