

California State Core Curriculum
Standards adopted 1997
Algebra II

Reference	Description	High School Algebra Boardworks presentations
1	Students solve equations and inequalities involving absolute value.	Absolute value functions
2	Students solve systems of linear equations and inequalities (in two or three variables) by substitution, with graphs, or with matrices.	Systems of equations and graphs The elimination method for systems of equations The substitution method for systems of equations Problems leading to systems of equations
3	Students are adept at operations on polynomials, including long division.	Operations with polynomials Dividing polynomials The factor theorem
4	Students factor polynomials representing the difference of squares, perfect square trinomials, and the sum and difference of two cubes.	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square
5	Students demonstrate knowledge of how real and complex numbers are related both arithmetically and graphically. In particular, they can plot complex numbers as points in the plane.	-
6	Students add, subtract, multiply, and divide complex numbers.	-
7	Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator.	Simplifying rational functions Operations with algebraic fractions Improper fractions

8	Students solve and graph quadratic equations by factoring, completing the square, or using the quadratic formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system.	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Problems leading to quadratic equations Solving quadratic equations Graphs of quadratic functions
9	Students demonstrate and explain the effect that changing a coefficient has on the graph of quadratic functions; that is, students can determine how the graph of a parabola changes as a , b , and c vary in the equation $y = a(x-b)^2 + c$.	Graphs of quadratic functions
10	Students graph quadratic functions and determine the maxima, minima, and zeros of the function.	Graphs of quadratic functions
11	Students prove simple laws of logarithms.	
11.1	Students understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.	Exponentials and logarithms Exponential growth and decay
11.2	Students judge the validity of an argument according to whether the properties of real numbers, exponents, and logarithms have been applied correctly at each step.	The laws of logarithms Solving equations involving logarithms
12	Students know the laws of fractional exponents, understand exponential functions, and use these functions in problems involving exponential growth and decay.	Exponents Zero, negative and fractional exponents Exponentials and logarithms Exponential growth and decay
13	Students use the definition of logarithms to translate between logarithms in any base.	The laws of logarithms Solving equations involving logarithms
14	Students understand and use the properties of logarithms to simplify logarithmic numeric expressions and to identify their approximate values.	The laws of logarithms Solving equations involving logarithms
15	Students determine whether a specific algebraic statement involving rational expressions, radical expressions, or logarithmic or exponential functions is sometimes true, always true, or never true.	Simplifying rational functions Manipulating radicals The laws of logarithms Solving equations involving logarithms Exponentials and logarithms

16	Students demonstrate and explain how the geometry of the graph of a conic section (e.g., asymptotes, foci, eccentricity) depends on the coefficients of the quadratic equation representing it.	Graphs of quadratic functions
17	Given a quadratic equation of the form $ax^2 + by^2 + cx + dy + e = 0$, students can use the method for completing the square to put the equation into standard form and can recognize whether the graph of the equation is a circle, ellipse, parabola, or hyperbola. Students can then graph the equation.	Solving quadratic equations Graphs of quadratic functions
18	Students use fundamental counting principles to compute combinations and permutations.	Permutations Combinations
19	Students use combinations and permutations to compute probabilities.	Permutations Combinations
20	Students know the binomial theorem and use it to expand binomial expressions that are raised to positive integer powers.	Binomial coefficients
21	Students apply the method of mathematical induction to prove general statements about the positive integers.	–
22	Students find the general term and the sums of arithmetic series and of both finite and infinite geometric series.	Sequences and rules Arithmetic sequences Geometric sequences Sequences and series The sum of an arithmetic series The sum of a geometric series
23	Students derive the summation formulas for arithmetic series and for both finite and infinite geometric series.	The sum of an arithmetic series The sum of a geometric series
24	Students solve problems involving functional concepts, such as composition, defining the inverse function and performing arithmetic operations on functions.	Functions and relations Domain, range and composite functions Inverse functions
25	Students use properties from number systems to justify steps in combining and simplifying functions.	Domain, range and composite functions