

## Algebra 2 Honors Unit 5: Rational Functions, expressions, and equations

### Universal Essential Question: Why is modeling phenomena essential?

**Goals of the Unit: Develop techniques to graph rational functions, simplify rational expressions, and solve rational equations**

| Learning Objectives  | Self-Rating, what you understand/don't yet understand and (last column only) how you learned it   |  |  |
|--|---|--|--|
| At the completion of this unit, I should ...   | 0 – I have no idea.<br>1 – I cannot solve problems yet but I am beginning to understand the strategies<br>2 – I can solve problems but do not yet know why the math works.<br>3 – I understand why the math works and can solve most problems but still make mistakes.<br>4 – I understand why the math works and can consistently and accurately solve problems. |  |  |
| <b>Know</b><br>– The vocabulary related to rational functions, expressions, and equations.<br><br>– Properties of rational functions   |   |  |  |
| <b>Be able to</b><br>– Graph parent rational functions and identify key features of the graph (domain/range, intercepts, asymptotes, increasing/decreasing intervals, end behavior)<br><br>– Identify horizontal and vertical asymptotes, slant asymptotes, and holes from the function's equation and from its graph.<br><br>– Use transformations of functions to graph rational functions and identify asymptotes and holes.<br><br>– Simplify rational expressions by dividing out common factors, multiplying, dividing, adding or subtracting.<br><br>– Solve rational equations<br><br>– Solve a system involving a rational equation and a linear equation |   |  |  |
| <b>Understand</b><br>– How the symbolic form of a rational function relates to the asymptotes of the function.   |   |  |  |

## Vocabulary of Rational Functions

Rational Function

Vertical Asymptote

Horizontal Asymptote

Slant Asymptote

Hole

Singularity

Extraneous Solution

## Reflection

1. *The Good News and the Bad News*: Make a list of everything you know about the mathematical concepts for this unit. Sort your list into "Good news", "Bad news" and one other column of your choice (crazy news, diabolical news, gross news, ...) Take the facts from your lists and turn them into sentences: "The good news about xxx is ... " "The bad news about xxx is ..." "The \_\_\_\_\_ news about xxx is ...."

Example:

The good news about some grasshoppers is that they can become locusts when their population density gets too great.

The bad news about these grasshoppers is that they eat everything in sight.

The gross news about these grasshoppers is that they can cross long distances by making a giant swarm - and they eat each other as fuel as they cross!

Brainstormed List:

List sorted into 3 categories:

The good news about ....

2. Give two examples of how the activities in this unit answer the Essential Question and explain your selections.