Introduction to Graphing Rational Functions

$x+4=0$
$x=-4$

Find any x-intercepts, y-intercepts, Vertical Asymptotes, Holes, and Horizontal Asymptotes

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

H.A: $y=2$

Holes: None

y-int: -1.5

x-int: -1.5

V.A: $x=2$

$x-3=0$
$x=3$

$$y=\frac{x-3}{x^2+6x+5}$$

H.A: $y=0$

Holes: None

y-int: $-.6$

x-int: 3

V.A: $x=-5$ $x=-1$

$$y=\frac{x-3}{(x+5)(x+1)}$$

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

$$y=\frac{1x^2-16}{1x^2+2x-8}$$

$x+5=0$
$x=-5$

$x+1=0$
$x=-1$

H.A: $y=1$

Holes: $(-4, 1.3)$

y-int: 2

x-int: 4

V.A: $x=2$

$$\frac{x-4}{x-2}=\frac{-8}{-6}$$

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

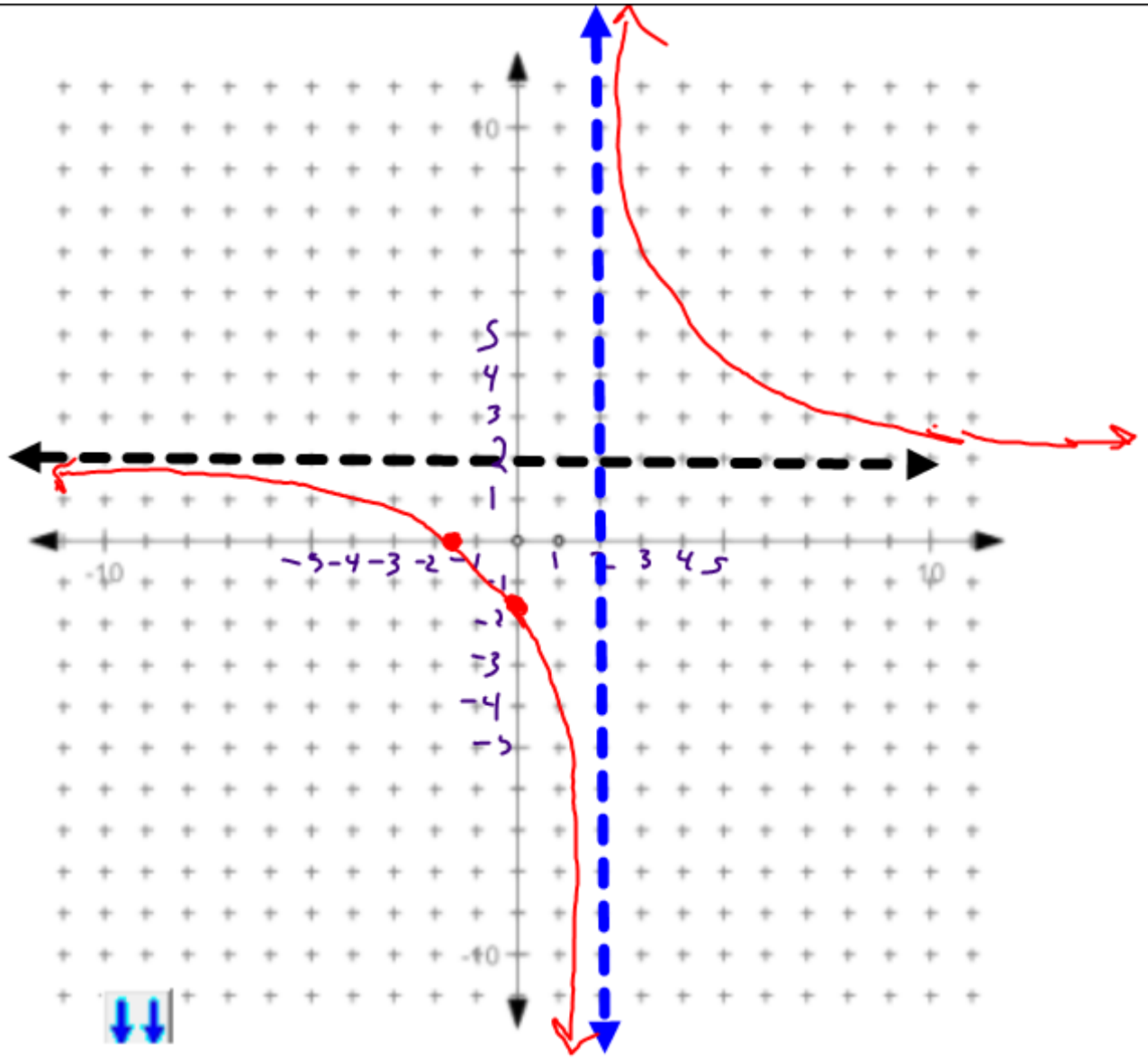
H.A: $y = 2$

Holes: None

y-int: -1.5

x-int: -1.5

V.A: $x = 2$



$$y = \frac{x-3}{x^2+6x+5}$$

$x - 3 = 0$
$x = 3$

H.A: $y = 0$

Holes: None

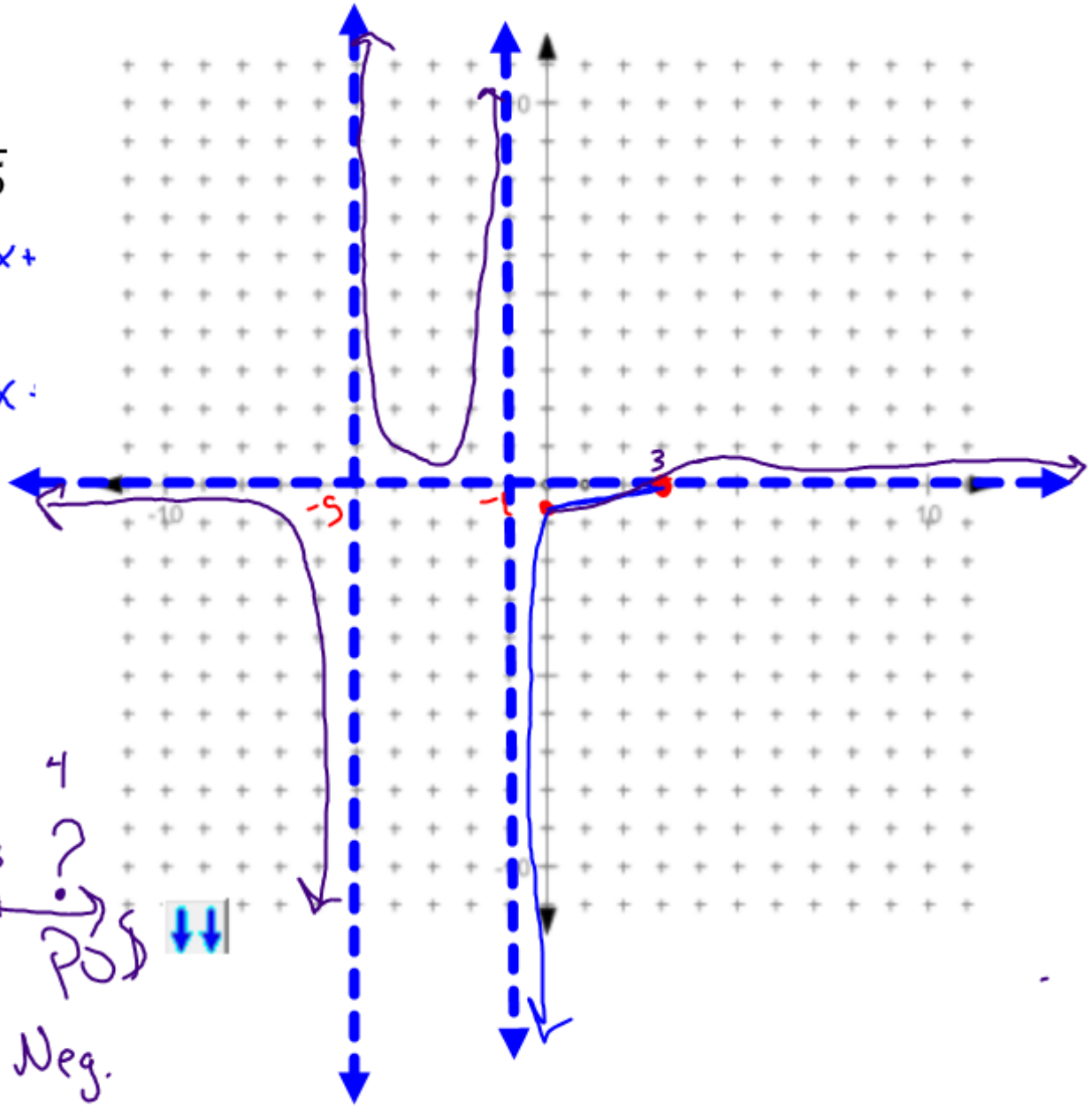
y-int: $-.6$

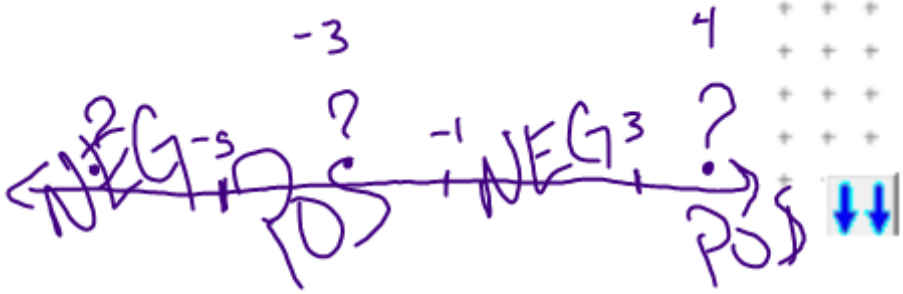
x-int: 3

V.A: $x = -5$, $x = -1$

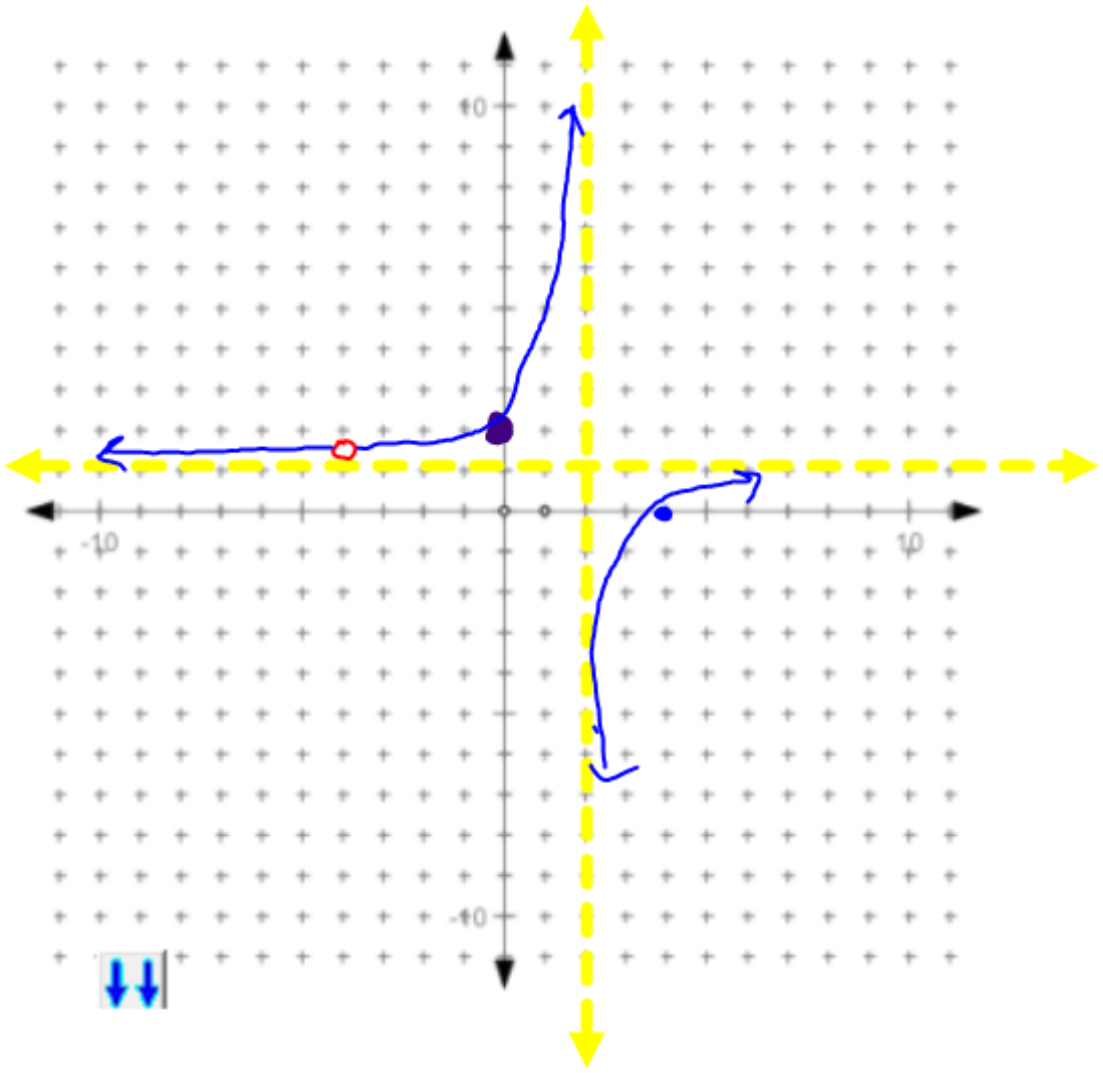
x+

x-





Pos. or Neg.



$$y = \frac{(x-2)(x+4)}{(x+3)(x+1)} \quad \text{(was } \frac{1x^2-16}{1x^2+2x-8}\text{)}$$

H.A: $y = 1$

Holes: $(-4, 1.3)$

y-int: 2

x-int: 4

V.A: $x = 2$

$$\frac{x-4}{x-2} = \frac{-8}{-6}$$

Graphing Rational Functions

Graphing Rational Functions:

- Find and graph the VA and HA
- Find and graph the x and y Intercepts and any holes (if any)
- Use a chart to evaluate additional points to show what the graph does on each section of graph (using your VA to split into sections)

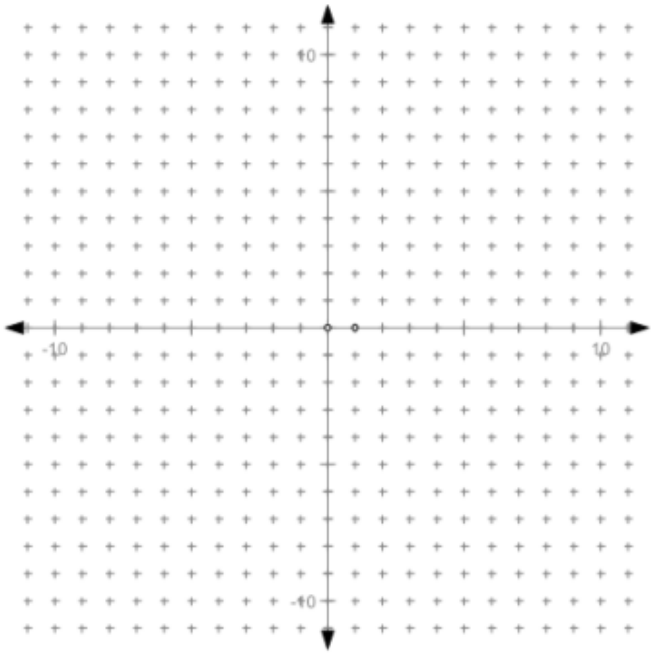
Parent Function:

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

VA: HA: Holes:

Intercepts:

x	y

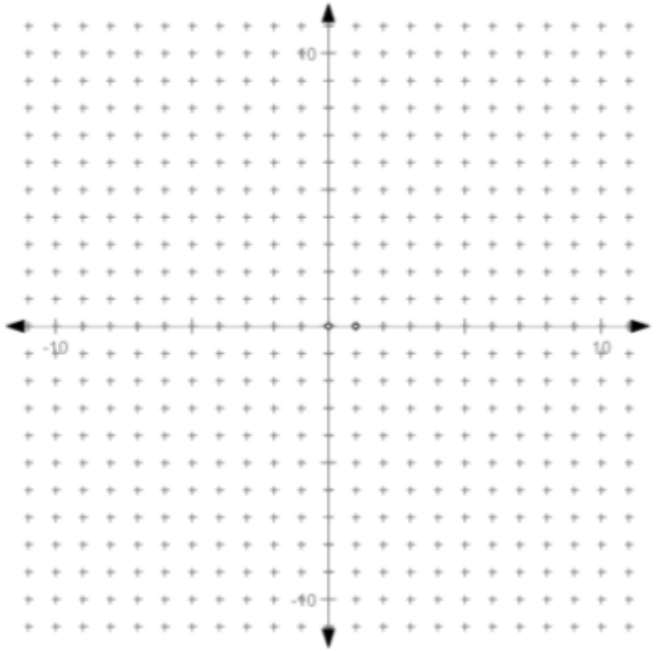


a) $f(x) = \frac{2x-1}{x-3}$

VA: HA: Holes:

Intercepts:

x	y



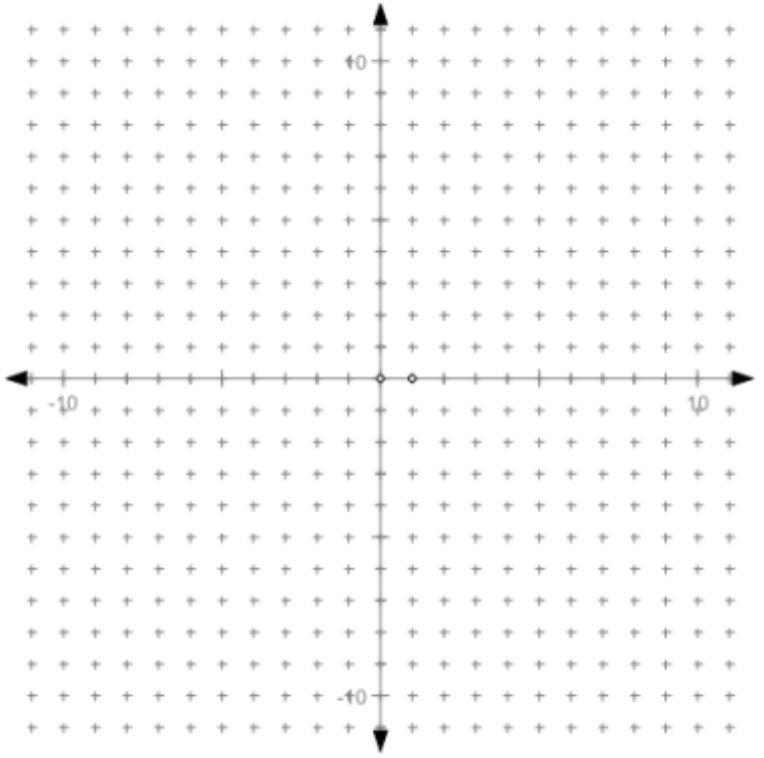
b) $f(x) = \frac{2x^2-18}{x^2-4}$

VA:

HA:

Holes:

Intercepts:



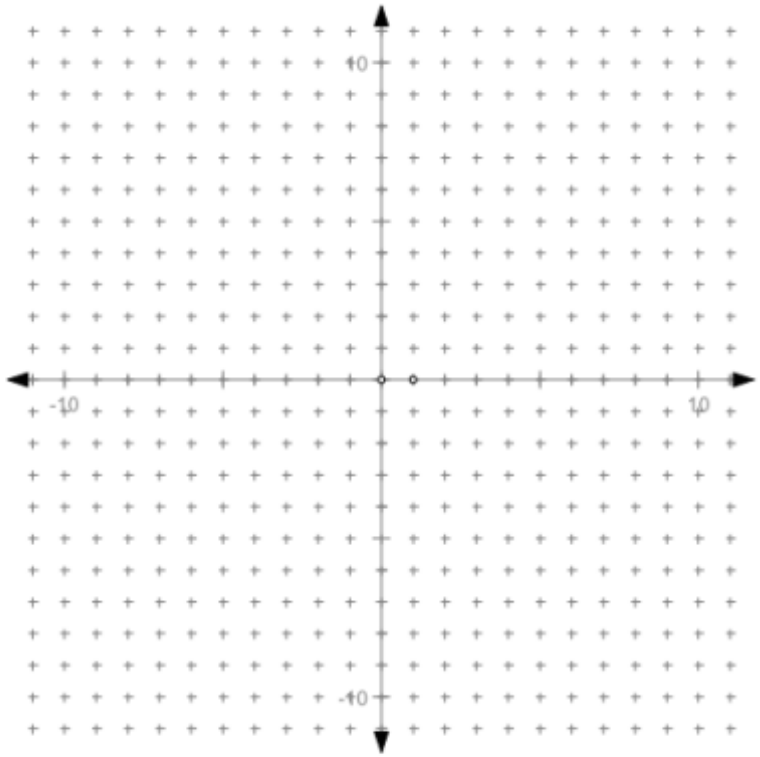
c) $f(x) = \frac{2x-4}{x-1}$

VA:

HA:

Holes:

Intercepts:



d) $f(x) = \dfrac{x+3}{x^2-3x+2}$ $\quad \dfrac{x+3}{(x-2)(x-1)}$

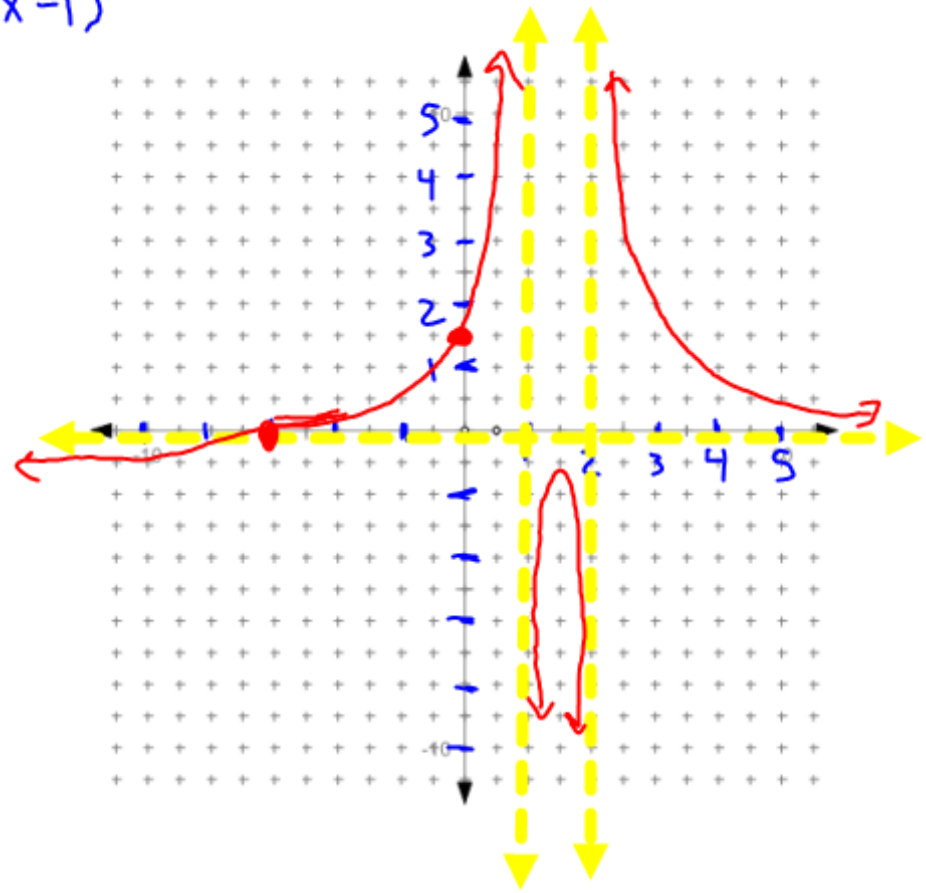
VA: $x = 2 \quad x = 1$

HA: $y = 0$

Holes: None

Intercepts: x-int: -3

y-int: 1.5



Homework:

Graphing Rational Functions Worksheet #1