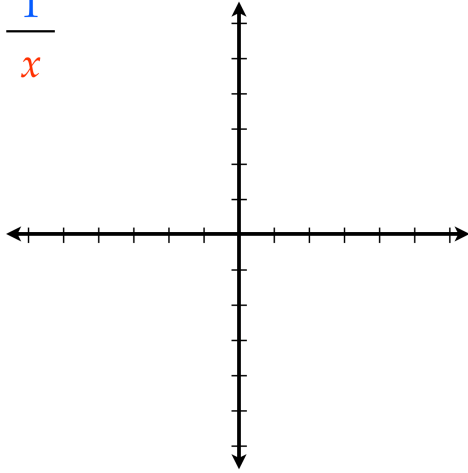
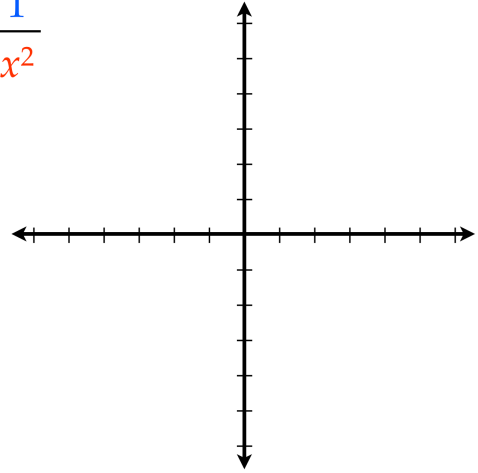


Rational Functions - Parent Functions

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



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



A rational function is a function that can be written in the form

$$f(x) = \frac{p(x)}{q(x)}$$

where $p(x)$ and $q(x)$ are polynomial functions and $q(x)$ is not the zero polynomial.

A rational function is Proper if the degree of $q(x)$ is greater than the degree of $p(x)$.

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

$$g(x) = \frac{x}{2x^2 - 18}$$

$$h(x) = \frac{x^4 + 3x^3}{x + 1}$$

A rational function is Proper if the degree of $q(x)$ is greater than the degree of $p(x)$.
 degree of **denominator** > degree of **numerator**

When graphing rational functions, determine the asymptotes

Horizontal Asymptote:

Vertical Asymptote(s):

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

When graphing rational functions, determine the asymptotes

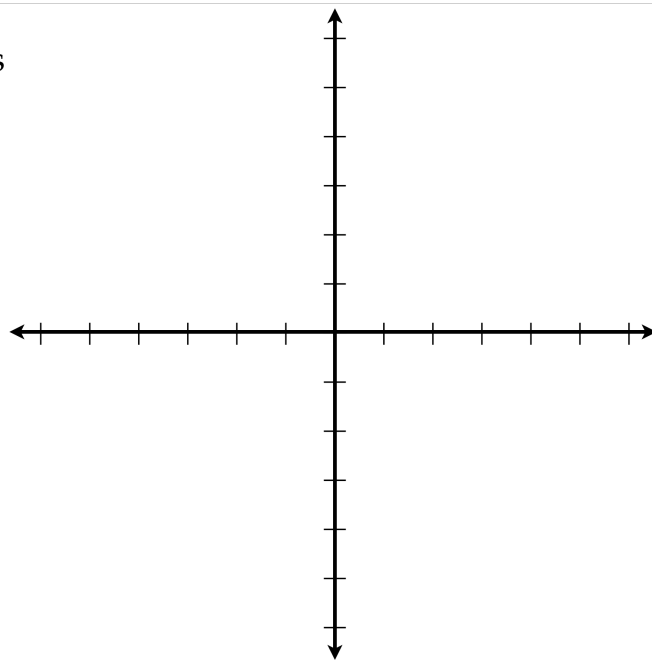
Horizontal Asymptote:

Vertical Asymptote(s):

$$g(x) = \frac{2}{x^2 - 4}$$

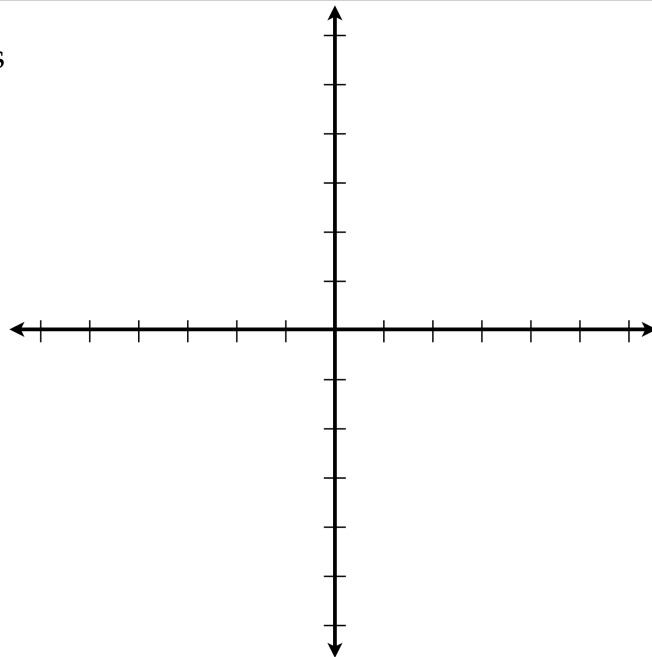
Graph the following proper rational functions

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



Graph the following proper rational functions

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



Graph the following proper rational functions

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

