

Name _____

Rational Function Review

Date _____

Adv Algebra

Find the characteristics listed of each rational function. Graph using an x/y table.

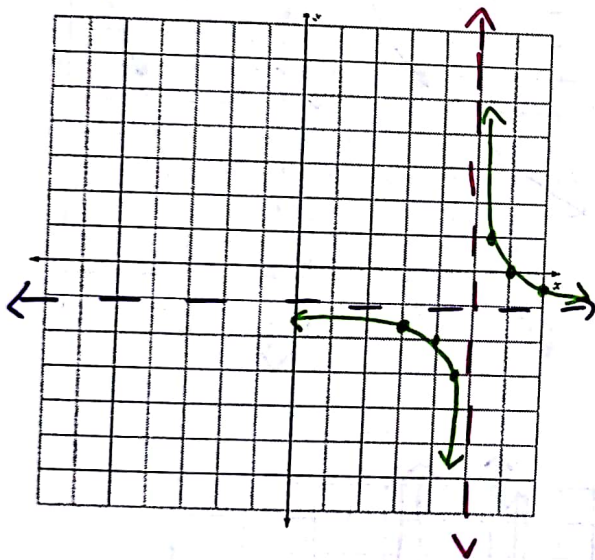
1) $f(x) = \frac{1}{x-5} - 1$

Vertical Asymptote: $x=5$

Horizontal Asymptote: $y=-1$

Domain: $x \neq 5$

Range: $y \neq -1$



x	y
-2	-1/2
-1	-1
-1/2	-2
1/2	2
1	1
2	1/2

→

x+5	y-1
3	-1.5
4	-2
4.5	-3
5.5	1
6	0
7	-1/2

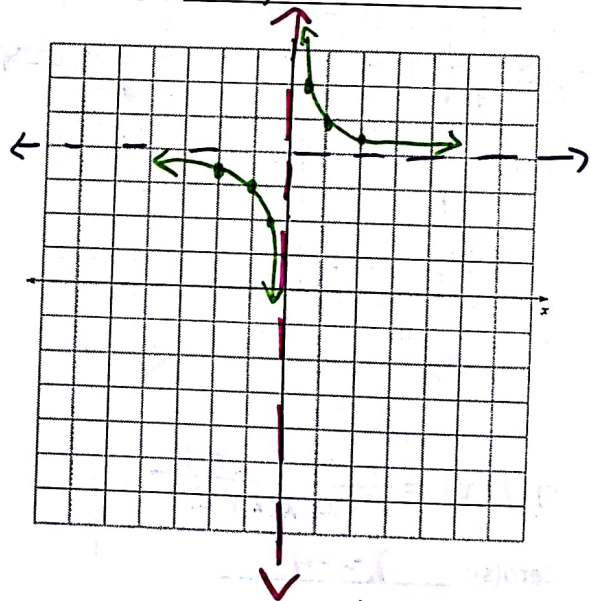
2) $f(x) = \frac{1}{x} + 4$

Vertical Asymptote: $x=0$

Horizontal Asymptote: $y=4$

Domain: $x \neq 0$

Range: $y \neq 4$



x	y
-2	-1/2
-1	-1
-1/2	-2
1/2	2
1	1
2	1/2

→

x	y+4
-2	3.5
-1	3
-1/2	2
1/2	6
1	5
2	4.5

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Find the characteristics listed for each rational function. Draw using a Graphing Calculator.

3) $f(x) = \frac{x^2-25}{x^2-16} = \frac{(x+5)(x-5)}{(x+4)(x-4)}$

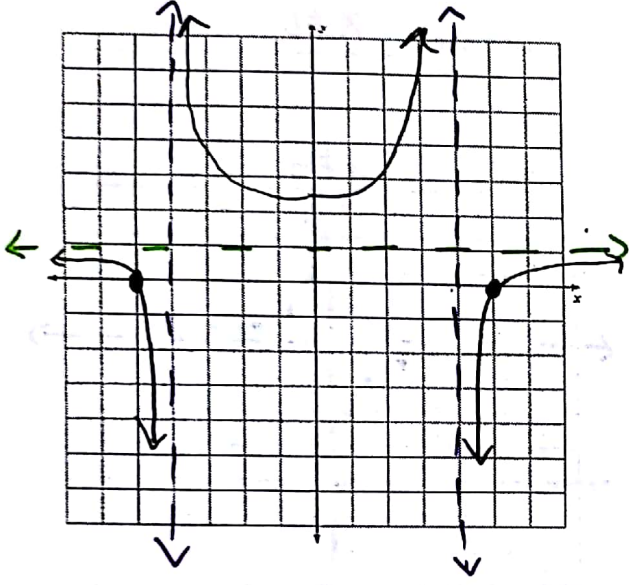
~~$\frac{-15}{-5 \cdot 3}$~~
 ~~$\frac{-2}{-2}$~~

Zero(s): $x = -5, 5$

Vertical Asymptote(s): $x = -4, x = 4$

Horizontal Asymptote: $y = 1$

Slant Asymptote: None



4) $f(x) = \frac{x^2-2x-15}{x-1} = \frac{(x-5)(x+3)}{(x-1)}$

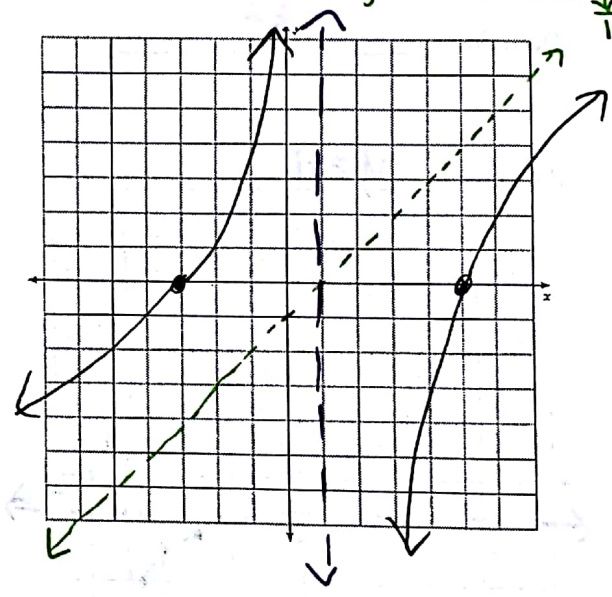
Zero(s): $x = 5, -3$

Vertical Asymptote(s): $x = 1$

Horizontal Asymptote: None

Slant Asymptote: $y = x - 1$

$\begin{array}{r} 1 \ 1 \ -2 \ -15 \\ 1 \ -1 \ \underline{15} \\ \hline \end{array}$



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

Zero(s): $x = -4$

Vertical Asymptote(s): $x = 0, x = -2$

Horizontal Asymptote: $y = 0$

Slant Asymptote: None

