## - Functions

- 0.1 Functions and Their Graphs
- 0.2 Some Important Functions
- 0.3 The Algebra of Functions
- 0.4 Zeros of Functions - The Quadratic Formula and Factoring
- 0.5 Exponents and Power Functions
- 0.6 Functions and Graphs in Applications
- 1. The Derivative
- 1.1 The Slope of a Straight Line
- 1.2 The Slope of a Curve at a Point
- 1.3 The Derivative and Limits
- 1.4 Limits and the Derivative
- 1.5 Differentiability and Continuity
- 1.6 Some Rules for Differentiation
- 1.7 More About Derivatives
- 1.8 The Derivative as a Rate of Change
- 2. Applications of the Derivative
- 2.1 Describing Graphs of Functions
- 2.2 The First and Second Derivative Rules
- 2.3 The First and Section Derivative Tests and Curve Sketching
- 2.4 Curve Sketching (Conclusion)
- 2.5 Optimization Problems
- 2.6 Further Optimization Problems
- 2.7 Applications of Derivatives to Business and Economics
- 3. Techniques of Differentiation
- 3.1 The Product and Quotient Rules
- 3.2 The Chain Rule
- 3.3 Implicit Differentiation and Related Rates
- 4. The Exponential and Natural Logarithm Functions
- 4.1 Exponential Functions
- 4.2 The Exponential Function ex
- 4.3 Differentiation of Exponential Functions
- 4.4 The Natural Logarithm Function
- 4.5 The Derivative of $\ln x$ 4.6 Properties of the Natural Logarithm Function
- 5. Applications of the Exponential and Natural Logarithm Functions
- 5.1 Exponential Growth and Decay
- 5.2 Compound Interest
- 5.3. Applications of the Natural Logarithm Function to Economics
- 5.4. Further Exponential Models
- 6. The Definite Integral
- 6.1 Anti-differentiation
- 6.2 The Definite Integral and Net Change of a Function
- 6.3 The Definite Integral and Area Under a Graph
- 6.4 Areas in the xy-Plane
- 6.5 Applications of the Definite Integral
- 7. Functions of Several Variables
- 7.1 Examples of Functions of Several Variables
- 7.2 Partial Derivatives
- 7.3 Maxima and Minima of Functions of Several Variables
- 7.4 Lagrange Multipliers and Constrained Optimization
- 7.5 The Method of Least Squares
- 7.6 Double Integrals
- 8. The Trigonometric Functions
- 8.1 Radian Measure of Angles
- 8.2 The Sine and the Cosine
- 8.3 Differentiation and Integration of $\sin t$ and $\cos t$
- 8.4 The Tangent and Other Trigonometric Functions
- 9. Techniques of Integration
- 9.1 Integration by Substitution
- 9.2 Integration by Parts
- 9.3 Evaluation of Definite Integrals
- 9.4 Approximation of Definite Integrals
- 9.5 Some Applications of the Integral
- 9.6 Improper Integrals
- 10. Differential Equations
- 10.1 Solutions of Differential Equations
- 10.2 Separation of Variables
- 10.3 First-Order Linear Differential Equations
- 10.4 Applications of First-Order Linear Dif
- ferential Equations
- 10.5 Graphing Solutions of Differential Equations
- 10.6 Applications of Differential Equations
- 10.7 Numerical Solution of Differential Equations

