Alg2H Unit 05 (Chapter 8): Rational Functions

Content Area: **Math**
Course(s): **Level 1 Engineering Drawing, Algebra 2 CP, Algebra 2 A, Algebra 2 H**
Time Period: **Marking Period 2**
Length: **4 weeks**
Status: **Published**

Unit Introduction

Standards

MA.A-SSE.A.1a	Interpret parts of an expression, such as terms, factors, and coefficients.
MA.A-SSE.A.1b	Interpret complicated expressions by viewing one or more of their parts as a single entity.
MA.A-SSE.A.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.
MA.F-IF.C.7d	Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end behavior.
MA.A-APR.D.6	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, $b(x)$, $q(x)$, and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.
MA.A-APR.D.7	Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.
MA.A-CED.A.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.
MA.F-BF.B.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.
MA.A-REI.A.2	Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
MA.A-REI.D.11	Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation$f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

Essential Questions

- Are a rational expression and its simplified form equivalent?

Content

- Sec 8.1 - Inverse Variations (pg. 498)
- Sec 8.2 - The Reciprical Function Family (pg. 507)
- Sec 8.3 - Rational Functions and Their Graphs (pg. 515)
- Sec 8.4 - Rational Expressions (pg. 527)
- Sec 8.5 - Adding and Subtracting Rational Expressions (pg. 534)
- Sec 8.6 - Solving Rational Equations (pg. 542)

Skills

- Add/Subtract Rational Expressions
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- Determining an inverse variation
- Factor polynomials
- Finding points of discontinuity
- Finding vertical and horizontal asymptotes
- Graph and use a rational function
- Graphing an inverse variation function
- Identify direct and inverse variations
- Identifying and graphing reciprocal function transformations
- Modeling an inverse variation
- Multiply/Divide Rational Expressions
- Simplify rational expressions
- Using a reciprocal funciton
- Using and applying combined variation
- Writing the equation of a transformation