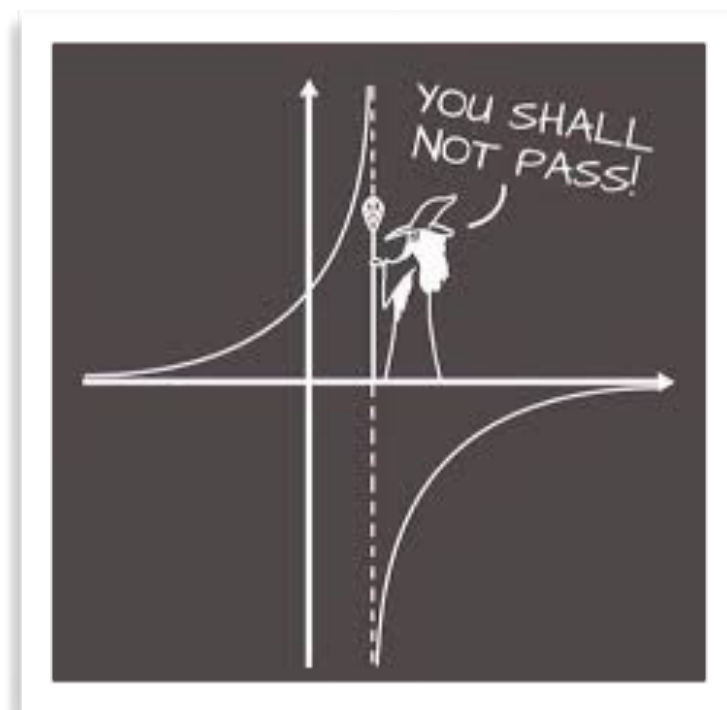


Title of Lesson: Graphing Rational Functions



By the end of this lesson, I will be able to answer the following questions...

1. How do I determine vertical and horizontal asymptotes of rational functions?
2. How do I use polynomial division to determine a slant asymptote?
3. What is the PARENT FORM of a rational function?
4. How do I use rational functions to solve problems?

Vocabulary

1. Vertical Asymptote(s):

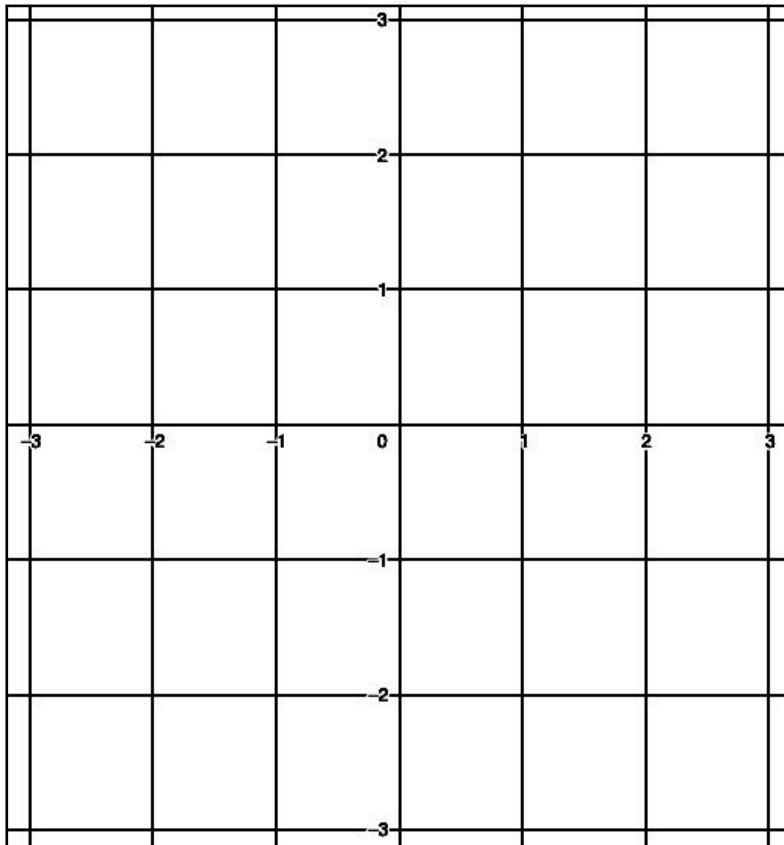
Occur when $D(x) = 0$ and $D(x)$ has no common factors with $N(x)$.

$$f(x) = \frac{N(x)}{D(x)} = \frac{Ax^n + \dots}{Bx^m + \dots}$$

2. Horizontal Asymptote:

- If $m > n$, then the horizontal asymptote is $y = 0$.*
- If $m = n$, then the horizontal asymptote is $y = \frac{A}{B}$*

Prerequisite Skills with Practice



x	$\frac{1}{x}$	y
3		
2		
1		
0		
-1		
-2		
-3		

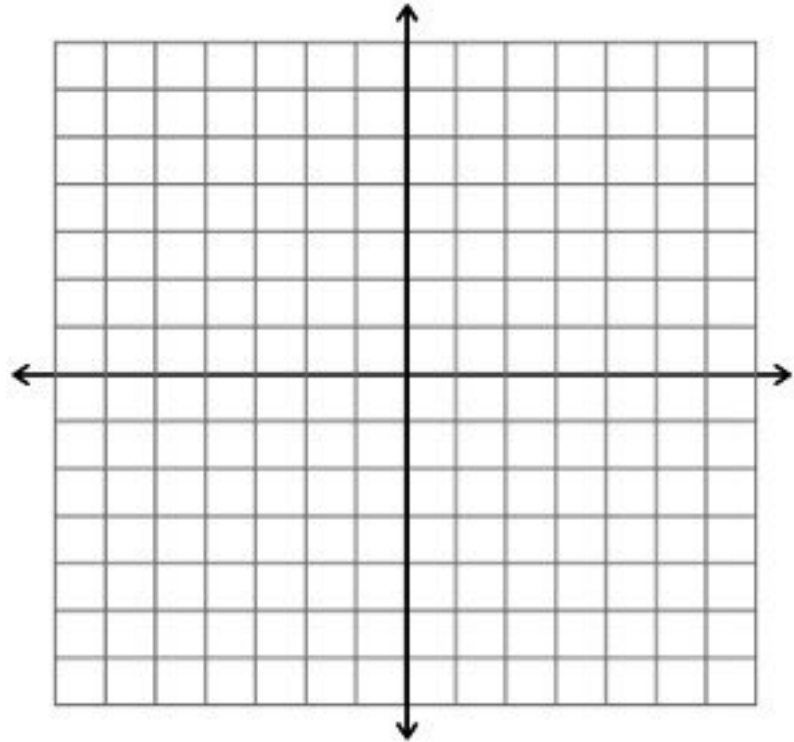
x	$\frac{1}{x}$	y
1/2		
1/3		
-1/3		
-1/2		

Graphing rational functions
from a parent function

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

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

1. Vertical Asymptote:
2. Horizontal Asymptote:
3. X- intercept(s):
4. Y - intercept:
5. Strategic Points if needed.

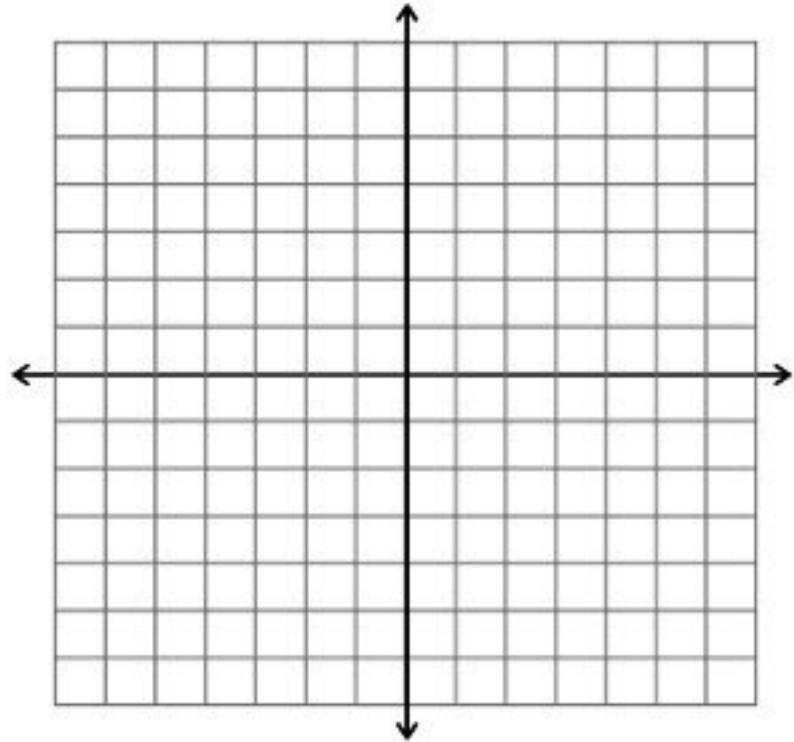


Graphing rational functions
from a parent function

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

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

1. Vertical Asymptote:
2. Horizontal Asymptote:
3. X- intercept(s):
4. Y - intercept:
5. Strategic Points if needed.

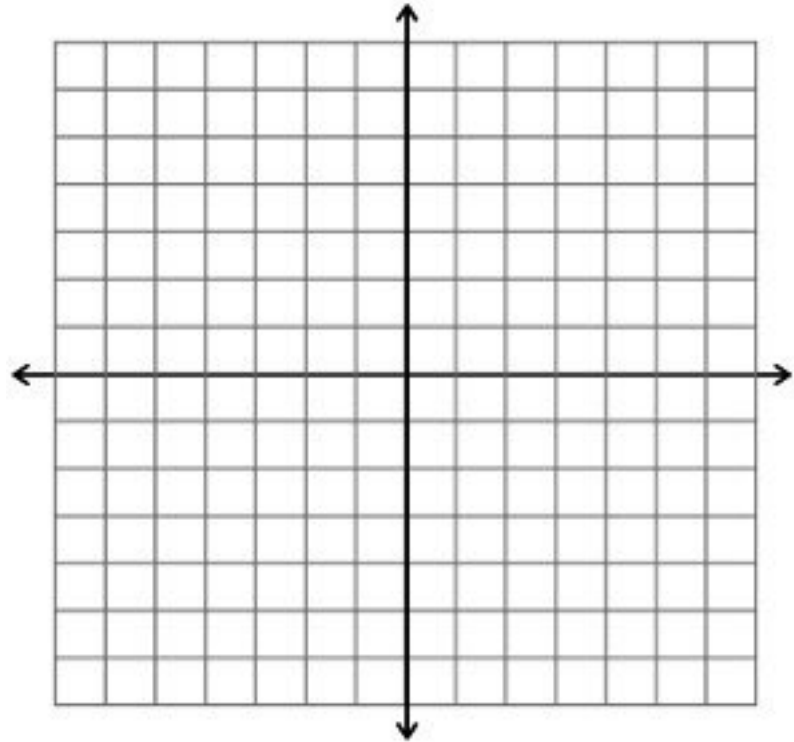


Graphing rational functions
from a parent function

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

$$f(x) = \frac{-4}{x+2} - \frac{5}{2}$$

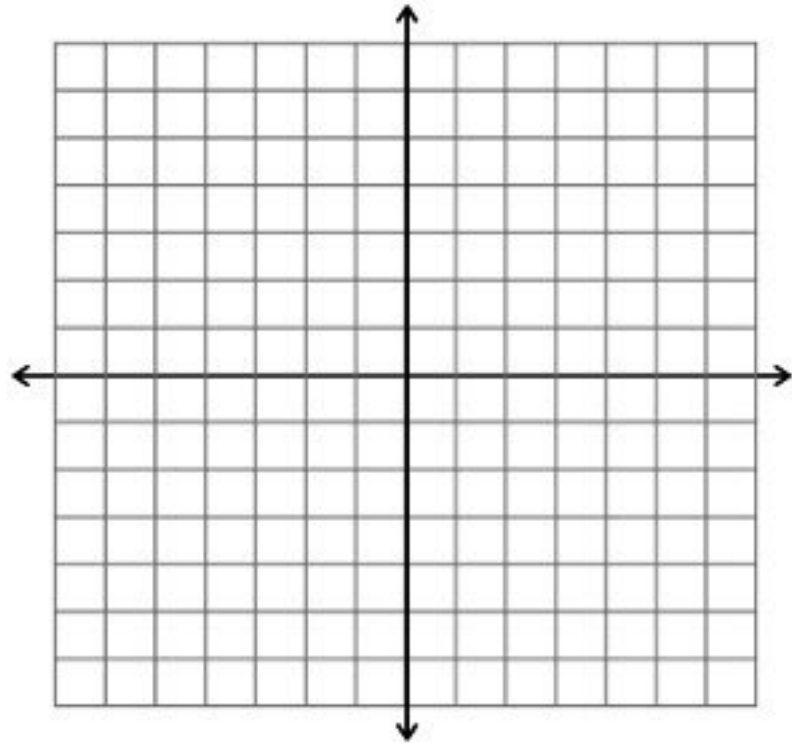
1. Vertical Asymptote:
2. Horizontal Asymptote:
3. X- intercept(s):
4. Y - intercept:
5. Strategic Points if needed.



Graphing rational functions that are not in standard form.

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

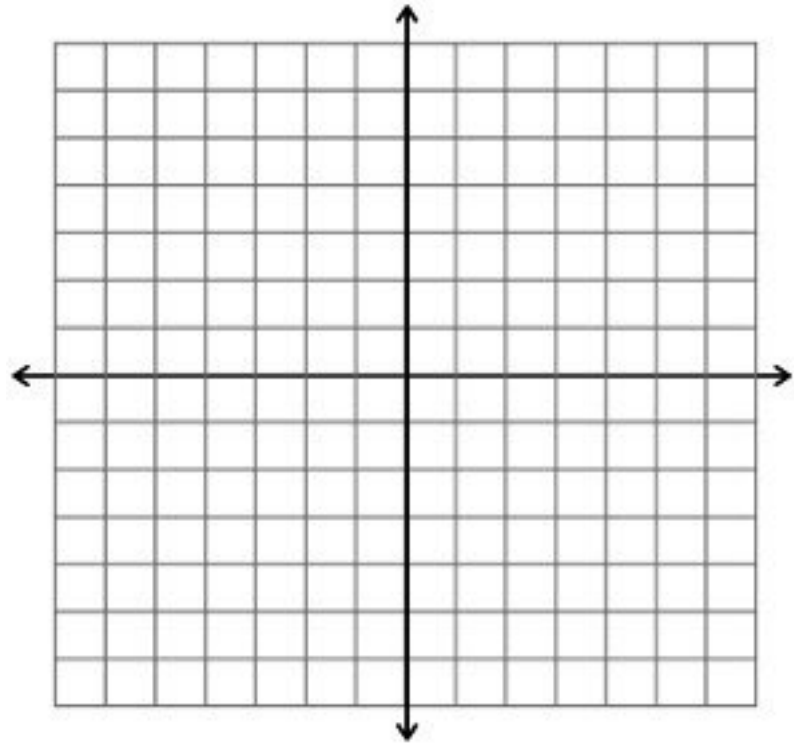
1. Vertical Asymptote(s):
2. Horizontal Asymptote:
3. X- intercept(s):
4. Y - intercept:
5. Strategic Points if needed.



Graphing rational functions that are not in standard form.

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

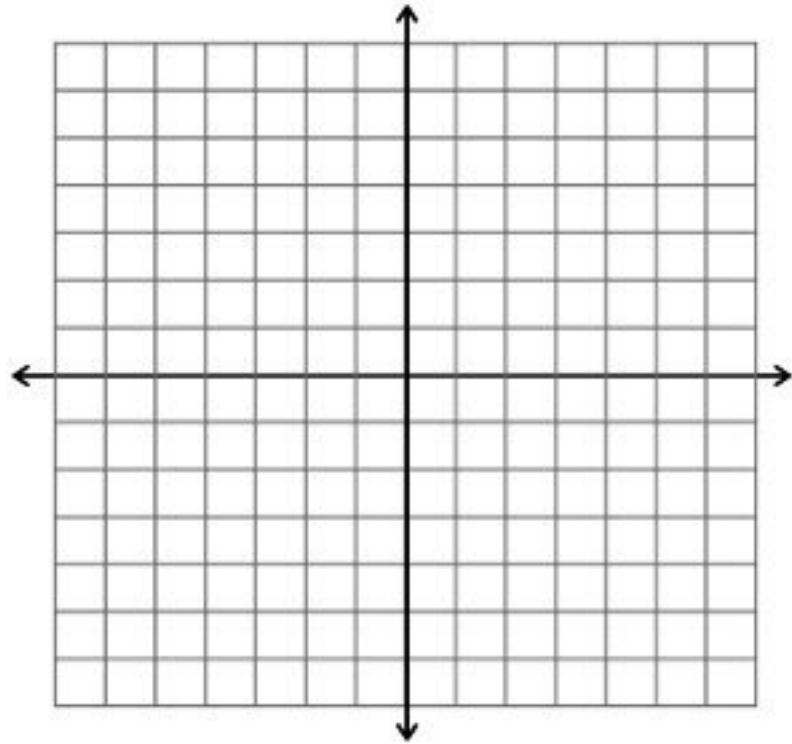
1. Vertical Asymptote(s):
2. Horizontal Asymptote:
3. X- intercept(s):
4. Y - intercept:
5. Strategic Points if needed.



Graphing rational functions that are not in standard form.

$$f(x) = \frac{2x^2 - 18}{x^2 - 2x - 3}$$

1. Vertical Asymptote(s):
2. Horizontal Asymptote:
3. Hole(s):
4. X- intercept(s):
5. Y - intercept:
6. Strategic Points if needed.



Graphing rational functions that are not in standard form.

$$f(x) = \frac{-x^2 + 9}{x^2 - 2x - 3}$$

1. Vertical Asymptote(s):
2. Horizontal Asymptote:
3. Hole(s):
4. X- intercept(s):
5. Y - intercept:
6. Strategic Points if needed.

