

MATH 150: CALCULUS WITH ANALYTIC GEOMETRY I

Textbook: Swokowski, Calculus: The Classic Edition (5th Edition)

CHAPTER 1: PRECALCULUS REVIEW

- 1.1 Algebra
- 1.2 Functions
- 1.3 Trigonometry

CHAPTER 2: LIMITS OF FUNCTIONS

- 2.1 Introduction to Limits
- 2.2 Definition of Limit
- 2.3 Techniques for Finding Limits
- 2.4 Limits Involving Infinity
- 2.5 Continuous Functions

CHAPTER 3: FURTHER APPLICATIONS OF DERIVATIVES

- 3.1 Tangent Lines and Rates of Change
- 3.2 Definition of Derivative
- 3.3 Techniques of Differentiation
- 3.4 Derivatives of the Trigonometric Functions
- 3.5 Increments and Differentials
- 3.6 The Chain Rule
- 3.7 Implicit Differentiation
- 3.8 Related Rates

CHAPTER 4: APPLICATIONS OF THE DERIVATIVE

- 4.1 Extrema of Functions
- 4.2 The Mean Value Theorem
- 4.3 The First Derivative Test
- 4.4 Concavity and the Second Derivative Test
(Some of 4.4 is in my “4.5” notes)
- 4.5 Summary of Graphical Methods
(Some of 4.4 is in my “4.5” notes)
- 4.6 Optimization Problems
- 4.7 Rectilinear Motion and Other Applications
- 4.8 Newton’s Method

CHAPTER 5: INTEGRALS

- 5.1 Antiderivatives and Indefinite Integrals
- 5.2 Change of Variables in Indefinite Integrals
- 5.3 Summation Notation and Area
(I combine 5.3 and 5.4 in my “5.4” notes.)
- 5.4 The Definite Integral
(I combine 5.3 and 5.4 in my “5.4” notes.)
- 5.5 Properties of the Definite Integral
- 5.6 The Fundamental Theorem of Calculus
- 5.7 Numerical Integration

CHAPTER 6: APPLICATIONS OF THE DEFINITE INTEGRAL

- 6.1 Area
- 6.2 Solids of Revolution
- 6.3 Volumes by Cylindrical Shells
- 6.4 Volumes by Cross Sections
- 6.5 Arc Length and Surfaces of Revolution
- 6.6 Work (skip)
- 6.7 Moments and Centers of Mass (skip)
- 6.8 Other Applications (sometimes skipped)

CHAPTER 7: LOGARITHMIC AND EXPONENTIAL FUNCTIONS

- 7.1 Inverse Functions
- 7.2 The Natural Logarithmic Function
- 7.3 The Natural Exponential Function
- 7.4 Integration
- 7.5 General Exponential and Logarithmic Functions
- 7.6 Laws of Growth and Decay (skip)

CHAPTER 8: INVERSE TRIGONOMETRIC AND HYPERBOLIC FUNCTIONS

- 8.1 Inverse Trigonometric Functions
- 8.2 Derivatives and Integrals
- 8.3 Hyperbolic Functions
- 8.4 Inverse Hyperbolic Functions (I skipped)