

Common Core Algebra II

Chapter 1: POLYNOMIALS

TOPIC A: Operations with Polynomials

PART 1: Addition and Subtraction of Polynomials

PART 2: Multiplication of Polynomials

Section a: Tabular Method of Multiplication

Section b: Products of Polynomials

Section c: Special Products

Section d: Problem Solving Involving Multiplication of Polynomials

PART 3: Division of Polynomials

Section a: Reverse Tabular Method

Section b: Long Division of Polynomials

Section c: Problem Solving Involving Division of Polynomials

PART 4: Mixed Operations

TOPIC B: Factoring

PART 1: Factoring Involving the Greatest Common Factor

PART 2: Factoring the Difference of Two Squares

PART 3: Factoring Trinomials

PART 4: Factoring the Sum and Difference of Two Cubes

PART 5: Factoring by Grouping Terms

PART 6: Factoring Polynomials Completely

TOPIC C: Polynomial Equations, Inequalities, and Functions

PART 1: Quadratic Equations

Section a: Solving Quadratic Equations

Section b: Sum and Product of the Roots

Section c: Writing Quadratic Equations

Section d: Discriminants

PART 2: Quadratic Inequalities of One Variable

Section a: Solving Using Algebraic Methods

Section b: Representing the Solution Set on a Number Line

Section c: Representing the Solution Set on a Coordinate Grid

PART 3: Polynomial Equations and Inequalities of Higher Degree

Section a: Solving Polynomial Equations of Higher Degree

Section b: Writing Polynomial Equations of Higher Degree

Section c: Polynomial Inequalities of Higher Degree

PART 4: Polynomial Functions

Section a: Properties of Polynomial Functions

Section b: Graphing Polynomial Functions

Section c: Remainder Theorem

Section d: Writing Equations of Polynomial Functions

PART 5: Polynomial Identities (none)

Chapter 2: RATIONAL ALGEBRAIC EXPRESSIONS

TOPIC A: Equivalent and Comparing Rational Expression

PART 1: Domain Restrictions

PART 2: Reducing Algebraic Fractions

TOPIC B: Multiplying and Dividing Rational Expressions

PART 1: Multiplying Rational Expressions

PART 2: Dividing Rational Expressions

TOPIC C: Adding and Subtracting Rational Expressions

PART 1: Adding Rational Expressions

PART 2: Subtracting Rational Expressions

TOPIC D: Rational Expressions Requiring Multiple Operations

PART 1: Expressions with Mixed Operations

PART 2: Complex Fractions

TOPIC E: Solving Rational Equations

PART 1: Proportions

PART 2: Equations Involving Sums and Differences of Rational Expressions

TOPIC F: Mathematical and Real World Applications of Rational Expression and Equations

Chapter 3: RADICAL EXPRESSIONS & EQUATIONS

TOPIC A: Simplifying and Evaluating Radical Expressions

PART 1: Evaluation of Numerical Radical Expressions

PART 2: Simplifying Radical Expressions Involving Variables

TOPIC B: Adding and Subtracting Radical Expressions

TOPIC C: Multiplying and Dividing Radical Expressions

PART 1: Products and Conjugates

Section a: Conjugates

Section b: Products of Radical Expressions

PART 2: Quotients of Radical Expressions

PART 3: Rationalizing Denominators

Section a: Expressions with Monomial Denominators

Section b: Expressions with Binomial Denominators

TOPIC D: Solving Radical Equations

PART 1: Solving Equations Involving Square Roots

PART 2: Solving Equations Involving Cube Roots

TOPIC E: Factors with Irrational Coefficients

TOPIC F: Mathematical and Real World Applications Involving Radicals

Chapter 4: COMPLEX NUMBERS

TOPIC A: Imaginary Numbers

PART 1: Simplifying Square Roots with a Negative Radicand

PART 2: Arithmetic Operations with Imaginary Numbers

PART 3: Powers of i

TOPIC B: Complex Numbers of the Form $a + bi$

PART 1: Properties of Complex Numbers

PART 2: Representing Complex Numbers Graphically

Section a: Complex Numbers Represented as Points

Section b: Complex Numbers Represented as Vectors

PART 3: Equality of Complex Numbers

PART 4: Adding and Subtracting Complex Numbers

PART 5: Multiplying and Dividing Complex Numbers

Section a: Multiplying Complex Numbers

Section b: Dividing Complex Numbers

PART 6: Mixed Operations

TOPIC C: Factoring Polynomial Expressions Over the Set of Complex Numbers

TOPIC D: Polynomial Equations with Complex Roots

PART 1: Solving Quadratic Equations with Complex Roots

PART 2: Writing Quadratic Equations Having Complex Roots

PART 3: Solving Polynomial Equations of Higher Degree with Complex Roots

PART 4: Writing Polynomial Equations of Higher Degree Having Complex Roots

Chapter 5: SYSTEMS OF EQUATIONS, CIRCLES, AND PARABOLAS

TOPIC A: Systems of Equations

PART 1: Systems of Linear Equations

Section a: Systems of Two Equations with Two Unknowns (review)

Section b: Systems of Three Equations with Three Unknowns

PART 2: Systems of Linear and Quadratic Equations

Section a: Algebraic Solutions

Section b: Graphical Solutions

PART 3: System of Two Quadratic Equations

TOPIC B: Circles

PART 1: Determining the Center and Radius of a Circle

PART 2: Determining the Equation of a Circle

PART 3: Graphing Circles

TOPIC C: Focus and Directrix Form of a Parabola

PART 1: Properties of the Parabola

PART 2: Writing Equations of Parabolas

PART 3: Graphing Parabolas

Chapter 6: FUNCTIONS

TOPIC A: Review of Function Theory

PART 1: Defining and Identifying Functions

PART 2: Domain and Range of a Function

Section a: Given an Equation

Section b: Given a Graph

PART 3: Function Notation

Section a: Writing Function Notation

Section b: Evaluating Functions

Section c: Equality of Functions

TOPIC B: Combining Functions

PART 1: Arithmetic Operations with Functions

PART 2: Composition of Functions

TOPIC C: One to One, Onto, Odd, and Even Functions

PART 1: One-to-One and Onto Functions

PART 2: Odd and Even Functions

TOPIC D: Inverse of a Function

PART 1: Properties of the Inverse

PART 2: Forming the Inverse of a Function

TOPIC E: Exponential Functions

PART 1: Integer Exponents

PART 2: Scientific Notation

PART 3: Rational Exponents

PART 4: Irrational Exponents

PART 5: Graphs and Transformations

Section a: Key Features

Section b: Graphing Exponential Functions

Section c: Transformations

PART 6: Solving Equations Involving Exponents

Section a: Equations with Rational Exponents

Section b: Exponential Equations

Section c: Additional Equations and Inequalities

TOPIC F: Logarithmic Functions

PART 1: Logarithmic Form vs. Exponential Form

Section a: Converting Between Exponential Form and Logarithmic Form

Section b: Evaluating Exponential and Logarithmic Expressions

Section c: Solving Equations Written in Logarithmic Form

Section d: The Inverse Relationship of Logarithmic and Exponential Functions

PART 2: Graphing Logarithmic Functions

Section a: Key Features

Section b: Graphing Logarithmic Functions

Section c: Transformations

PART 3: Laws of Logarithms

Section a: Rewriting Expressions Using Laws of Logarithms

Section b: Evaluating Expressions

Section c: Change of Base

PART 4: Solving Equations Using Laws of Logarithms

Section a: Solving Exponential Equations and Inequalities Using Logarithms

Section b: Solving Logarithmic Equations

PART 5: Mathematical and Real World Applications of Exponents and Logarithms

Section a: Growth and Decay Models

Section b: Financial Models

TOPIC G: Geometric Sequences and Series

PART 1: Geometric Sequences
PART 2: Finite Geometric Series
PART 3: Using Sigma with Series

Chapter 7: TRIGONOMETRIC FUNCTIONS

TOPIC A: Circular Trigonometry

PART 1: Angles in Standard Position
PART 2: Degree Measure Versus Radian Measure
 Section a: Converting From Degrees to Radians
 Section b: Converting From Radians to Degrees
PART 3: Length of an Arc
PART 4: Defining the Sine and Cosine Functions
PART 5: Defining the Tangent, Cotangent, Secant and Cosecant
PART 6: Locating an Angle in the Correct Quadrant
PART 7: Evaluating Trigonometric Functions
 Section a: Finding Exact Values
 Section b: Using Technology to Evaluate Trigonometric Functions of Any Angle
PART 8: Special Angles and Quadrantal Angles
PART 9: Reference Angles
PART 10: Basic Trigonometric Relationships
 Section a: Cofunction Relationships
 Section b: Negative Angle Relationships
 Section c: Pythagorean Relationships
 Section d: Reciprocal Relationships
 Section e: Quotient Relationships

TOPIC B: GRAPHS OF TRIGONOMETRIC FUNCTIONS

PART 1: Properties of Sine and Cosine Functions
 Section a: Increase, Decrease, and Intercepts
 Section b: Amplitude, Range, Maximum, and Minimum
 Section c: Frequency and Period
 Section d: Phase Shift and Vertical Displacement
 Section e: Using Equations of Sine and Cosine Functions to Determine Properties
PART 2: Graphs and Equations of Trigonometric Functions
 Section a: Sketching Sine and Cosine Functions
 Section b: Determining an Equation of a Sinusoidal Function
 Section c: Properties and Graphs of the Tangent and Cotangent Functions
 Section d: Odd Functions, Even Functions, and Symmetry

TOPIC C: TRIGONOMETRIC EQUATIONS

PART 1: Basic Trigonometric Identities
 Section a : Emphasizing Pythagorean Identities
 Section b : Emphasizing Quotient and Reciprocal Identities
 Section c: Working with All Basic Identities
PART 2: Sum and Difference of Two Angles Formulas
 Section a: Derivations of Formulas

Section b: Sums and Differences Formulas

PART 3: Trigonometric Identity Proofs

Chapter 8: PROBABILITY AND STATISTICS

TOPIC A: PROBABILITY

PART 1: Review of Basic Probability

PART 2: Two-Way Frequency Tables

PART 3: Venn Diagrams

PART 4: Probability Rules

TOPIC B: STATISTICS

PART 1: Describing Data Distributions

PART 2: Normal Distributions

PART 3: Statistical Studies and Sampling Distributions

Section a: Statistical Studies

Section b: Sampling Distributions of Sample Proportions

Section c: Sampling Distributions of Sample Means

PART 4: Ruling Out Chance