

Texas A&M Univ: Math 151–251 Stewart’s Early Transcendentals, 7th Edition: Chapters & Sections

1. Functions and Models

- 1.1 Four Ways to Represent a Function
- 1.2 Math Models: A Catalog of Essential Functions
- 1.3 New Functions from Old Functions
- 1.4 Graphing Calculators and Computers
- 1.5 Exponential Functions
- 1.6 Inverse Functions and Logarithms
- R1** Review
- P1** Principles of Problem Solving

2. Limits and Derivatives

- 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
- 2.5 Continuity
- 2.6 Limits at Infinity; Horizontal Asymptotes
- 2.7 Derivatives and Rates of Change
- 2.8 The Derivative of a Function
- R2** Review
- P2** Problems Plus

3. Differentiation Rules

- 3.1 Derivatives of Polynomials & Exponential Functions
- 3.2 The Product and Quotient Rules
- 3.3 Derivatives of Trigonometric Functions
- 3.4 The Chain Rule
- 3.5 Implicit Differentiation
- 3.6 Derivatives of Logarithmic Functions
- 3.7 Rates of Change in the Natural and Social Sciences
- 3.8 Exponential Growth and Decay
- 3.9 Related Rates

- 3.10 Linear Approximations and Differentials

- 3.11 Hyperbolic Functions

- R3** Review

- P3** Problems Plus

4. Applications of Differentiation

- 4.1 Maximum and Minimum Values
- 4.2 The Mean Value Theorem
- 4.3 How Derivatives Affect the Shape of a Graph
- 4.4 Indeterminate Forms and l’Hospital’s Rule
- 4.5 Summary of Curve Sketching
- 4.6 Graphing with Calculus *and* Calculators
- 4.7 Optimization Problems
- 4.8 Newton’s Method
- 4.9 Antiderivatives
- R4** Review
- P4** Problems Plus

5. Integrals

- 5.1 Areas And Distances
- 5.2 The Definite Integral
- 5.3 The Fundamental Theorem of Calculus
- 5.4 Indefinite Integrals and the Net Change Theorem
- 5.5 The Substitution Rule
- R5** Review
- P5** Problems Plus

6. Applications of Integration

- 6.1 Area Between Curves
- 6.2 Volumes
- 6.3 Volumes by Cylindrical Shells
- 6.4 Work
- 6.5 Average Value of a Function
- R6** Review
- P6** Problems Plus

7. Techniques of Integration

- 7.1 Integration by Parts
- 7.2 Trigonometric Integrals
- 7.3 Trigonometric Substitution
- 7.4 Integration via Partial Fractions
- 7.5 Strategy for Integration
- 7.6 Integration Tables and Computer Algebra Systems
- 7.7 Approximate Integration
- 7.8 Improper Integrals
- R7** Review
- P7** Problems Plus

8. Further Applications of Integration

- 8.1 Arc Length
- 8.2 Area of a Surface of Revolution
- 8.3 Applications to Physics and Engineering
- 8.4 Applications to Economics and Biology
- 8.5 Probability
- R8** Review
- P8** Problems Plus

9. Differential Equations

- 9.1 Modeling with Differential Equations
- 9.2 Direction Fields and Euler's Method
- 9.3 Separable Equations
- 9.4 Models for Population Growth
- 9.5 Linear Equations
- 9.6 Predator-Prey Systems
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- P9** Problems Plus

10. Parametric Equations & Polar Coords

- 10.1 Curves Defined by Parametric Equations
- 10.2 Calculus with Parametric Curves
- 10.3 Polar Coordinates
- 10.4 Areas and Lengths in Polar Coordinates
- 10.5 Conic Sections
- 10.6 Conic Sections in Polar Coordinates
- R10** Review
- P10** Problems Plus

11. Infinite Sequences and Series

- 11.1 Sequences
- 11.2 Series
- 11.3 The Integral Test and Estimates of Sums
- 11.4 The Comparison Tests
- 11.5 Alternating Series
- 11.6 Absolute Convergence; Ratio and Root Tests
- 11.7 Strategy for Testing Series
- 11.8 Power Series
- 11.9 Representation of Functions as Power Series
- 11.10 Taylor and Maclaurin Series
- 11.11 Applications of Taylor Polynomials
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- P11** Problems Plus

12. Vectors and the Geometry of Space

- 12.1 Three-Dimensional Coordinate Systems
- 12.2 Vectors
- 12.3 The Dot Product
- 12.4 The Cross Product
- 12.5 Equations of Lines and Planes
- 12.6 Cylinders and Quadric Surfaces
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- P12** Problems Plus

13. Vector Functions

- 13.1 Vector Functions and Space Curves
- 13.2 Derivatives and Integrals of Vector Functions
- 13.3 Arc Length and Curvature
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- P13** Problems Plus

14. Partial Derivatives

- 14.1 Functions of Several Variables
- 14.2 Limits and Continuity
- 14.3 Partial Derivatives
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- 14.6 Directional Derivatives and the Gradient Vector
- 14.7 Maximum and Minimum Values
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- P14** Problems Plus

15. Multiple Integrals

- 15.1 Double Integrals over Rectangles
- 15.2 Iterated Integrals
- 15.3 Double Integrals over General Regions
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- 15.8 Triple Integrals in Cylindrical Coordinates
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- 16.3 The Fundamental Theorem for Line Integrals
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- 16.5 Curl and Divergence
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- P16** Problems Plus

17. Second-Order Differential Equations

- 17.1 Second-Order Linear Equations
- 17.2 Nonhomogeneous Linear Equations
- 17.3 Applications of Second-Order Differential Eqs
- 17.4 Series Solutions
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Appendixes

- A** Numbers, Inequalities, and Absolute Values
- B** Coordinate Geometry and Lines
- C** Graphs of Second-Degree Equations
- D** Trigonometry
- E** Sigma Notation
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