Robert Colson’s

Lesson 4.2: **Graphing Rational Functions**

|  |  |
| --- | --- |
| Objectives | * Graph rational functions by identifying asymptotes and end behavior. * Rewrite simple rational expressions in different forms using long division. |
| Language Objective | * SWBAT use a 3-reads protocol to interpret an Algebra 2 word problem by listening to the teacher’s reading and summarizing the situation in a sentence, reading it aloud to state the math question, and silently rereading to list key facts and figures. |
| Essential Understanding | A rational function is any function *R*(*x*) =  where *P*(*x*) and *Q*(*x*) are polynomial functions. The domain of a rational function is all real numbers except any *x*-values for which *Q*(*x*) equals to zero. The graph of a rational function has one or more asymptotes, which guide the end behavior of the graph. |

**EXPLORE & REASON** *using DESMOS*

1. **Look for Relationships**. Graph each function. Determine whether the functions are linear. Find the y intercept of each function, and slope, if appropriate.

|  |  |  |  |
| --- | --- | --- | --- |
| Function | Linear? (Yes/No) | y-intercept | Slope |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

1. What is the effect on the graph of f when dividing x-1 by 2?
2. What happens to the graph of h as x approaches 2?
3. **Communicate Precisely**. What is the effect on the graph of f(x) when dividing x-1 by x-2. (Hint: Compare it to what you found in part (B)

|  |  |  |
| --- | --- | --- |
| **A person and a child looking at a picture  Description automatically generated** | **First Read - Understanding the Context** |  |
| *What is the core of the problem?*   * I think this problem is about... |  |
| **Second Read - Interpreting the Question** |  |
| *What are we trying to find out?*   * I know the problem is asking...because... |  |
| **Third Read - Identifying Information** |  |
| *What are the important quantities, relationships, and other relevant information?*   * The quantities are... * I can count... * These quantities help me to answer... * The information from the situation that we need is... |  |
| Solution (show and explain your answer) | |
|  | |
| Interpretation of solution (interpret your solution in your own words) | |
|  | |

**A green and black box

AI-generated content may be incorrect.  
A black text on a white background

AI-generated content may be incorrect.**

**A grid of blue squares

Description automatically generated**

**Check, using Desmos.**

**A close up of a sign

AI-generated content may be incorrect.  
A black and white math equation

AI-generated content may be incorrect.**

**A grid of blue squares

Description automatically generated**

**A close up of a sign

AI-generated content may be incorrect.**

**A black and white math equation

AI-generated content may be incorrect.**

**A grid of blue squares

Description automatically generated**

A screenshot of a math problem

Description automatically generated

**A close up of words

AI-generated content may be incorrect.A grid of blue squares

Description automatically generatedA black text on a white background

AI-generated content may be incorrect.A grid of blue squares

Description automatically generated**

**A black text on a white background

AI-generated content may be incorrect.**

**A grid of blue squares

Description automatically generated**

**A close-up of a sign

AI-generated content may be incorrect.**

**There are 3 cases to consider, below is case 1:**

**A grid of blue squares

Description automatically generated**

**A close-up of a sign

AI-generated content may be incorrect.**

**There are 3 cases to consider, below is case 2:**

**A grid of blue squares

Description automatically generated**

**A close-up of a sign

AI-generated content may be incorrect.**

**There are 3 cases to consider, below is case 3:**

**A grid of blue squares

Description automatically generated**

**A close-up of a sign

AI-generated content may be incorrect.**

**A grid of blue squares

Description automatically generated**

**A black text on a white background

AI-generated content may be incorrect.**

**A black math equation with numbers and symbols

AI-generated content may be incorrect.**

**A black and white math equation

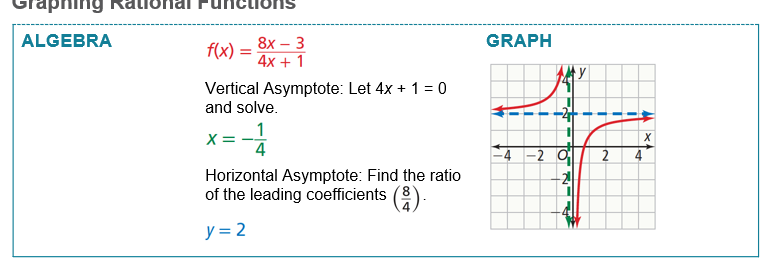
AI-generated content may be incorrect.**

**Practice & Problem Solving**

|  |  |
| --- | --- |
|  |  |
|  |  |
|  |  |
|  |  |

**A screenshot of a math equation

AI-generated content may be incorrect.**

****