

# Textbook Information

## Math 143 GH – Precalculus Mathematics

The class's textbook policy is as follows. **Students must have a precalculus book (or a college algebra and a trigonometry book) but it does NOT have to be the official textbook designated for this course.** This policy is intended to lower textbook costs. Usually students can purchase a textbook for the course under \$40.

The textbook for this course is the 6th edition of Precalculus, by James Stewart, Lothar Redlin, and Saleem Watson, (Brooks/Cole, 2012; ISBN Number: 978-0-8400-6807-1). Students are welcome to use any previous edition at a much lower cost.

Students also may use other precalculus books. These include any edition of precalculus textbooks written by:

Sheldon Axler

Michael Sullivan

Thomas W. Hungerford

Mark Dugopolski

Earl William Swokowski

Ron Larson, Robert P. Hostetler and Bruce H. Edwards

Raymond A. Barnett and Karl E. Byleen

David Cohen, David Skiar and Theodore B. Lee

Marvin L. Bittinger, Judith A. Beecher and David J. Ellenbogen

Margaret L. Lial, Gary K. Rockswold and John Hornsby

## **Chapter 1 – Fundamentals**

- 1.1 Real Numbers
- 1.2 Exponents and Radicals
- 1.3 Algebraic Expressions
- 1.4 Rational Expressions
- 1.5 Equations
- 1.6 Modeling with Equations
- 1.7 Inequalities
- 1.8 Coordinate Geometry
- 1.9 Graphing Calculators; Solving Equations and Inequalities Graphically
- 1.10 Lines
- 1.11 Making Models Using Variation

## **Chapter 2 – Functions**

- 2.1 What is a function?
- 2.2 Graphs of Functions
- 2.3 Getting Information from the Graph of a Function
- 2.4 Average Rate of Change of a Function
- 2.5 Transformations of Functions
- 2.6 Combining Functions
- 2.7 One-to-One Functions and Their Inverses

## **Chapter 3 – Polynomial and Rational Functions**

- 3.1 Quadratic Functions and Models
- 3.2 Polynomial Functions and Their Graphs
- 3.3 Dividing Polynomials
- 3.4 Real Zeroes of Polynomials
- 3.5 Complex Numbers
- 3.6 Complex Zeroes and the Fundamental Theorem of Algebra
- 3.7 Rational Functions

## **Chapter 4 - Exponential and Logarithmic Functions**

- 4.1 Exponential Functions
- 4.2 The Natural Exponential Function
- 4.3 Logarithmic Functions
- 4.4 Laws of Logarithms
- 4.5 Exponential and Logarithmic Equations
- 4.6 Modeling with Exponential and Logarithmic Functions

## **Chapter 5 – Trigonometric Functions: Unit Circle Approach**

- 5.1 The Unit Circle
- 5.2 Trigonometric Functions of Real Numbers
- 5.3 Trigonometric Graphs
- 5.4 More Trigonometric Graphs
- 5.5 Inverse Trigonometric Functions and Their Graphs
- 5.6 Modeling Harmonic Motion

## **Chapter 6 – Trigonometric Functions: Right Triangle Approach**

- 6.1 Angle Measure
- 6.2 Trigonometry of Right Triangles
- 6.3 Trigonometric Functions of Angles
- 6.4 Inverse Trigonometric Functions and Right Triangles
- 6.5 The Law of Sines
- 6.6 The Law of Cosines

## **Chapter 7 – Analytic Trigonometry**

- 7.1 Trigonometric Identities
- 7.2 Addition and Subtraction Formulas
- 7.3 Double-Angle, Half-Angle, and Product-Sum Formulas
- 7.4 Basic Trigonometric Equations
- 7.5 More Trigonometric Equations

## **Chapter 8 – Polar Coordinates and Parametric Equations**

- 8.1 Polar Coordinates
- 8.2 Graphs of Polar Equations
- 8.3 Polar Form of Complex Numbers, De Moivre's Theorem
- 8.4 Plane Curves and Parametric Equations

## **Chapter 9 – Vectors in Two and Three Dimensions**

- 9.1 Vectors in Two Dimensions
- 9.2 The Dot-product
- 9.3 Three-Dimensional Coordinate Geometry
- 9.4 Vectors in Three Dimensions
- 9.5 The Cross Product
- 9.6 Equations of Lines and Planes

## **Chapter 10 – Systems of Equations and Inequalities**

- 10.1 Systems of Linear Equations in Two Variables
- 10.2 Systems of Linear Equations in Several Variables
- 10.3 Matrices and Systems of Linear Equations
- 10.4 The Algebra of Matrices
- 10.5 Inverses of Matrices and Matrix Equations
- 10.6 Determinants and Cramer's Rule
- 10.7 Partial Fractions
- 10.8 Systems of Nonlinear Equations
- 10.9 Systems of Inequalities

## **Chapter 11 – Conic Sections**

- 11.1 Parabolas
- 11.2 Ellipses
- 11.3 Hyperbolas
- 11.4 Shifted Conics
- 11.5 Rotation of Axes
- 11.6 Polar Equations of Conics

## **Chapter 12 – Sequences and Series**

- 12.1 Sequences and Summation Notation
- 12.2 Arithmetic Sequences
- 12.3 Geometric Sequences
- s12.4 Mathematics of Finance
- 12.5 Mathematical Induction
- 12.6 The Binomial Theorem

## **Chapter 13 – Limits: A Preview of Calculus**

- 13.1 Finding Limits Numerically and Graphically
- 13.2 Finding Limits Algebraically
- 13.3 Tangent Lines and Derivatives
- 13.4 Limits at Infinity: Limits of Sequences
- 13.5 Areas