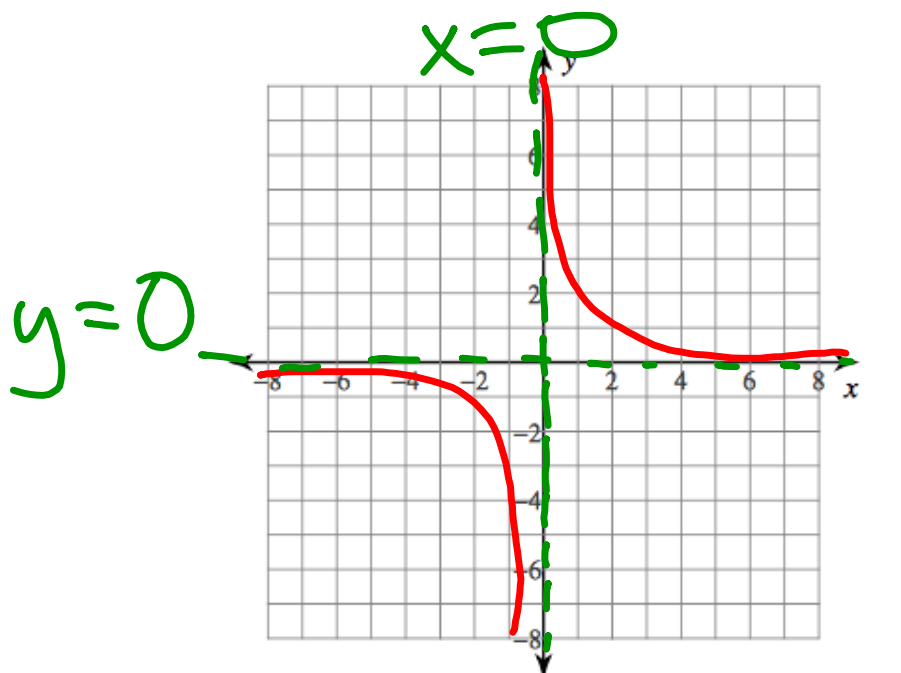


9-1 Rational Functions

Objectives:

- I can determine the domain, range, end behavior, and intervals of increasing and decreasing of rational functions.
- I can identify the transformation of a given function and sketch a graph
- I can write a rational equation given a graph.

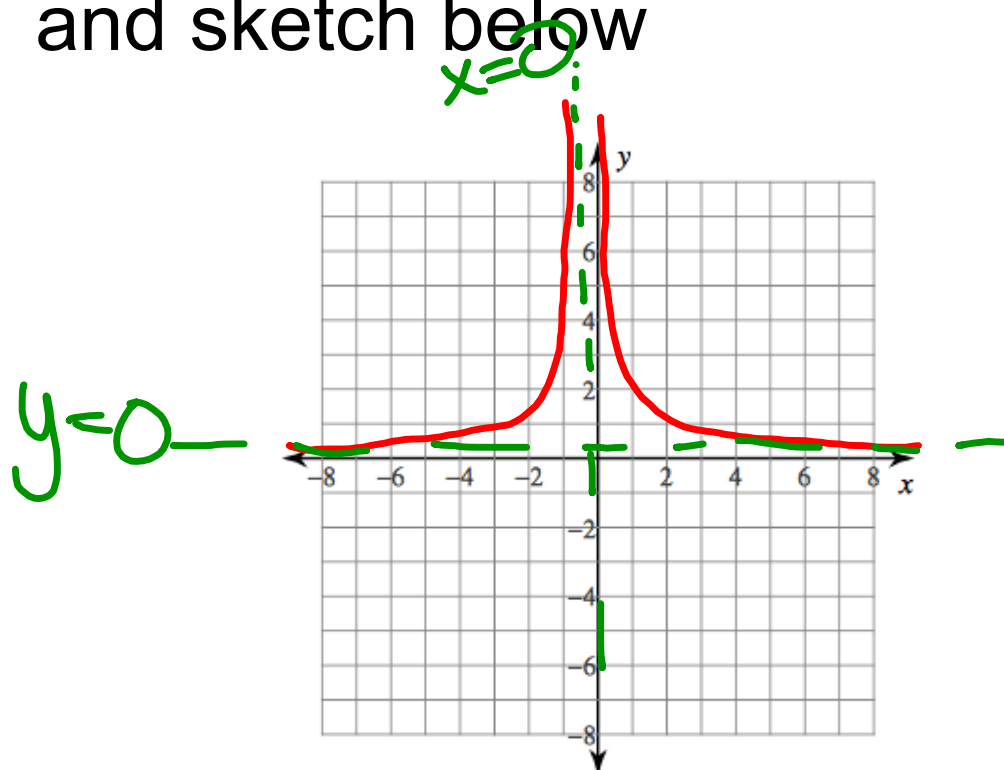
Graph $f(x) = \frac{1}{x}$ on your calculator
and sketch below



What are the excluded values?

Where are the asymptotes?

Graph $f(x) = \frac{1}{x^2}$ on your calculator
and sketch below

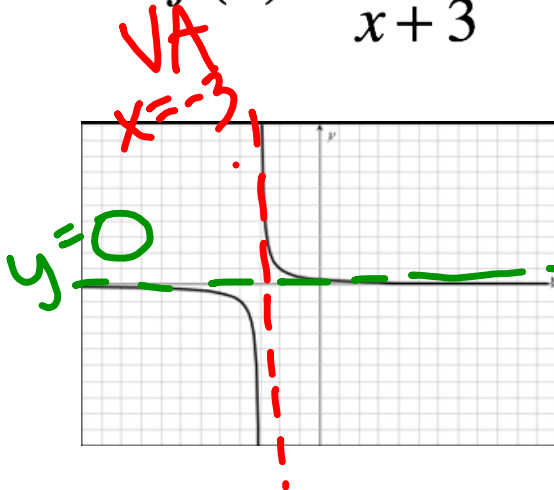


What are the excluded values?

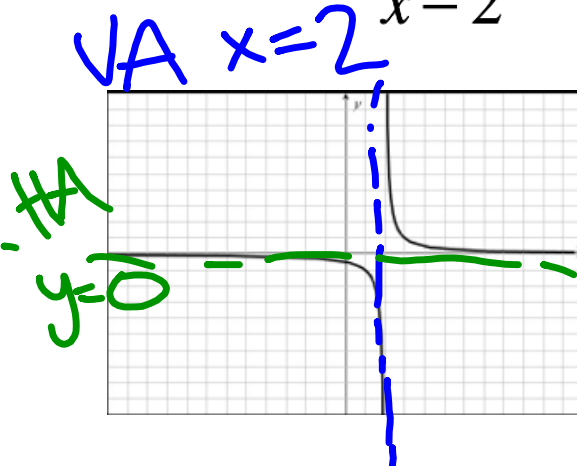
Where are the asymptotes?

What are the excluded values of the graph below? How do they correspond to the graph?

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

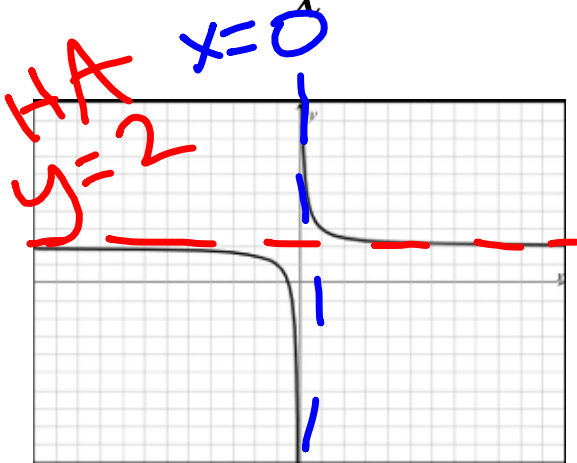


$$f(x) = \frac{1}{x-2}$$

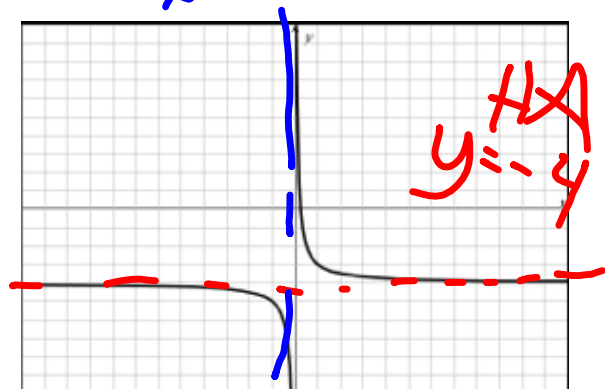


How do the changes to the equation affect the graph?

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



$$f(x) = \frac{1}{x} - 4$$



How do h and k change the parent function?

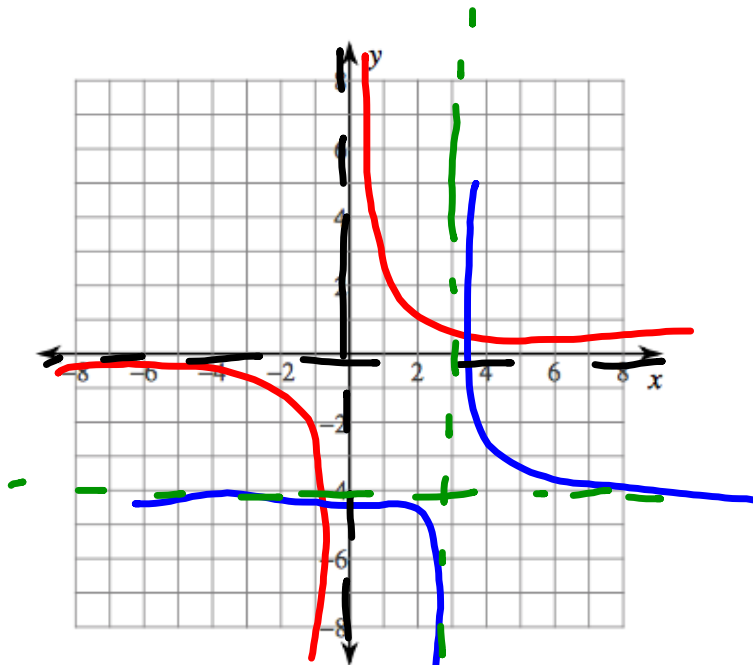
$$f(x) = \frac{1}{x - h} + k$$

X'S
LIE

left shift
right
(excluded
value/VA)

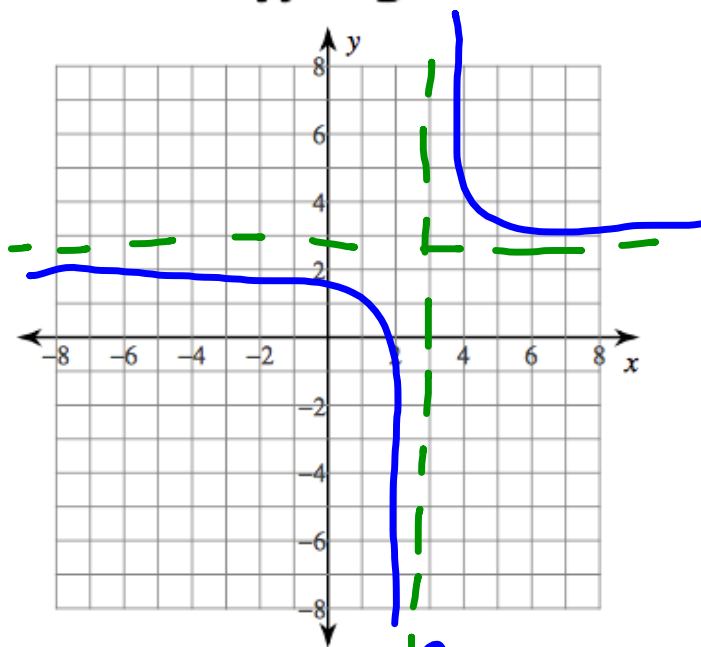
up shift
down
(HA)

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



Vertical Asymptote: $x=3$
Horizontal Asymptote: $y=-4$

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



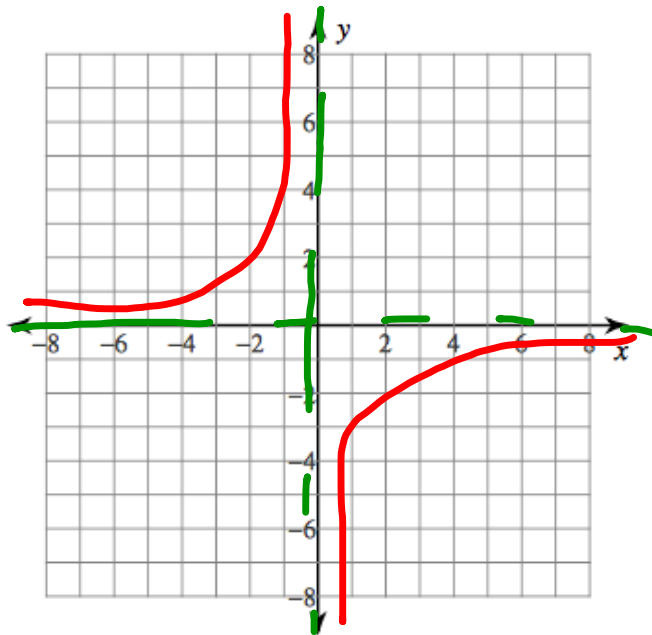
Vertical Asymptote:

$$x = 3$$

Horizontal Asymptote:

$$y = 3$$

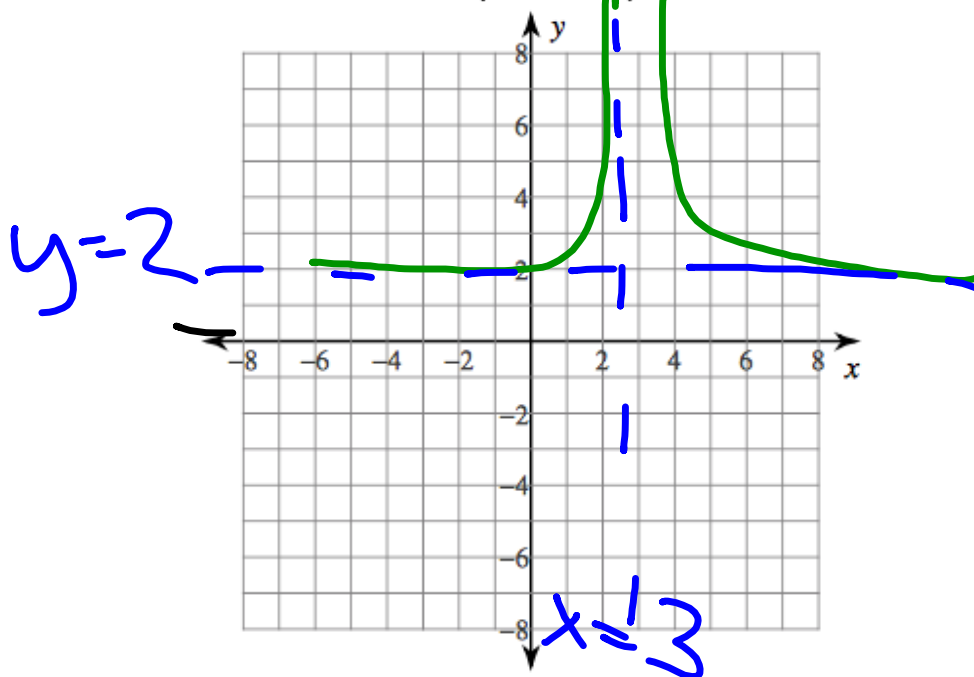
$$f(x) = -\frac{1}{x}$$



Vertical Asymptote:

Horizontal Asymptote:

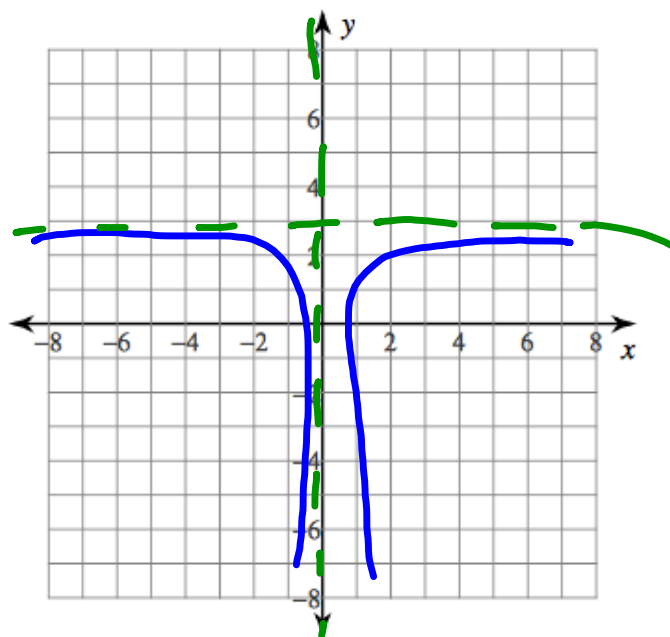
$$f(x) = \frac{1}{(x-3)^2} + 2$$



Vertical Asymptote:

Horizontal Asymptote:

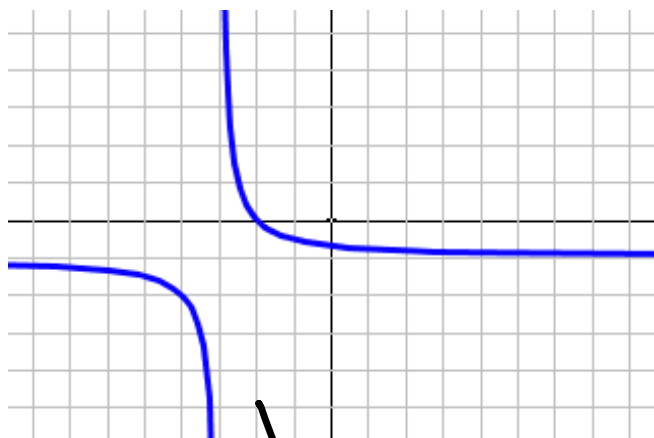
$$f(x) = -\frac{1}{x^2} + 3$$



Vertical Asymptote:

Horizontal Asymptote:

Write the equation for the following graph



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

