Graphing Rational Functions Using Transformations

Name _____

Date _____ Period _____

Rational Parent Function

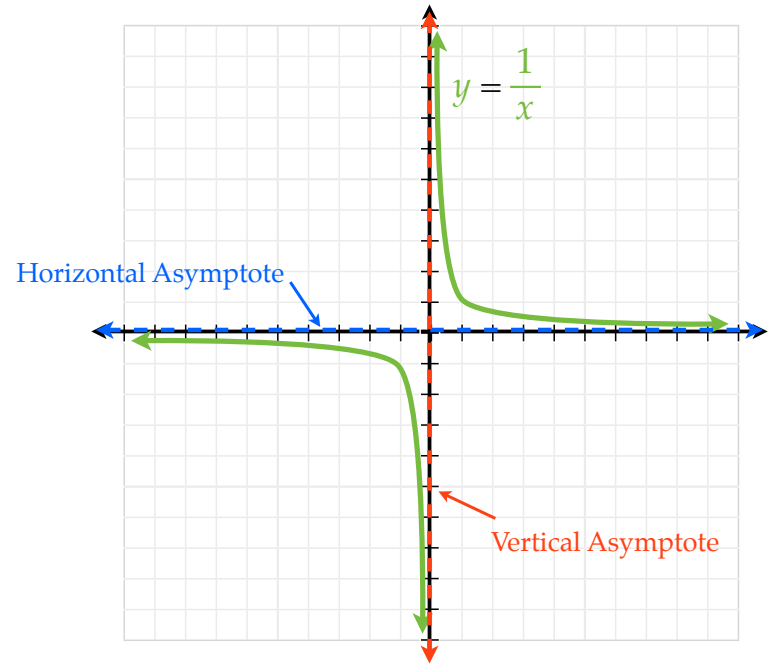
$$y = \frac{1}{x}$$

Horizontal Asymptote

$y = 0$

Vertical Asymptote

$x = 0$



Rational Function

$|a|$ gives vertical stretch or compression

$a < 0$; reflect over horizontal asymptote

$$y = \frac{a}{x - h} + k$$

equation for vertical asymptote;

$x = h$

equation for the horizontal asymptote;

$y = k$

Rational Function

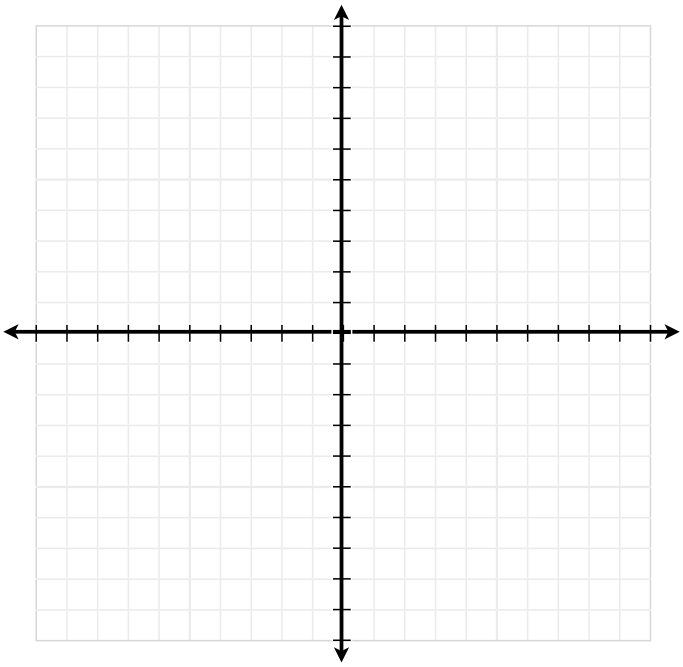
$$y = \frac{a}{x - h} + k$$

Given the following rational functions, label a, h, and k

$$y = \frac{2}{x - 3} + 5 \qquad y = \frac{-1}{x + 2} - 6 \qquad y = \frac{3}{x} + 2 \qquad y = \frac{-2}{x + 4}$$

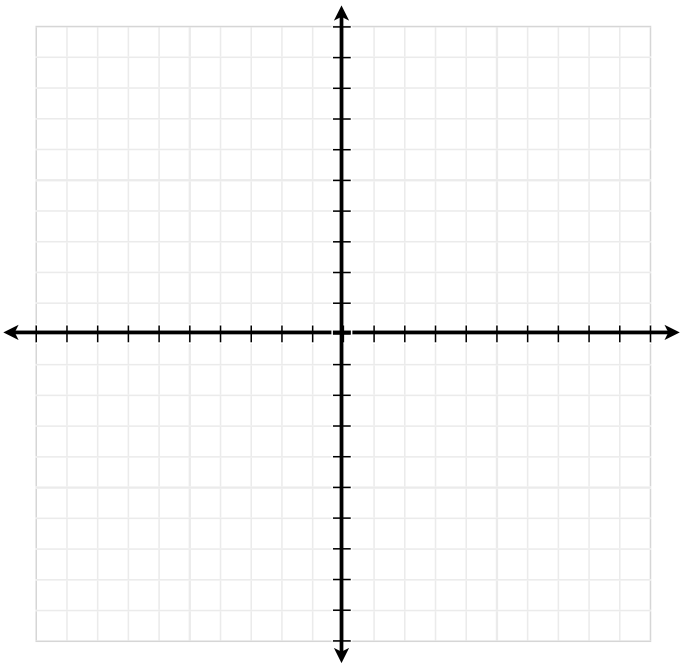
Graph the following rational functions

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



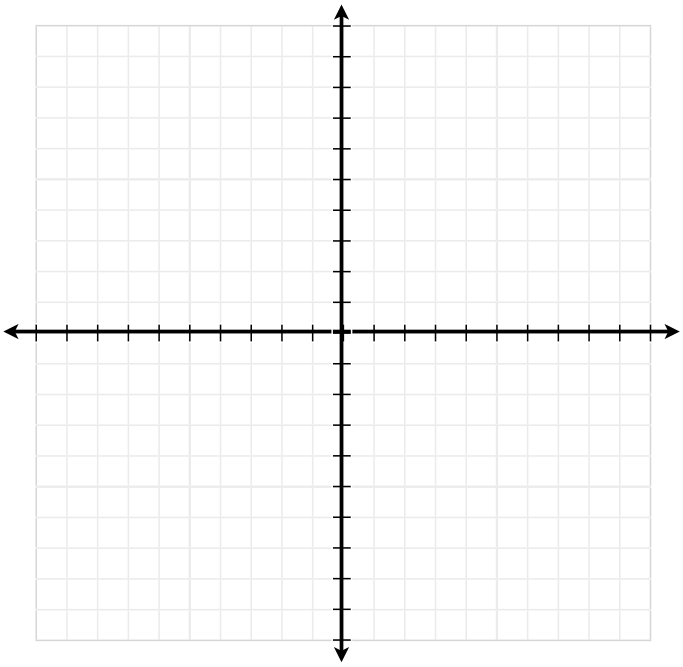
Graph the following rational functions

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



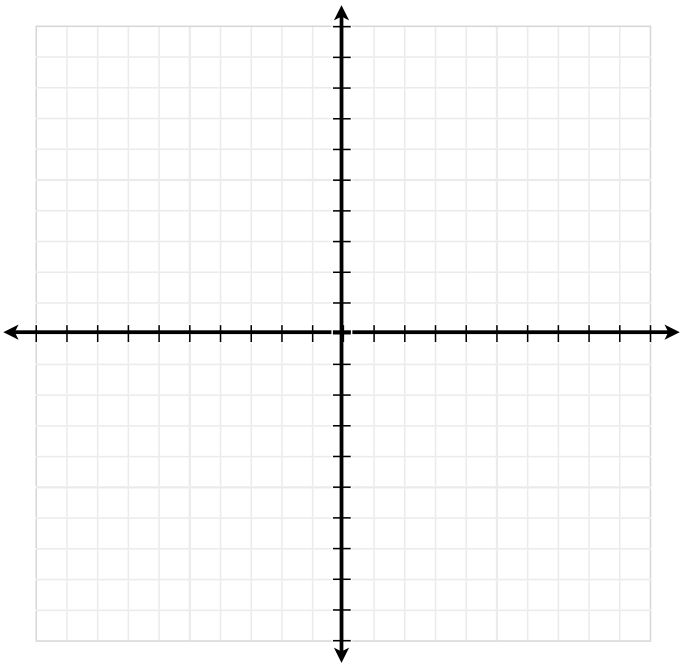
Graph the following rational functions

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



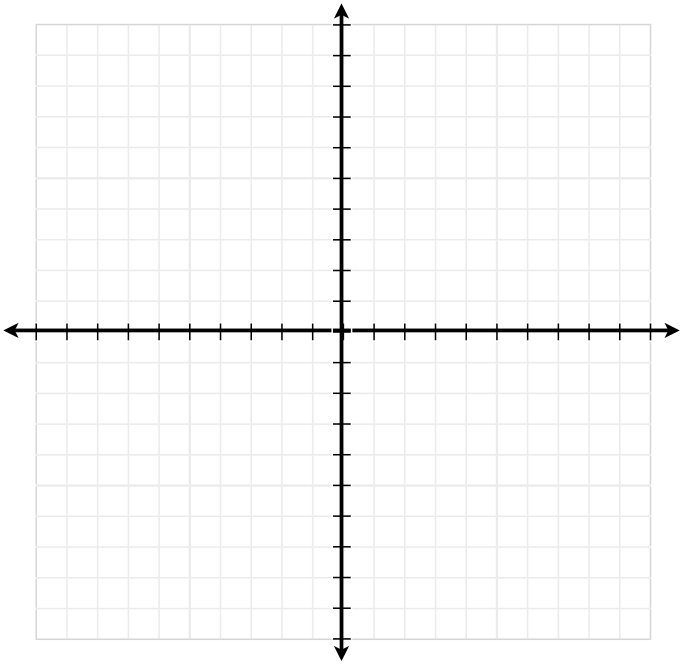
Graph the following rational functions

$$y = \frac{1}{(x-3)^2} + 2$$



Graph the following rational functions

$$y = \frac{-2}{(x+1)^2} - 3$$



Rational Function

$|a|$ gives vertical stretch or compression
$a < 0$; reflect over horizontal asymptote

$$y = \frac{a}{x - h} + k$$

equation for vertical asymptote;
$x = h$

equation for the horizontal asymptote;
$y = k$