

Stewart, Algebra and Trigonometry, TOC

Prologue: Principles of Problem Solving.

P. PREREQUISITES.

Modeling the Real World. Real Numbers and Their Properties. The Real Number Line and Order. Integer Exponents. Rational Exponents and Radicals. Algebraic Expressions.

Factoring Algebraic Expressions. Rational Expressions. Chapter P Review. Chapter P Test. Focus on Problem Solving: General Principles.

1. EQUATIONS AND INEQUALITIES.

Chapter Overview. Basic Equations. Modeling with Equations. Quadratic Equations. Complex Numbers. Other Types of Equations. Inequalities. Absolute Value Equations and Inequalities. Chapter 1 Review. Chapter 1 Test. Focus on Modeling: Making the Best Decisions.

2. COORDINATES AND GRAPHS.

Chapter Overview. The Coordinate Plane. Graphs of Equations in Two Variables. Graphing Calculators: Solving Equations Graphically. Lines. Modeling: Variation.

Chapter 2 Review. Chapter 2 Test. Focus on Modeling: Fitting Lines to Data.

Cumulative Review Test: Chapters 1 and 2.

3. FUNCTIONS.

Chapter Overview.

What Is a Function?. Graphs of Functions. Getting Information from the Graph of a Function. Average Rate of Change of a Function. Transformations of Functions. Combining Functions. One-to-One Functions and Their Inverses. Chapter 3 Review.

Chapter 3 Test. Focus on Modeling: Functions as Models.

4. POLYNOMIAL AND RATIONAL FUNCTIONS.

Chapter Overview. Quadratic Functions and Models. Polynomial Functions and Their Graphs. Dividing Polynomials. Real Zeros of Polynomials. Complex Numbers. Complex Zeros and the Fundamental Theorem of Algebra. Rational Functions. Chapter 4 Review. Chapter 4 Test. Focus on Modeling: Fitting Polynomial Curves to Data.

5. EXPONENTIAL AND LOGARITHMIC FUNCTIONS.

Chapter Overview. Exponential Functions. The Natural Exponential Function. Logarithmic Functions. Laws of Logarithms. Exponential and Logarithmic Equations. Modeling with Exponential and Logarithmic Functions. Chapter 5 Review. Chapter 5 Test. Focus on Modeling: Fitting Exponential and Power Curves to Data. Cumulative Review Test: Chapters 3, 4, and 5.

6. TRIGONOMETRIC FUNCTIONS: RIGHT TRIANGLE APPROACH.

Chapter Overview. Angle Measure. Trigonometry of Right Triangles. Trigonometric Functions of Angles. Inverse Trigonometric Functions and Triangles. The Law of Sines. The Law of Cosines. Chapter 6 Review. Chapter 6 Test. Focus on Modeling: Surveying.

7. TRIGONOMETRIC FUNCTIONS: UNIT CIRCLE APPROACH.

Chapter Overview. The Unit Circle. Trigonometric Functions of Real Numbers. Trigonometric Graphs. More Trigonometric Graphs. Inverse Trigonometric Functions and Their Graphs. Modeling Harmonic Motion. Chapter 7 Review. Chapter 7 Test.

Focus on Modeling: Fitting Sinusoidal Curves to Data.

8. ANALYTIC TRIGONOMETRY.

Chapter Overview. Trigonometric Identities. Addition and Subtraction Formulas. Double-Angle, Half-Angle, and Sum-Product Identities. Basic Trigonometric Equations. More Trigonometric Equations. Chapter 8 Review. Chapter 8 Test. Focus on Modeling: Traveling and Standing Waves. Cumulative Review Test: Chapters 6, 7, and 8.

9. POLAR COORDINATES AND PARAMETRIC EQUATIONS.

Chapter Overview. Polar Coordinates. Graphs of Polar Equations. Polar Form of Complex Numbers; DeMoivre's Theorem. Plane Curves and Parametric Equations.

Chapter 9 Review. Chapter 9 Test. Focus on Modeling: The Path of a Projectile.

10. VECTORS IN TWO AND THREE DIMENSIONS.

Chapter Overview. Vectors in Two Dimensions. The Dot Product. Three –Dimensional Coordinate Geometry. Vectors in Three Dimensions. The Cross Product. Equations of Lines and Planes. Chapter 10 Review. Chapter 10 Test. Focus on Modeling: Vector Fields. Cumulative Review Test: Chapters 9 and 10.

11. SYSTEMS OF EQUATIONS AND INEQUALITIES.

Chapter Overview. Systems of Linear Equations in Two Variables. Systems of Linear Equations in Several Variables. Systems of Linear Equations: Matrices. The Algebra of Matrices. Inverses of Matrices and Matrix Equations. Determinants and Cramer's Rule. Partial Fractions. Systems of Non-Linear Equations. Systems of Inequalities. Chapter 11 Review. Chapter 11 Test. Focus on Modeling: Linear Programming.

12. ANALYTIC GEOMETRY.

Overview. Parabolas. Ellipses. Hyperbolas. Shifted Conics. Rotation of Axes. Polar Equations of Conics. Chapter 12 Review. Chapter 12 Test. Focus on Modeling: Conics in Architecture. Cumulative Review Test: Chapters 11 and 12.

13. SEQUENCES AND SERIES.

Chapter Overview. Sequences and Summation Notation. Arithmetic Sequences. Geometric Sequences. Mathematics of Finance. Mathematical Induction. The Binomial Theorem. Chapter 13 Review. Chapter 13 Test. Focus on Modeling: Difference Equations.

14. COUNTING AND PROBABILITY.

Chapter Overview. Counting Principles. Permutations and Combinations. Probability. Binomial Probability. Expected Value. Chapter 14 Review. Chapter 14 Test. Focus on Modeling: The Monte Carlo Method. Cumulative Review Test: Chapters 11 and 12.

APPENDIX Calculators and Calculations.