Advanced Algebra Learning Targets (Proficiencies) 2011-2012

AA 0 **Presumed Knowledge**	AA0a.Linear Relationships- including, modeling linear data using multiple representations, interpreting slope and y-intercepts, writing linear equations from 2 points or 1 point and slope. AA0b.Algebraic Manipulation- including, solving basic linear equations, performing order of operations, simplifying/expanding expressions, and performing operations with fraction, decimal, and radical numbers.
AA 1 **Algebraic Manipulation**	AA1a.Simplify/expand expressions into equivalent algebraic expressions, including integer exponents* and fractional exponents*. AA1b.Solve linear, quadratic, literal, absolute value*, radical* and rational* equations. AA1c.Factor expressions.
AA 2 **Functions and Relations**	AA2a.Interpret and use function notation. AA2b.Determine whether or not a relation is a function. AA2c.Describe domain and range of functions using different notations. AA2d.Investigate functions given tables, graphs, equations and/or situations. AA2e.Model situations with functions, interpret solutions within a context, and use models to make predictions.*
AA 3 **Sequences**	AA3a.Describe growth patterns in sequences, identify whether they are arithmetic, geometric or neither and generate additional terms. AA3b.Find equations for arithmetic and geometric sequences and determine whether or not an element is a term of a sequence.
AA 4 **Exponents and Exponential Functions**	AA4a.Apply properties of integer exponents to simplify expressions and solve equations. AA4b.Apply properties of fractional and negative exponents to simplify expressions and solve equations. AA4c.Model exponential data using multiple representations and interpret exponential growth and decay.
AA 5 **Transformations of Parent Graphs**	AA5a.Recognize, describe, graph, and write equations for basic transformations of parent graphs, including dilations, reflections, and horizontal and vertical translations. (Linear, Quadratics, Cubics, Exponentials, Hyperbolic, Absolute Value, Radical, Circles, "Sideways" Parabolas)
AA 6 **Quadratic Functions**	AA6a.Recognize and use standard, graphing (vertex), and intercept form of quadratic equations. AA6b.Model quadratic data using multiple representations and interpret different situations.
AA 7 **Systems of Equations and Inequalities**	AA7a.Solve systems of 2 or 3 equations algebraically and graphically and interpret their solutions. AA7b.Write and solve single inequalities and systems of inequalities and interpret their solutions.* AA7c.Solve word problems involving situations that require systems of equations and/or inequalities* (Linear Programming).
AA 9 **Inverses**	AA9a.Find the inverse of a function and represent and describe the relationship using tables, graphs, equations, and domain and range.
AA 10 **Logarithms**	AA10a.Use the definition of logarithms to evaluate logarithms and convert between logarithmic and exponential forms. AA10b.Apply properties of logarithms to solve logarithmic and exponential equations or to simplify expressions.
AA 12 **Polynomials and Complex Numbers**	AA12a.Sketch a graph of a polynomial equation and write polynomial equations given graphs of polynomials or roots. AA12b.Divide polynomials and find the factors and roots of a polynomial. AA12c.Perform basic operations with complex numbers.
AA 14 **Matrices**	AA14a.Perform basic operations with matrices with and without a calculator. AA14b.Solve systems of equations using matrices.
AA15 **Probability**	AA15a. Solve basic probability problems involving tree diagrams, area model and basic properties AA15b. Calculate conditional probabilities and expected value.