Advanced Math Concepts
1st Grading Period

Laws of Exponents and Radicals

Power Objectives:

- **Perform arithmetic operations with complex numbers and use complex numbers in polynomial identities and equations. (P.O. #1)**
- **Write and interpret the structure of expressions in equivalent forms to solve problems. (P.O. #2)**
- **Create equations that describe numbers or relationships. (P.O.# 5)**
- **Understand, represent and solve equations and inequalities graphically. Use this understanding as a process of reasoning and explain the reasoning. (P.O. #6)**
- **Build a function that models a relationship between two quantities and build new functions from existing functions. (P.O.# 8)**

Academic Vocabulary:

- composite functions
- inverse functions
- nth root
- principal root
- radical equation
- radicand
- rational exponent
- rationalize the denominator
- square root equation
- square root function
- extraneous solutions

Enduring Understandings:

- Corresponding to ever power there is a root.
- You can combine like radicals using properties of real numbers.
- You can write a radical expression in an equivalent form using a fractional (rational) exponent instead of a radical sign.
- Solving a square root equation may require that you square each side of the equation. This can introduce extraneous solutions.
- You can add, subtract, multiply, and divide functions based on how you perform these operations for real numbers. One difference is that you must consider the domain of each function.
- The inverse of a function may or may not be a function
- A square root function is the inverse of a quadratic function that has a restricted domain.

Essential Questions:

- To simplify the nth root of an expression, what must be true about the expression?
- When you square each side of an equation, is the resulting equation equivalent to the original?
- How are a function and its inverse function related?