

Calculus

1 Review and Introduction

1.1 Functions, Graphs (Ch. P)

1.2 Limits (Ch 1)

2 Basic Differentiation

2.1 Differentiation Definitions (Ch 2)

2.2 Basic Rules (Ch 2)

Power rule, chain rule

2.3 Rates of change in natural and trig functions (Ch 2, Ch 5.1)

2.4 Implicit Differentiation (Ch 2.5)

2.5 Optimization (Ch 3.7)

2.6 Related Rates (Ch 2.6)

2.7 Curve Sketching (Ch 3.3-3.6)

3 Basic Integration

3.1 Integration Definitions (Ch 4)

3.2 Basic Rules (Ch 4)

3.3 The Fundamental Theorem of Calculus (Ch 4)

3.4 Numerical Integration (Ch 4.6)

4 Differentiation and Integration Techniques

4.1 Integration by Parts (Ch 7.2)

4.2 Partial Fractions (Ch 7.5)

4.3 Trig functions (Ch 7.3, 7.4)

4.4 Natural functions (Ch 5.1-5.5)

4.5 Improper Integrals (Ch 7.8)

5 Basic Applications

5.1 Decay and Basic Differential Equations (Ch 5.6)

5.2 Parametric Equations (Ch 9.2, 9.3)

5.3 Volumes of Revolution

(over for possible enrichment topics)

6 Advanced Applications

6.1 Basic series (Ch 8.1-8.6)

6.2 Polar Coordinates and Conics (Ch 9)

6.3 Intro/review of complex functions, diff eqs, line integrals (Ch 5, Ch 14)

7 Techniques #2

7.1 Trig substitutions applied (Ch 7.4)

8 Advanced series

8.1 Taylor's Theorem (Ch 8.7-)

8.2 Taylor Series/MacLauren Series (-Ch 8.10)

8.3 Power Series (Ch 8.8)

9 Advanced topics

9.1 Vector fields. Gradients and curl (Ch 11, Ch 14)

9.2 Multivariable calculus (Ch 12, Ch 13)

9.3 Transforms

9.4 Predicate calculus