

Name Key

Date _____

Vertical Asymptotes	X-Intercepts	Y- Intercept	Horizontal Asymptotes
* Vertical line graph can't touch * always $x =$ • set denominator = 0 + solve.	* crosses X-axis * $(#, 0)$ • Plug 0 in for y + solve.	* crosses Y-axis * $(0, #)$ • Plug 0 in X + solve.	* Horizontal line graph can't touch (special cases it <u>will</u> go through) * always $y =$ • Look at degrees 1) Degree bigger bottom $\rightarrow y = 0$ 2) Degree same $\rightarrow y = \frac{L.C.}{L.C.}$ (leading coeff.) 3) Degree bigger top \rightarrow none (no H.A)
	* set numerat. = 0 *	* look @ constants *	

1. Graph

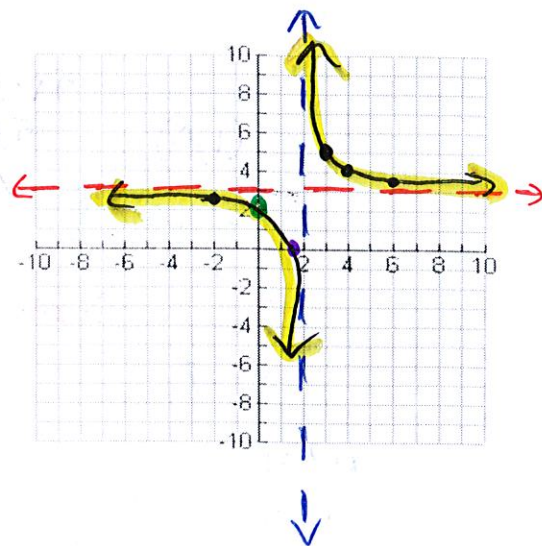
$$f(x) = \frac{3x - 4}{x - 2}$$

(numer) x-int $(\frac{4}{3}, 0)$ $3x - 4 = 0$
 $3x = 4$ $x = \frac{4}{3}$
 (constants) y-int $(0, 2)$ $\frac{-4}{-2}$

(degrees) HA $y = 3$ same! look @ leading coeff. $\frac{3x}{1x}$
 $y = 3$

(denom) VA $x = 2$
 $x - 2 = 0$
 $x = 2$

x	y
-2	2.5
2	error
3	5
4	4
6	3.5



2. Graph

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

x-int none $2 = 0$
 y-int $(0, -\frac{1}{2})$ $\frac{2}{-4}$

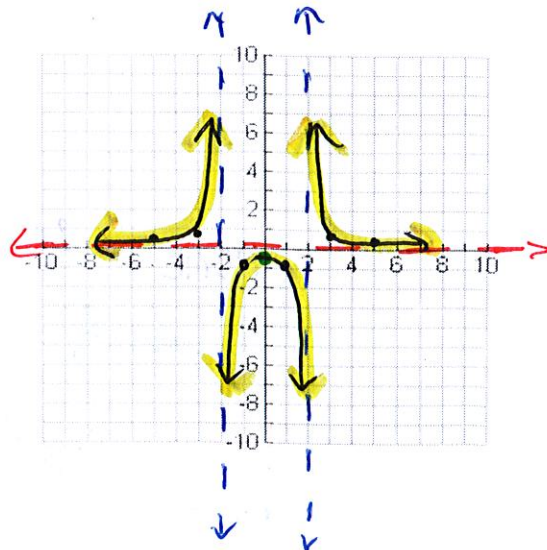
HA $y = 0$ bigger bottom!

VA $x = -2, 2$

$$(x+2)(x-2)$$

$$x = -2, 2$$

x	y
-5	.01
-3	.4
-1	-.666
1	-.666
3	.4
5	.01



Factor First!

3. Graph

$$f(x) = \frac{x^2 + 2x - 15}{x^2 - 4} = \frac{(x+5)(x-3)}{(x+2)(x-2)}$$

x-int $(-5, 0)(3, 0)$ $(x+5)=0$ $x+3=0$
 $x=-5$ $x=3$

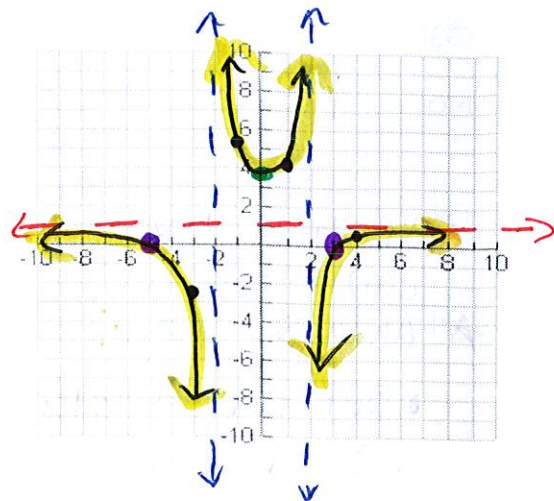
y-int $(0, 3.75) = \frac{-15}{-4}$

HA $y=1$ Same! $\frac{1x^2}{1x^2}$

VA $x=-2, 2$

$(x+2)(x-2)$
 $x=-2$ $x=2$

x	y
-3	-2.4
-1	5.33
1	4
4	.75



4. Graph

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

x-int $(1, 0)$ $5x - 5 = 0$
 $5x = 5$
 $x = 1$

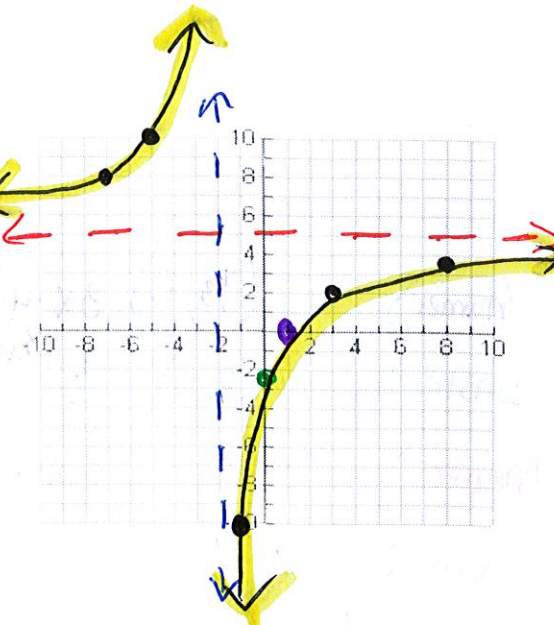
y-int $(0, -2.5) = \frac{-5}{2}$

HA $y=5$ Same! $\frac{5x}{x}$

VA $x=-2$

$x+2=0$
 $x=-2$

x	y
-7	8
-5	10
-1	-10
3	2
8	3.5



5. Graph

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

x-int none $2 \neq 0$

y-int $(0, .66) = \frac{2}{3}$

HA $y=0$ bigger bottom!

VA $x=-3$

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

x	y
-7	-.5
-5	-1
-4	-2
-2	2
-1	1

