MA.AA2:1 Students will use complex numbers in polynomial identities and equations. (CN2, CN7, CN8, CN9)

MA.AA2:1-1 Use Euler's notation ($3i$, etc) to simplify square roots.
MA.AA2:1-2 Add, subtract, multiply, and divide complex numbers.

MA.AA2:2 Students will build functions. (BF1c, BF2, BF4a, BF4b, BF4d, BF5)

MA.AA2:2-1 Perform operations with functions and compositions of functions.
MA.AA2:2-2 Find the inverse of a function.
MA.AA2:2-3 Determine if a relationship is a direct or inverse relationship, or neither.

MA.AA2:3 Students will demonstrate an understanding of arithmetic performed on polynomials, rational expressions, and rational equations. (A.SSE2, APR3, APR7)

MA.AA2:3-1 Rewrite the structure of complicated rational and radical expressions. (e.g. rationalize denominators, rational exponents.)
MA.AA2:3-2 Add, subtract, multiply, and divide nonzero rational and radical expressions.
MA.AA2:3-3 Use long and synthetic division to divide polynomials.

MA.AA2:4 Students will solve equations as a process of reasoning and explain the reasoning. (REI2, REI4a, REI4b, REI7, REI8, REI11, REI12, CED1, CED4)

MA.AA2:4-1 Solve rational and radical equations in one variable, resulting in quadratics or involving literal equations.

MA.AA2:4-2 Complete the square to transform any quadratic equation into vertex form.

MA.AA2:4-3 Solve quadratic equations with lead coefficients that have real or complex solutions by completing the square, the quadratic formula or factoring. (Write complex solutions in the form $a \pm bi$ for real numbers a and b and use the discriminant to determine the number of real solutions.)

MA.AA2:4-4 Solve systems of equations consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. (e.g. find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$).

MA.AA2:4-5 Represent a system of equations as a single augmented matrix or a matrix as a system of equations.

MA.AA2:4-6 Graph the solution to a system of inequalities in two variables, including quadratic and absolute value functions.

MA.AA2:4-7 Solve absolute value and linear equations and inequalities in one variable.

MA.AA2:4-8 Solve a system of 2 or 3 equations of first degree given the equations or a real world context.

MA.AA2:4-9 Solve quadratic inequalities in one variable.

MA.AA2:5 Students will demonstrate understanding of the concept of a function and use function notation. (IF4, IF5, IF6, IF7a, IF7b, IF7c, IF7d, IF8, IF9)

MA.AA2:5-1 Calculate the average rate of change of a nonlinear function over a specified interval.

MA.AA2:5-2 Graph, identify, or write quadratic functions showing vertex, axis of symmetry, intercepts, maxima, minima, domain, and range.

MA.AA2:5-3 Graph, identify, or write cubic, radical, absolute value, and rational functions and recognize any transformations.

MA.AA2:5-4 Interpret the zeros and maximum or minimum values of the graph of a quadratic function in terms of a context.

MA.AA2:5-5 Identify and interpret domain and range of a given function or context.

MA.AA2:6 Students will use categorical and quantitative data. (ID6)

MA.AA2:6-1 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

MA.AA2:6-2 Fit a function to data represented on a scatter plot.

MA.AA2:6-3 Represent a quadratic function given various characteristics (e.g. 3 points, vertex and stretch)

MA.AA2:7 Students will perform operations on vectors and matrix quantities and use them in applications. (VM.6, VM7, VM8, VM10, VM12, REI.9)

MA.AA2:7-1 Add, subtract, and multiply matrices of appropriate dimensions.
MA.AA2:7-2 Find the determinant of square matrices.
MA.AA2:7-3 Find the inverse of a square matrix.
MA.AA2:7-4 Solve systems of equations using matrices with a calculator.