

Algebra II  
Rational Functions

Name \_\_\_\_\_

If  $p(x) = x^2 + 2x - 35$  and  $f(x) = 2x^2 - 5x - 3$  and  $g(x) = 3x^2 - 5x + 2$ , find the domain of the following rational functions.

1.  $\frac{f(x)}{p(x)}$

2.  $\frac{p(x)}{g(x)}$

3.  $\frac{g(x)}{f(x)}$

4.  $\frac{g(x)}{p(x)}$

Graph the following rational functions. State the transformations, equations of asymptotes and domain.

5.  $f(x) = \frac{1}{x} - 2$

6.  $f(x) = \frac{1}{x+3}$

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

8.  $f(x) = -\frac{1}{x-2} + 2$

9.  $f(x) = \frac{1}{x-3} - 2$

10.  $f(x) = -\frac{1}{x+3} + 4$

Solve the following. Make sure to check for extraneous solutions.

11.  $\frac{1}{x^2+2x} = \frac{1}{x}$

12.  $\frac{n-1}{n-8} = \frac{1}{n-8}$

13.  $\frac{w+5}{w+8} = \frac{w+7}{w+1}$

14.  $\frac{b+12}{4b^2} = \frac{b+4}{2b^2}$

15.  $\frac{3x+1}{2x-1} = 3x-1$

16.  $\frac{(2x+3)(3x-1)}{(x+1)(2x-1)} = 3$