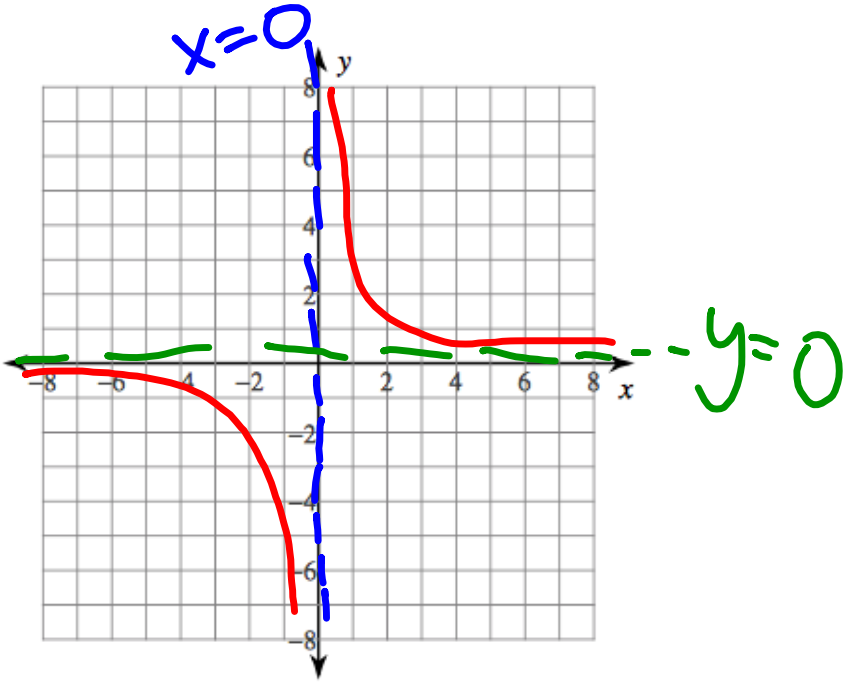
April 10, 2018

11-1 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.

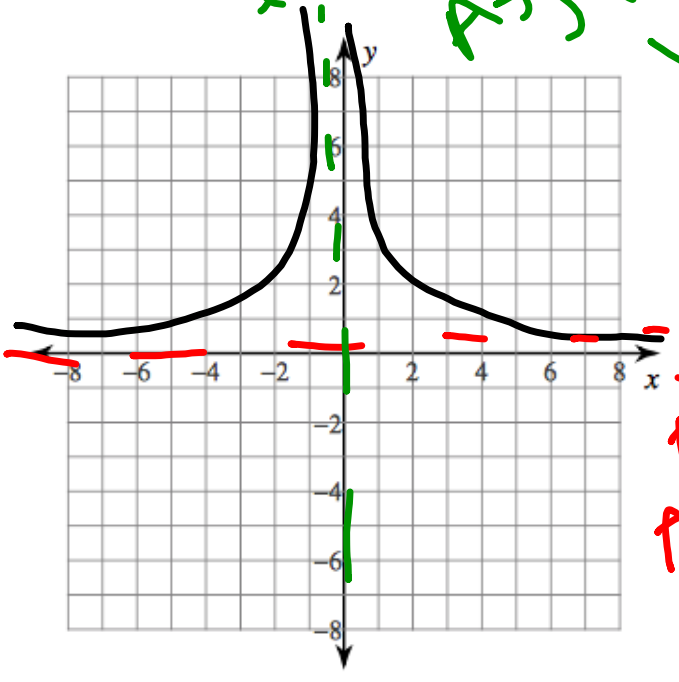
Graph $f(x)=\frac{1}{x}$ on your calculator and sketch below



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?

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

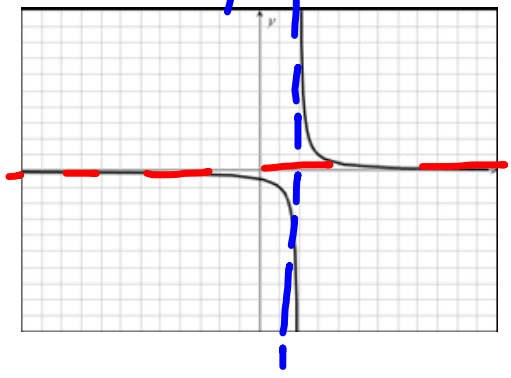
shift left 3

$x=-3$

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

right 2

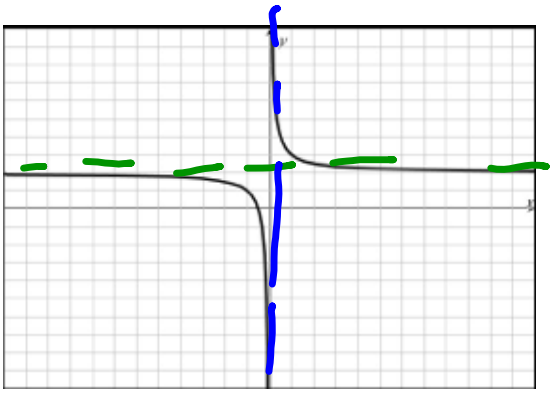
$x=2$

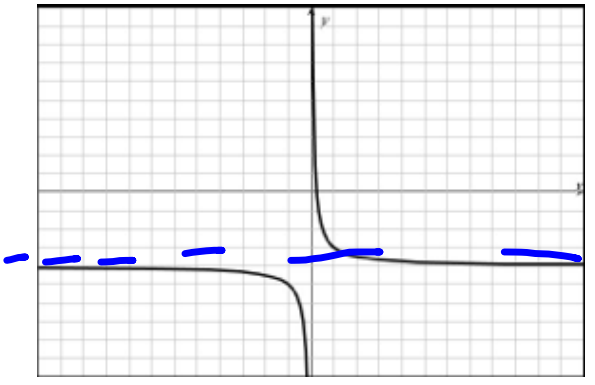


How do the changes to the equation affect the graph?

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

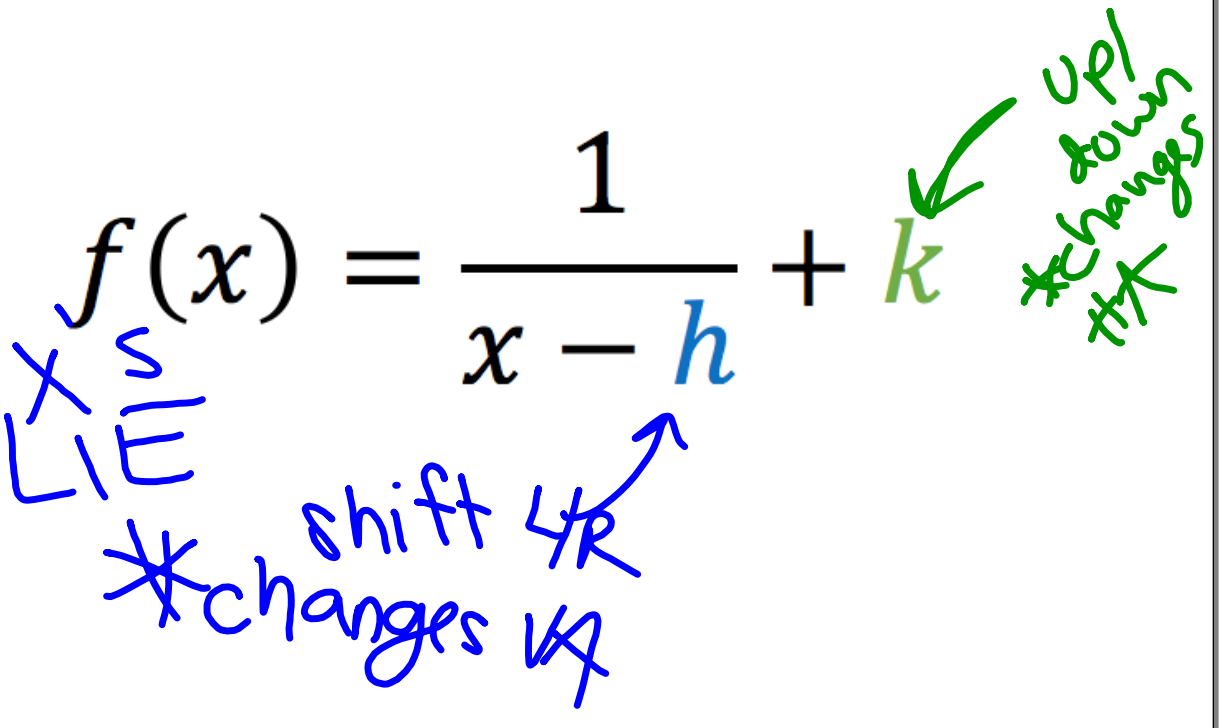
$$f(x)=\frac{1}{x}-4$$



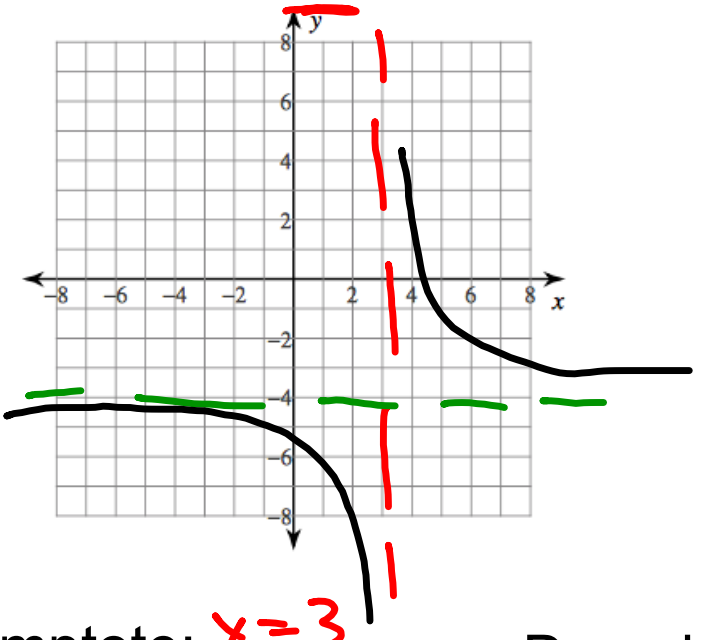


How do h and k change the parent function?

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



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



Vertical Asymptote: $x=3$

Horizontal Asymptote: $y=-4$

~~Domain~~:

~~Range~~:

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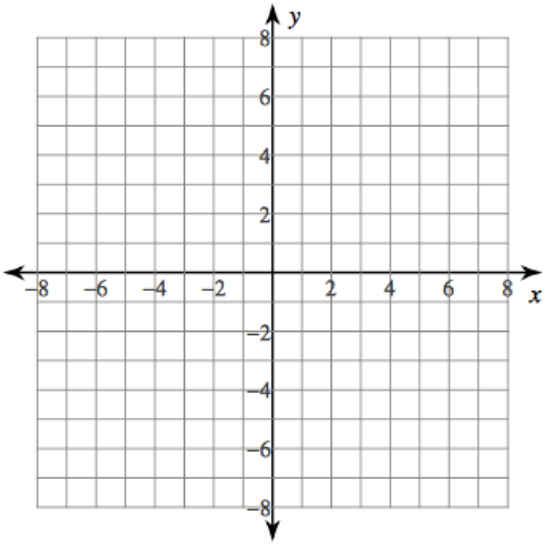
$$f(x)=\frac{1}{x-3}+3$$



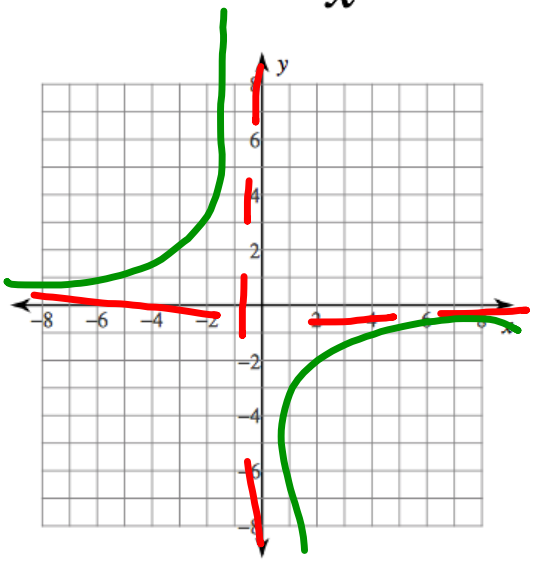
Vertical Asymptote:

Horizontal Asymptote:

Domain:

Range:

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



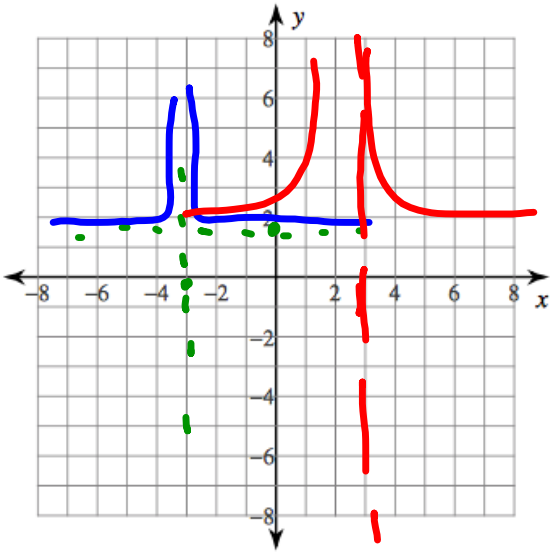
Vertical Asymptote: 0

Horizontal Asymptote: 0

~~Domain:~~

~~Range:~~

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



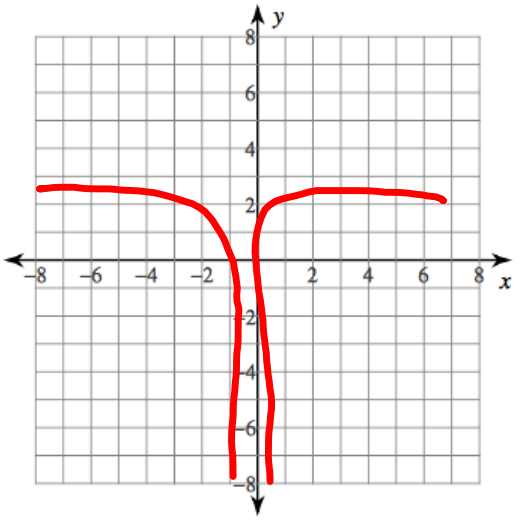
Vertical Asymptote: 3

Horizontal Asymptote: 2

Domain:

Range:

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



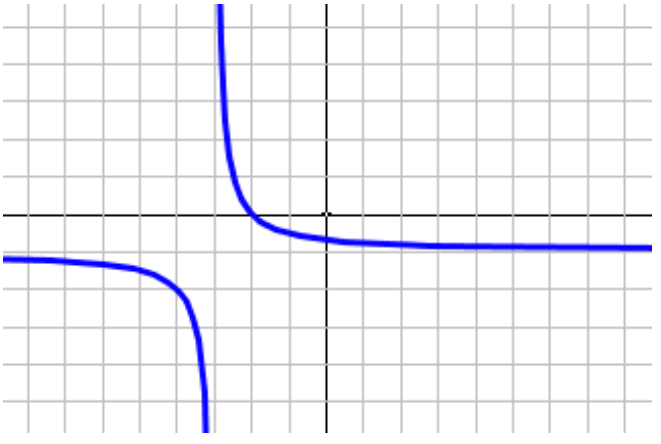
Vertical Asymptote: 0

Horizontal Asymptote: 3

Domain:

Range:

Write the equation for the following graph



HA:

VA:

Domain:

Range: