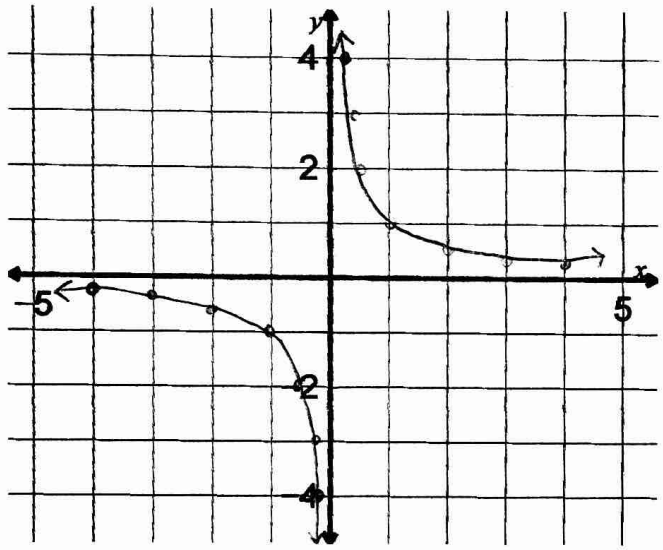
Algebra 2 8.6 Rational Functions Investigation, Part 1 Name_____

Step 1: Complete the table.

x	-4	-3	-2	-1	$-\frac{1}{2}$	$-\frac{1}{3}$	$-\frac{1}{4}$	0	$\frac{1}{4}$	$\frac{1}{3}$	$\frac{1}{2}$	1	2	3	4
$y=\frac{1}{x}$	-1/4	-1/3	-1/2	-1	-2	-3	-4	dne	4	3	2	1	1/2	1/3	1/4

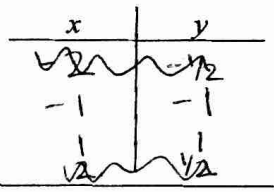
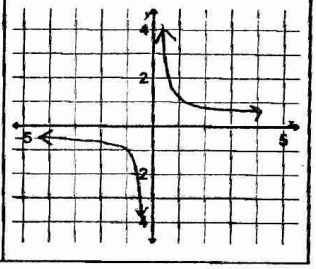
Step 2: Plot the points from the table on the graph.



Step 3:
List at least three interesting features of the graph.

1. flipped over origin
2. $x \neq 0$
3. $y \neq 0$

Summary

Parent Equation	$1/x$
Asymptotes	$y=0,\ x=0$
Domain	$(-\infty,0)\cup(0,\infty)$
Range	$(-\infty,0)\cup(0,\infty)$
Key Points	
Graph	

$y = \frac{1}{x-h} + k$ $h \rightarrow$ L/R $k \rightarrow$ U/D

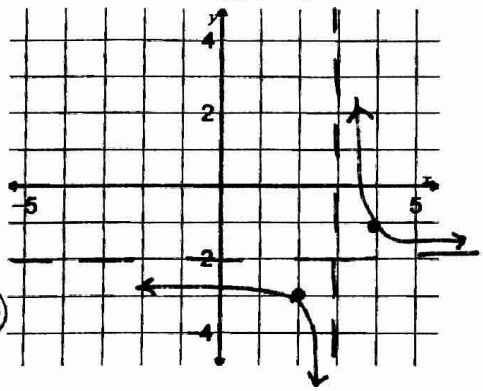
Examples

1. List the asymptotes, state the domain and range, and sketch the graph of $y=\frac{1}{x-3}-2$. ← U & D; L & R

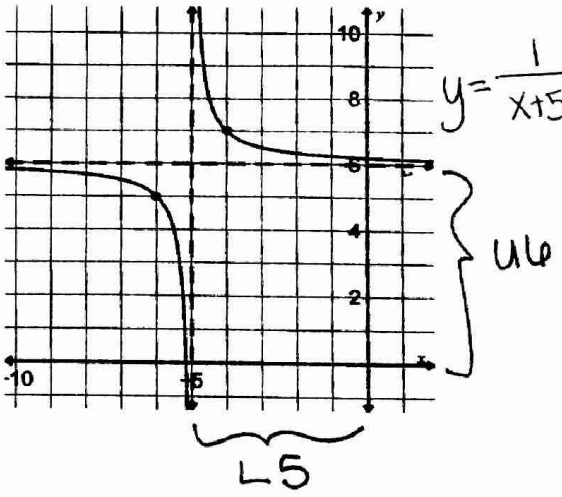
Asymptotes:
$x=3, y=-2$

Domain:
$(-\infty,3)\cup(3,\infty)$

Range:
$(-\infty,-2)\cup(-2,\infty)$



2. Write the equation for the function in the graph.



$y=\frac{1}{x+5}+6$

U6

L5