

**South Carolina State Core Curriculum**  
**Standards adopted 2007**  
**Intermediate Algebra**

Strand	Reference	Description	Boardworks High School Algebra presentations
<b>Standard IA-1: The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.</b>	IA-1.1	Communicate a knowledge of algebraic relationships by using mathematical terminology appropriately.	–
	IA-1.2	Connect algebra with other branches of mathematics.	–
	IA-1.3	Apply algebraic methods to solve problems in real-world contexts.	Using equations to solve problems
	IA-1.4	Judge the reasonableness of mathematical solutions.	–
	IA-1.5	Demonstrate an understanding of algebraic relationships by using a variety of representations (including verbal, graphic, numerical, and symbolic).	Equations, formulas and identities Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Using graphs to solve equations
	IA-1.6	Understand how algebraic relationships can be represented in concrete models, pictorial models, and diagrams.	Equations, formulas and identities Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Using graphs to solve equations
	IA-1.7	Understand how to represent algebraic relationships by using tools such as handheld computing devices, spreadsheets, and computer algebra systems (CASs).	–
	IA-2.1	Carry out a procedure to solve a system of linear inequalities algebraically.	Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables
	IA-2.2	Carry out a procedure to solve a system of linear inequalities graphically.	Inequalities and regions Inequalities in two variables
	IA-2.3	Analyze a problem situation to determine a system of linear inequalities that models the problem situation.	Inequalities and regions Inequalities in two variables

<b>Standard IA-2: The student will demonstrate through the mathematical processes an understanding of functions, systems of equations, and systems of linear inequalities.</b>	IA-2.4	Use linear programming to solve contextual problems involving a system of linear inequalities.	–
	IA-2.5	Carry out procedures to perform operations on polynomial functions (including $f(x) + g(x)$ , $f(x) - g(x)$ , $f(x) \cdot g(x)$ , and $f(x)/g(x)$ ).	Operations with polynomials Dividing polynomials The factor theorem
	IA-2.6	Apply a procedure to write the equation of a composition of given functions.	Domain, range and composite functions
	IA-2.7	Carry out a procedure to graph translations of parent functions (including $y = x$ , $y = x^2$ , $y = \sqrt{x}$ , $y =  x $ , $y = 1/x$ )	Transforming functions part 1 Transforming functions part 2
	IA-2.8	Carry out a procedure to graph transformations of parent functions (including $y = x$ , $y = x^2$ , $y =  x $ )	Graphs of important non-linear functions Absolute value functions
	IA-2.9	Carry out a procedure to graph discontinuous functions (including piecewise and step functions).	Plotting and sketching graphs Absolute value functions
	IA-2.10	Carry out a procedure to determine the domain and range of discontinuous functions (including piecewise and step functions).	Domain, range and composite functions
	IA-2.11	Carry out a procedure to solve a system of equations (including two linear functions and one linear function with one quadratic function).	Systems of equations and graphs The elimination method for systems of equations The substitution method for systems of equations Systems of linear and quadratic equations Problems leading to systems of equations
	IA-3.1	Carry out a procedure to simplify expressions involving powers of $i$ .	–
	IA-3.2	Carry out a procedure to perform operations with complex numbers (including addition, subtraction, multiplication, and division).	–
	<b>Standard IA-3: The student will demonstrate through the mathematical processes an understanding of quadratic equations and the complex number system.</b>	IA-3.3	Carry out a procedure to solve quadratic equations algebraically (including factoring, completing the square, and applying the quadratic formula).

	IA-3.4	Use the discriminant to determine the number and type of solutions of a quadratic equation.	The quadratic formula Solving quadratic equations
	IA-3.5	Analyze given information (including quadratic models) to solve contextual problems.	Problems leading to quadratic equations
	IA-3.6	Carry out a procedure to write an equation of a quadratic function when given its roots.	Solving quadratic equations
<b>Standard IA-4: The student will demonstrate through the mathematical processes an understanding of algebraic expressions and nonlinear functions.</b>	IA-4.1	Carry out a procedure to perform operations (including multiplication, exponentiation, and division) with polynomial expressions.	Operations with polynomials Dividing polynomials The factor theorem
	IA-4.2	Carry out a procedure to determine specified points (including zeros, maximums, and minimums) of polynomial functions.	Graphs of quadratic functions Plotting and sketching graphs
	IA-4.3	Carry out a procedure to solve polynomial equations (including factoring by grouping, factoring the difference between two squares, factoring the sum of two cubes, and factoring the difference between two cubes).	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Solving quadratic equations
	IA-4.4	Analyze given information (including polynomial models) to solve contextual problems.	Problems leading to quadratic equations
	IA-4.5	Carry out a procedure to simplify algebraic expressions involving rational exponents.	Zero, negative and fractional exponents Rational exponents
	IA-4.6	Carry out a procedure to simplify algebraic expressions involving logarithms.	The laws of logarithms Solving equations involving logarithms
	IA-4.7	Carry out a procedure to perform operations with expressions involving rational exponents (including addition, subtraction, multiplication, division, and exponentiation).	Zero, negative and fractional exponents Rational exponents
	IA-4.8	Carry out a procedure to perform operations with rational expressions (including addition, subtraction, multiplication, and division).	Simplifying rational functions Operations with algebraic fractions Improper fractions
	IA-4.9	Carry out a procedure to solve radical equations algebraically.	Manipulating formulas Manipulating radicals
	IA-4.10	Carry out a procedure to solve logarithmic equations algebraically.	The laws of logarithms Solving equations involving logarithms
	IA-4.11	Carry out a procedure to solve logarithmic equations graphically.	Exponentials and logarithms Exponential growth and decay

	IA-4.12	Carry out a procedure to solve rational equations algebraically.	Simplifying rational functions Operations with algebraic fractions Improper fractions
	IA-4.13	Carry out a procedure to graph logarithmic functions.	Exponentials and logarithms Exponential growth and decay
	IA-4.14	Carry out a procedure to graph exponential functions.	Exponentials and logarithms Exponential growth and decay
<b>Standard IA-5: The student will demonstrate through the mathematical processes an understanding of conic sections.</b>	IA-5.1	Carry out a procedure to graph the circle whose equation is the form $x^2 + y^2 = r^2$	Coordinate geometry The equation of a circle
	IA-5.2	Carry out a procedure to write an equation of a circle centered at the origin when given its radius.	The equation of a circle
	IA-5.3	Carry out a procedure to graph the ellipse whose equation is the form $x^2/a^2 + y^2/b^2 = 1$	–
	IA-5.4	Carry out a procedure to write an equation of an ellipse centered at the origin when given information from among length of major axis, length of minor axis, and vertices.	–
	IA-5.5	Carry out a procedure to graph the hyperbola whose equation is the form $x^2/a^2 - y^2/b^2 = 1$	–
	IA-5.6	Carry out a procedure to write an equation of a hyperbola centered at the origin with specified vertices.	–
	IA-5.7	Match the equation of a conic section with its graph.	–
<b>Standard IA-6: The student will demonstrate through the mathematical processes an understanding of sequences and series</b>	IA-6.1	Categorize a sequence as arithmetic, geometric, or neither.	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences
	IA-6.2	Carry out a procedure to write a specified term of an arithmetic or geometric sequence when given the nth term of the sequence.	Sequences and rules Arithmetic sequences Geometric sequences
	IA-6.3	Carry out a procedure to write a formula for the nth term of an arithmetic or geometric sequence when given at least four consecutive terms of the sequence.	Sequences and rules Arithmetic sequences Geometric sequences Sequences and series
	IA-6.4	Carry out a procedure to write a formula for the nth term of an arithmetic or geometric sequence when given at least four terms of the sequence.	Sequences and rules Arithmetic sequences Geometric sequences Sequences and series

and series.

IA-6.5	Represent an arithmetic or geometric series by using sigma notation.	Sequences and series The sum of an arithmetic series The sum of a geometric series
IA-6.6	Carry out a procedure to calculate the sum of an arithmetic or geometric series written in sigma notation.	The sum of an arithmetic series The sum of a geometric series
IA-6.7	Carry out a procedure to determine consecutive terms of a sequence that is defined recursively.	Other types of sequences
IA-6.8	Carry out a procedure to define a sequence recursively when given four or more consecutive terms of the sequence.	Other types of sequences
IA-6.9	Translate between the explicit form and the recursive form of sequences.	Other types of sequences