LESSON 7.3 Assignment

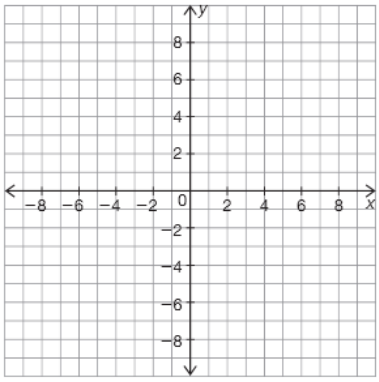
Name _____ Date _____

A Rational Approach

Exploring Rational Functions Graphically

1. Consider the functions $f(x) = x^2 + x - 6$ and $g(x) = \frac{1}{x^2 + x - 6}$.

   a. Graph and label the function $f(x) = x^2 + x - 6$ on the given coordinate plane.

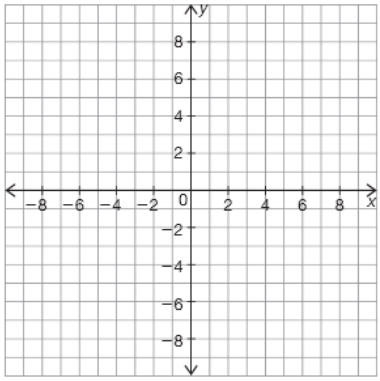


   b. Graph and label the function $g(x) = \frac{1}{x^2 + x - 6}$ on the same coordinate plane.

   c. Determine the domain, range, vertical asymptote(s), horizontal asymptote(s), and y-intercept of $g(x)$.

   d. How do the output values of $f(x)$ and $g(x)$ compare for any given input value?

2. Write a rational function with vertical asymptotes $x = 0$ and $x = 6$ and a horizontal asymptote $y = -2$. Sketch the function on the given coordinate plane.



3. Consider the basic rational function $f(x) = \frac{1}{x}$.

a. Explain how the graph of $g(x) = f(x + 5) - 9$ compares to the graph of $f(x)$.

b. Explain how the graph of $h(x) = \frac{10}{x} + 8$ compares to the graph of $f(x)$.

c. Explain how the graph of $m(x) = \frac{4}{x - 7} - 1$ compares to the graph of $f(x)$.

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