

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)

3 Basic Integration

3.1 Integration Definitions (Ch 4)

3.2 Basic Rules (Ch 4)

3.3 The Fundamental Theorem of Calculus (Ch 4)

4 Basic Applications

4.1 Related Rates (Ch 2.6)

4.2 Curve Sketching (Ch 3.3-3.6)

4.3 Numerical Integration (Ch 4.6)

5 Differentiation and Integration Techniques

5.1 Integration by Parts (Ch 7.2)

5.2 Partial Fractions (Ch 7.5)

5.3 Trig functions (Ch 7.3, 7.4)

5.4 Natural functions (Ch 5.1-5.5)

5.5 Improper Integrals (Ch 7.8)

6 Basic Applications #2

6.1 Decay (Ch 5.6)

6.2 Parametric Equations (Ch 9.2, 9.3)

(over)

7 Advanced Applications

7.1 Basic series (Ch 8.1-8.6)

7.2 Polar Coordinates and Conics (Ch 9)

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

8 Techniques #2

8.1 Trig substitutions applied (Ch 7.4)

9 Advanced series

9.1 Taylor's Theorem (Ch 8.7-)

9.2 Taylor Series/MacLauren Series (-Ch 8.10)

9.3 Power Series (Ch 8.8)

10 Advanced topics

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

10.2 Multivariable calculus (Ch 12, Ch 13)

10.3 Transforms

10.4 Predicate calculus