Advanced Algebra Concepts and Connections Unit 7: Exploring Rational Functions

Overview:

In this unit, students will explore the characteristics and graphical behavior of rational functions. Students will also rewrite and perform operations on rational expressions. Students will explore rational functions as models for real-life phenomena.

Learning Targets

- Explore culturally relevant situations and problems that can be represented with rational expressions.
- Rewrite rational expressions in various equivalent forms, based on the context of the problem, with the understanding that any factor of the numerator, over itself in the denominator, is equal to a factor of one.
- Explore rational operations within the context of real-life problems, e.g., uniform motion, work, mixtures.
- Divide factorable expressions for which no remainder exists.
- Identify characteristics of rational functions either using technology or after given the graphs directly. Characteristics include x and y-intercepts, roots of multiplicity, zeros, and solutions; domain, range, and intervals where the function is increasing, decreasing, positive, and/or negative (using inequality and interval notations); vertex, extreme value, and axis of symmetry; end behavior, using technology where appropriate.
- Check for extraneous solutions.

Key Vocabulary: (linked to GA DOE Interactive Glossary)

Asymptote	Extraneous Solutions	Increasing	Rational Expression	Slant Asymptote
Axis	Features	Irrational Number	Rational Function	Vertical Asymptote
Decreasing	Horizontal Asymptote	Negative Exponent	Reciprocal	Zero
End Behavior		Quadrant	Root	

Supporting Resources:

http://ctlslearn.cobbk12.org/

https://gavirtual.instructure.com/courses/34342

Rational Expressions

Multiplying rational expressions

Graph a Rational Function by Making a Table