NAME Solutions WS #3 Hour _____

2C.3 WS #3 Graphing Rational Functions

1. Use the rational function $f(x) = \frac{x+2}{x^2-4}$ to complete the following and graph the function. Show all work and label the graph appropriately.

a. Simplify

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

b. Domain

all real x, $x \neq -2, 2$

c. Vertical Asymptote(s):

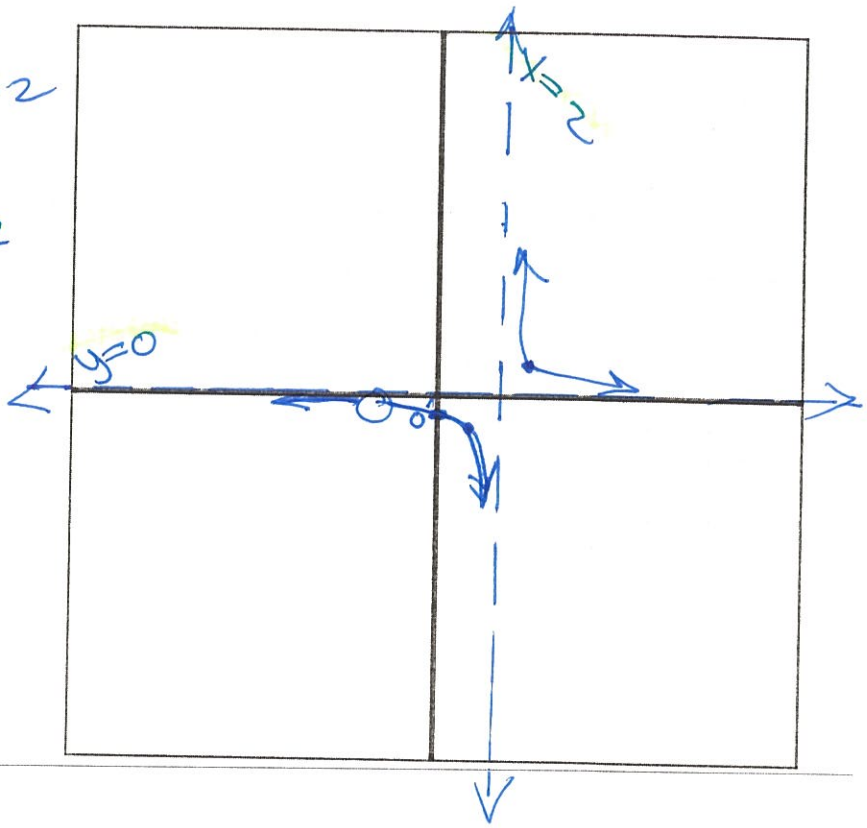
$x - 2 = 0$

$x = 2$

d. Horizontal Asymptote:

$n = 1$ $m = 2$

$n < m$ $y = 0$



e. Slant Asymptote:

NONE

f. x-intercepts

$x + 2 = 0$

$x = -2$

HOLE

g. y-intercepts

$f(0) = \frac{0+2}{0^2-4}$

$= -2/4$

$(0, -\frac{1}{2})$

h. Additional Points

x	$f(x)$
1	-1
3	1

2. Use the rational function $f(x) = \frac{4x-2}{2x+1}$ to complete the following. Show all work and label the graph appropriately.

a. Simplify

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

b. Domain

$2x+1=0$

$2x=-1$

$x=-\frac{1}{2}$

all real x

$x \neq -\frac{1}{2}$

c. Vertical Asymptote(s):

$2x+1=0$

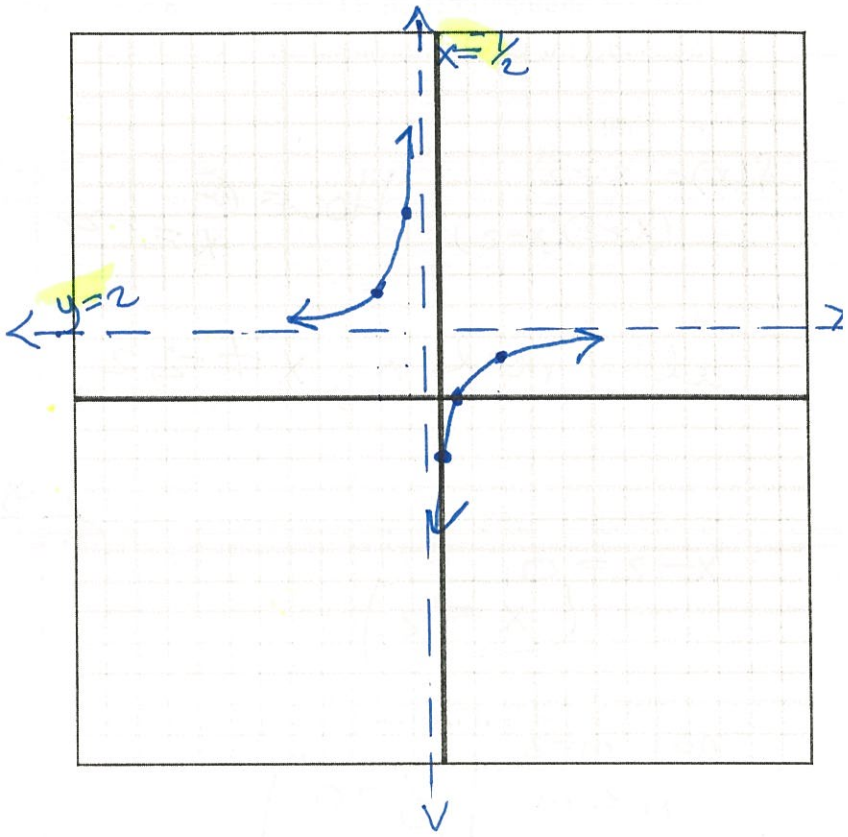
$2x=-1$

$x=-\frac{1}{2}$

d. Horizontal Asymptote:

$n=m$

$y=\frac{4}{2}=2$



e. Slant Asymptote:

NONE

f. x-intercept(s):

$4x-2=0$

$4x=2$

$x=\frac{1}{2}$

$(\frac{1}{2}, 0)$

g. y-intercept(s):

$f(0)=\frac{4(0)-2}{2(0)+1}$

$=-2$

$(0,-2)$

h. Additional Points:

x	$f(x)$
-1	6
-2	3.3
2	1.2