NAME _Key_

Hour _____

2C.3 Graphing Rational Functions

1. Use the rational function $f(x) = \frac{3}{x-2}$ to complete the following. Show all work and label the graph appropriately.

a. Vertical Asymptote(s):

$x - 2 = 0$

$\boxed{x = 2}$

b. Horizontal Asymptote:

$n = 0, \ m = 1$

$n < m \quad \boxed{y = 0}$

c. Slant Asymptote:

NONE

d. Additional Points:

x	$f(x)$
1	$\frac{3}{1-2} = -3 \quad (1, -3)$
3	$\frac{3}{3-2} = 3 \quad (3, 3)$
4	$\frac{3}{4-2} = \frac{3}{2} \quad (4, \frac{3}{2})$

e. x-intercept(s): (set N(x)=0)

$\boxed{\text{NONE}}$

$(3 = 0 \text{ NEVER})$

f. y-intercept(s): (set solve f(0))

$f(0) = \frac{3}{0-2} = -\frac{3}{2}$

$\boxed{(0, -\frac{3}{2})}$

g. Domain:

$x - 2 = 0$

$x = 2$

$\boxed{D: \text{all real } x, \ x \neq 2}$

h. Sketch the graph of the rational function.

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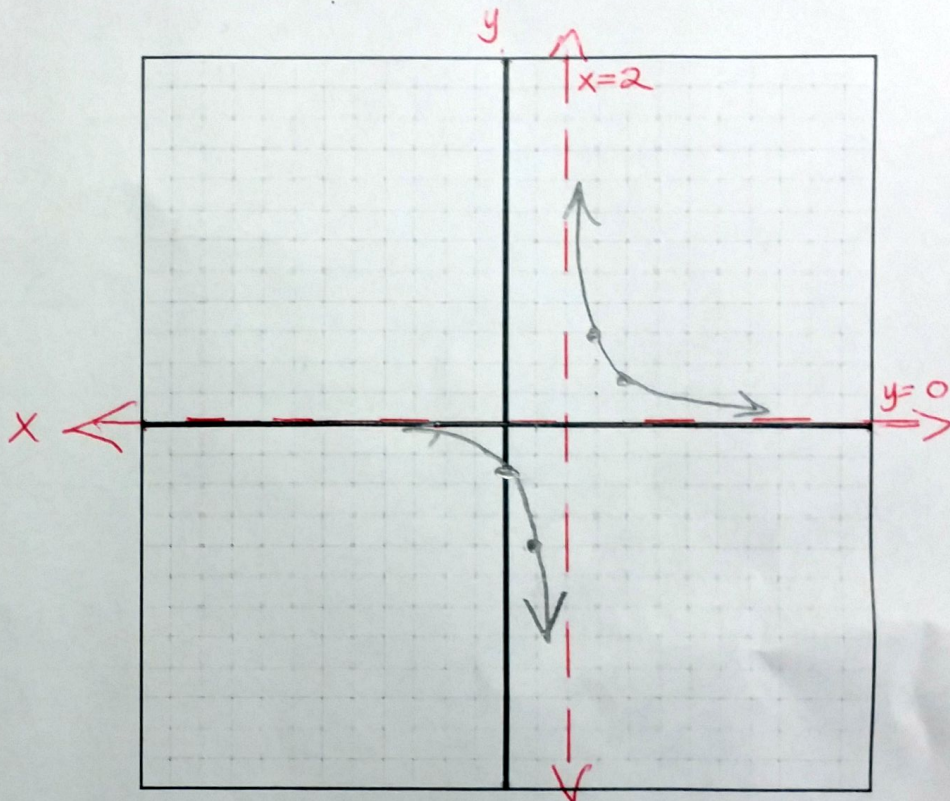
2. Use the rational function $f(x) = \dfrac{2x-1}{x}$ to complete the following. Show all work and label the graph appropriately.

a. Vertical Asymptote(s):

$$\boxed{x = 0}$$

b. Horizontal Asymptote:

$n = 1, \quad m = 1$

$n = m \quad \boxed{y = \dfrac{2}{1}}$

c. Slant Asymptote:

$$\boxed{\text{NONE}}$$

d. Additional Points:

x	$f(x)$
-1	$\dfrac{2(-1)-1}{-1} = 3 \quad (-1,3)$
1	$\dfrac{2(1)-1}{1} = 1 \quad (1,1)$

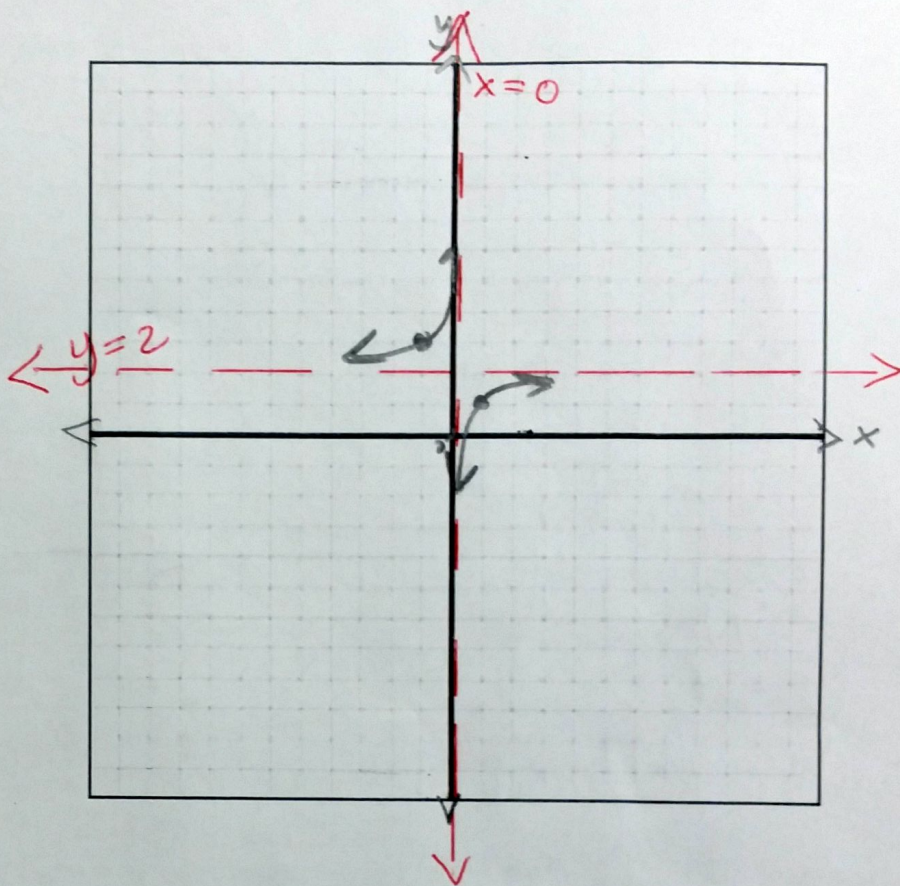e. x-intercept(s):

$2x - 1 = 0$

$2x = 1$

$x = \frac{1}{2} \quad \left(\frac{1}{2}, 0\right)$

f. y-intercept(s):

$f(0) = \dfrac{2(0)-1}{0} = \dfrac{-1}{0}$

$$\boxed{\text{NONE}}$$

g. Domain: $\boxed{\text{all real } x \ , \ x \neq 0}$

h. Sketch the graph of the rational function