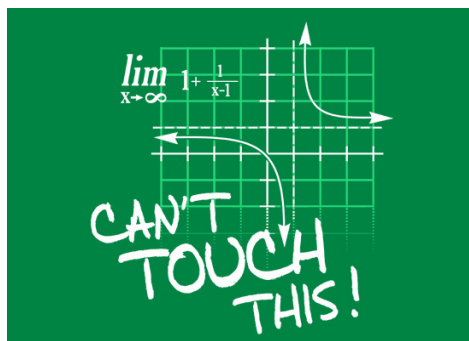


Day 1 **Unit 2B:** Learning Target 6
I can graph a rational function and
find key information.



Rational Functions

A **fraction** of two polynomial expressions where the **denominator must contain a variable**.

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

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

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

Asymptotes

lines that the graph approaches, but will never touch
(horizontal asymptotes are *sometimes* the exception)

Vertical Asymptote :



Horizontal Asymptote :



Horizontal Asymptote

$$\frac{x^2 + 2}{x^3 - 2x + 7}$$

$$\frac{2x^3 + 2}{x^3 - 2x + 7}$$

$$\frac{2x^3 + 2}{x^3 - 2x + 7}$$

$$1.) f(x) = \frac{1}{x} = 0$$

V.A.: $x=0$ H.A.: $y=0$

Holes: DNE

* Domain: $(-\infty, 0) \cup (0, \infty)$

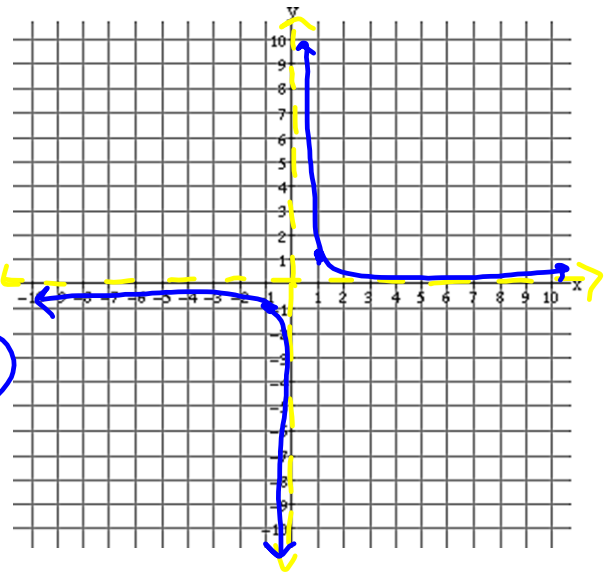
y Range: $(-\infty, 0) \cup (0, \infty)$

x-intercept(s): DNE

y-intercept: DNE

End behavior: As $x \rightarrow -\infty, f(x) \rightarrow 0$

As $x \rightarrow \infty, f(x) \rightarrow 0$



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

V.A.: $x=2$ H.A.: $y=0$

Holes: DNE

Domain: $(-\infty, 2) \cup (2, \infty)$

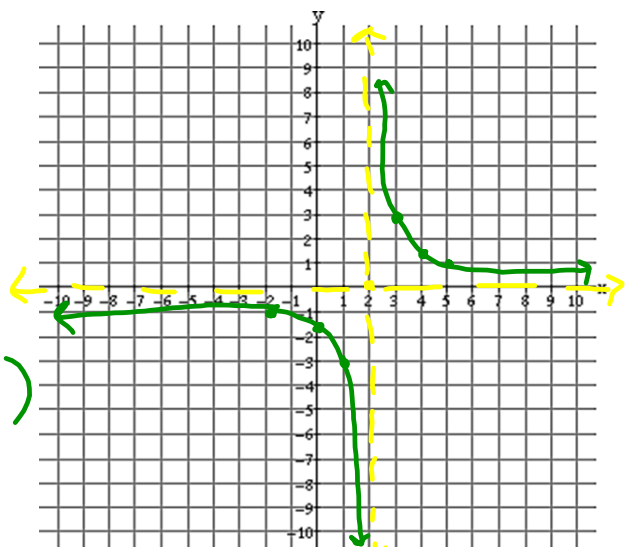
Range: $(-\infty, 0) \cup (0, \infty)$

x-intercept(s): DNE

y-intercept: $y = -1.5$

End behavior: As $x \rightarrow -\infty, f(x) \rightarrow 0$

As $x \rightarrow \infty, f(x) \rightarrow 0$



$$x-2=0$$

$$x=2$$

$$\frac{3}{0-2} = \frac{3}{-2} = -1.5$$

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

V.A.: $x = -3$ H.A.: $y = 3$

Holes: DNE

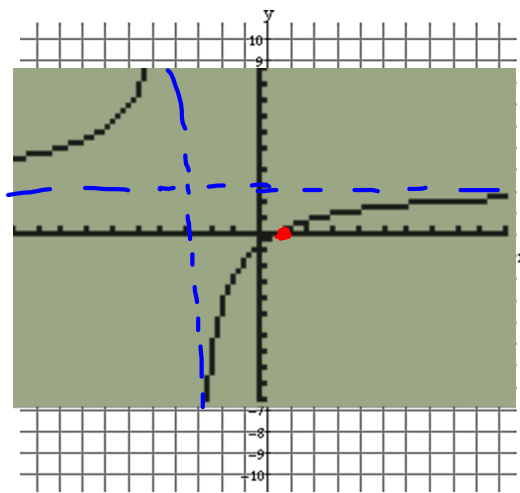
Domain: $(-\infty, -3) \cup (-3, \infty)$

Range: $(-\infty, 3) \cup (3, \infty)$

x-intercept(s): $x = 2/3$

y-intercept: $y = -2/3$

End behavior: $As x \rightarrow -\infty, f(x) \rightarrow 3$
 $As x \rightarrow \infty, f(x) \rightarrow 3$



$$\frac{3x-2}{x+3} = 0$$

$$3x-2 = 0$$

$$3x = 2$$

$$x = 2/3$$

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

V.A.: _____ H.A.: _____

Holes: _____

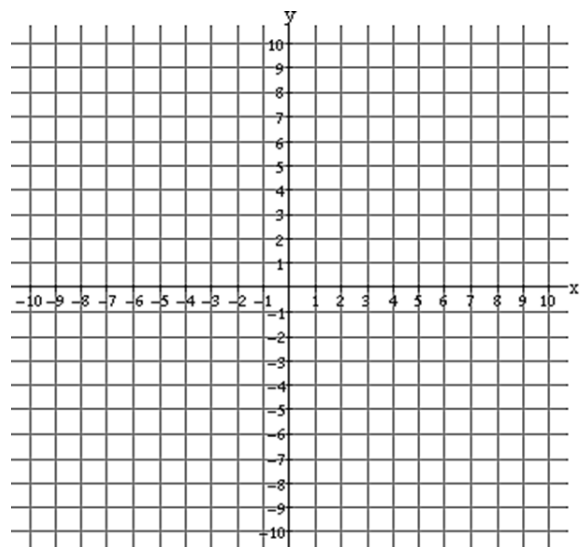
Domain: _____

Range: _____

x-intercept(s): _____

y-intercept: _____

End behavior: $As x \rightarrow -\infty, f(x) \rightarrow \underline{\hspace{1cm}}$
 $As x \rightarrow \infty, f(x) \rightarrow \underline{\hspace{1cm}}$



Homework!!!!

LT 2.6 PRACTICE Day 1 worksheet

“I want to hire
employees
who don’t
finish
their work”

Said no boss ever.

JUNIORS--Pick up Monday's lesson at the end of class today!!!

(if you need help ask and we can set up a time or go to after school tutoring)

Day 2

Unit 6

Learning Target 2

I can graph a rational function and find key information.

Holes



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

Zeros: _____

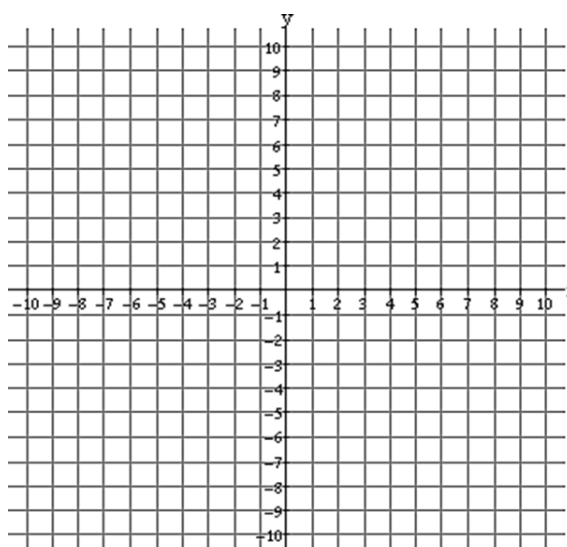
Vertical Asymptote: _____

Horizontal Asymptote: _____

Holes: _____

Domain: _____

Range: _____



$$2.) f(x) = \frac{x^2 - 16}{x - 4}$$

Zeros: _____

Vertical Asymptote: _____

Horizontal Asymptote: _____

Holes: _____

Domain: _____

Range: _____

