Name: Period: Date:

Practice Worksheet: Rational Functions

PART I: Determine any horizontal or vertical asymptotes.

1] $y = \frac{3}{x+2}$

2] $y = \frac{x-5}{x+1}$

3] $y = \frac{x}{1-x}$

4] $y = \frac{x}{x-5}$

5] $y = \frac{2}{x-3}$

6] $y = \frac{1}{x+5}$

7] $y = \frac{1}{x} + 5$

8] $y = \frac{1}{x+1} + 1$

9] $y = \frac{x+3}{x-2}$

10] $y = \frac{4}{x}$

11] $y = \frac{1}{x+4}$

12] $y = \frac{1}{x-2} - 3$

PART II: Determine the hole in the following graphs.

1] $f(x) = \frac{(x-2)(x+3)}{(x+2)(x-2)}$

2] $f(x) = \frac{x^2-x}{x}$

3] $f(x) = \frac{x^2+3x-28}{(x^3-11x^2+28x)}$

4] $f(x) = \frac{x^2+3x}{x}$

PART III: Determine any horizontal, vertical, or slant asymptotes or holes in the graph of each function.

1] $f(x) = \frac{1}{x-1} - 1$

2] $f(x) = \frac{x^2-x}{x}$

3] $f(x) = \frac{x+3}{x-3}$

4] $f(x) = \frac{x^2+2x-3}{x-1}$

5] $f(x) = \frac{-2}{(x+1)^2}$

6] $f(x) = \frac{x^2+x-6}{x}$

7] $f(x) = \frac{x^2+2x+1}{x}$

8] $f(x) = \frac{x^3-x}{x-1}$

9] $f(x) = \frac{5x^2-10x+1}{x}$

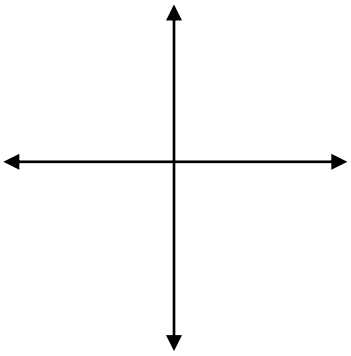
10] $f(x) = \frac{2}{x-3}$

11] $f(x) = \frac{3x^2-2x+1}{2x}$

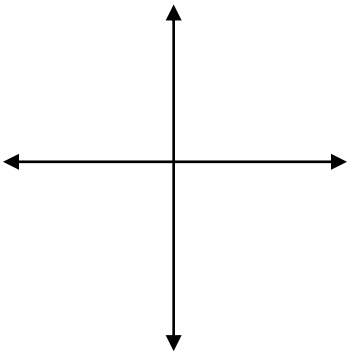
12] $f(x) = \frac{x^2+3x-4}{x}$

Part IV: State the domain of the function, identify all intercepts, find any asymptotes or holes, and plot additional solution points as needed to sketch the graph of the rational functions.

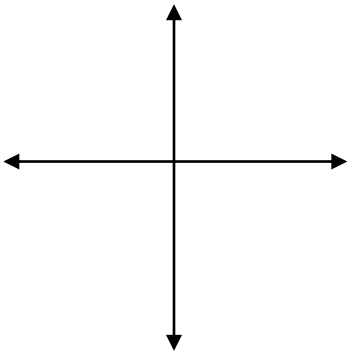
1] $f(x) = \frac{1}{x-3}$



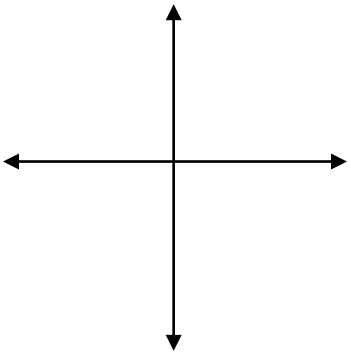
2] $f(x) = \frac{1}{6-x}$



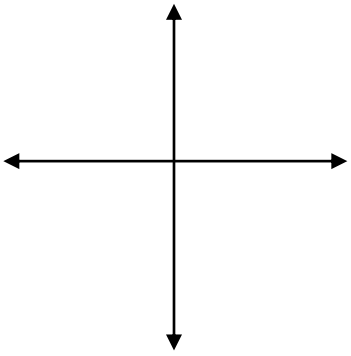
3] $f(x) = \frac{1-3x}{1-x}$



4] $f(x) = \frac{x^2-2x-8}{x^2-9}$



5] $f(x) = \frac{x^2-36}{x+6}$



6] $f(x) = \frac{x^2+5}{x}$