

Michigan State Core Curriculum
Standards adopted 2009
Algebra II

Strand	Reference	Description	Boardworks High School Algebra presentations
L1.Reasoning about numbers, systems, and quantitative situations	L1.2	Representations and Relationships	
	L1.2.1	Use mathematical symbols to represent quantitative relationships and situations.	–
	L1.3	Counting and probabilistic reasoning	
	L1.3.1	Describe, explain, and apply various counting techniques; relate combinations to Pascal's triangle; know when to use each technique.	Permutations Combinations The sum of a geometric series Binomial coefficients
L2.Calculation, algorithms and estimation	L2.1	Calculation using real and complex numbers	
	L2.1.3	Explain the exponential relationship between a number and its base 10 logarithm, and use it to relate rules of logarithms to those of exponents in expressions involving numbers.	The laws of logarithms Solving equations involving logarithms
	L2.1.5	Add, subtract, and multiply complex numbers; use conjugates to simplify quotients of complex numbers.	–
	L2.2	Sequences and Iterations	
	L2.2.1	Find the nth term in arithmetic, geometric, or other simple sequences.	Arithmetic sequences Geometric sequences Other types of sequences
	L2.2.2	Compute sums of finite arithmetic and geometric sequences.	The sum of an arithmetic series The sum of a geometric series

	L2.2.3	Use iterative processes in such examples as computing compound interest or applying approximation procedures.	Geometric sequences
	L2.3	Measurement units, calculations and scales	
	L.2.3.2	Describe and interpret logarithmic relationships in such contexts as the Richter scale, the pH scale, or decibel measurements; solve applied problems.	Exponential growth and decay
A1.Expressions, equations and inequalities	A1.1	Construction, Interpretation, and Manipulation of Expressions	
	A1.1.1	Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables.	Using equations to solve problems Formula problems Substituting into formulas
	A1.1.4	Add, subtract, multiply, and simplify polynomials and rational expressions.	Operations with polynomials Simplifying rational functions Operations with algebraic fractions
	A1.1.5	Divide a polynomial by a monomial.	Dividing polynomials The factor theorem
	A1.1.6	Transform exponential and logarithmic expressions into equivalent forms using the properties of exponents and logarithms, including the inverse relationship between exponents and logarithms.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms
	A1.2	Solutions of Equations and Inequalities	
	A.1.2.2	Associate a given equation with a function whose zeros are the solutions of the equation.	Function notation Non-linear functions
	A.1.2.5	Solve polynomial equations and equations involving rational expressions and justify steps in the solution.	Solving quadratic equations Simplifying rational functions Operations with algebraic fractions Improper fractions Partial fractions
	A.1.2.7	Solve exponential and logarithmic equations and justify steps in the solution.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay

	A.1.2.8	Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable, and justify steps in the solution.	Substituting into formulas
	A.1.2.9	Know common formulas and apply appropriately in contextual situations.	–
A2.Functions	A.2.1	Definitions, Representations, and Attributes of Functions	
	A.2.1.1	Recognize whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function, and identify its domain and range.	Functions and relations Domain, range and composite functions
	A.2.1.2	Read, interpret, and use function notation, and evaluate a function at a value in its domain.	Non-linear functions Function notation Domain, range and composite functions
	A.2.1.3	Represent functions in symbols, graphs, tables, diagrams, or words, and translate among representations.	Plotting and sketching graphs
	A.2.1.6	Identify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as x approaches positive or negative infinity, given the symbolic and graphical representations.	Plotting and sketching graphs
	A.2.1.7	Identify and interpret the key features of a function from its graph or its formula(s).	Plotting and sketching graphs
	A2.2	Operations and Transformations with Functions	
	A2.2.1	Combine functions by addition, subtraction, multiplication, and division.	Domain, range and composite functions
	A2.2.2	Apply given transformations to parent functions, and represent symbolically.	Transforming functions part 1 Transforming functions part 2
	A2.2.3	Recognize whether a function (given in tabular or graphical form) has an inverse, and recognize simple inverse pairs.	Inverse functions
	A2.3	Representations of functions	

	A2.3.1	Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior.	Graphs of important non-linear functions Plotting and sketching graphs
	A2.3.3	Write the general symbolic forms that characterize each family of functions.	Non-linear functions Graphs of important non-linear functions
	A2.4	Models of Real-World Situations Using Families of Functions	
	A2.4.1	Identify the family of functions best suited for modeling a given real-world situation.	Graphs of important non-linear functions Plotting and sketching graphs
	A2.4.2	Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.	Graphs of important non-linear functions Plotting and sketching graphs
	A2.4.3	Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.	Plotting and sketching graphs
A3.Families of functions	A3.2	Exponential and Logarithmic Functions	
	A3.2.2	Interpret the symbolic forms and recognize the graphs of exponential and logarithmic functions.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms
	A.3.2.3	Apply properties of exponential and logarithmic functions.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms
	A3.6	Rational functions	Simplifying rational functions Operations with algebraic fractions Improper fractions Partial fractions
	A3.6.1	Write the symbolic form and sketch the graph of simple rational functions.	Simplifying rational functions Operations with algebraic fractions Improper fractions Partial fractions

	A3.6.2	Analyze graphs of simple rational functions and understand the relationship between the zeros of the numerator and denominator, and the function's intercepts, asymptotes, and domain.	–
G1.Figures and their properties	G1.7	Conic sections and their properties	
	G1.7.1	Find an equation of a circle given its center and radius; given the equation of a circle, find its center and radius.	The equation of a circle
	G1.7.2	Identify and distinguish among geometric representations of parabolas, circles, ellipses, and hyperbolas; describe their symmetries, and explain how they are related to cones.	–
	G1.7.3	Graph ellipses and hyperbolas with axes parallel to the x- and y-axes, given equations.	–
S1.Univariate data - examining distributions	S1.1	Producing and interpreting plots	
	S1.1.1	Construct and interpret dot plots, histograms, relative frequency histograms, bar graphs, basic control charts, and box plots with appropriate labels and scales; determine which kinds of plots are appropriate for different types of data; compare data sets and interpret differences based on graphs and summary statistics.	Comparing data Bar graphs Frequency diagrams Histograms The range and interquartile range Quartiles and box plots Scatter plots
	S1.2	Measures of Center and Variation	
	S1.2.1	Calculate and interpret measures of center including: mean, median, and mode; explain uses, advantages and disadvantages of each measure given a particular set of data and its context.	The mode The median The mean Which measure of central tendency