Name: _____ **Date:** _____ **Period:** _____

8.2 Practice WS

The following changes represent transformations from the reciprocal parent function. Write an equation to represent the new function, then identify the asymptotes.

1. Translated 2 units left and 9 units down. $$y = \frac{1}{x+2} - 9$$ HA: $y = -9$ VA: $x = 2$	**2.** Reflected across the x-axis, then translated 5 units up. $$y = \frac{-1}{x} + 5$$ HA: $y = 5$ VA: $x = 0$
3. Vertically stretched by a factor of 4, then translated 3 units right. $$y = \frac{4}{x-3}$$ HA: $y = 0$ VA: $x = 3$	**4.** Vertically stretched by a factor of 2, reflected across the x-axis, then translated 1 unit left and 8 units up. $$y = \frac{-2}{x+1} + 8$$ HA: $y = 8$ VA: $x = -1$

The vertical and horizontal asymptotes of a reciprocal function are below. Write an equation that could represent the function.

|	
5. Asymptotes: $x = 3$ and $y = -2$ $$y = \frac{1}{x-3} - 2$$	**6.** Asymptotes: $x = -7$ and $y = 0$ $$y = \frac{1}{x+7}$$

Graph each function. Identify the domain, range, and asymptotes.

7. $f(x) = \frac{1}{x} + 3$

X	Y
-3	2.6
-2	2.5
-1	2
0	
1	4
2	3.5
3	3.3
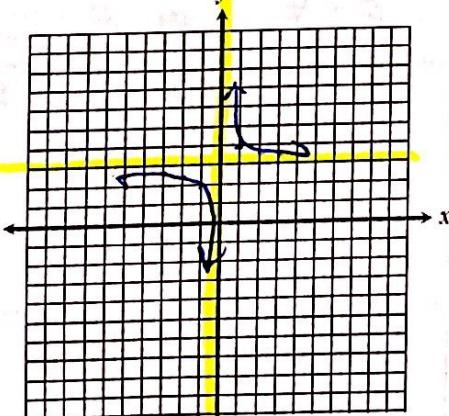
Domain: $\mathbb{R}$ $x \neq 0$ VA: $x = 0$

Range: $\mathbb{R}$ $y \neq 3$ HA: $y = 3$

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

X	Y
-3	.3
-2	.5
-1	1
0	
1	-1
2	-.5
3	-.3
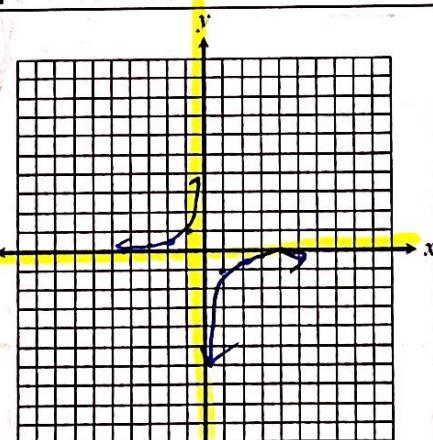
Domain: $\mathbb{R}$ $x \neq 0$ VA: $x = 0$

Range: $\mathbb{R}$ $y \neq 0$ HA: $y = 0$

9. $f(x) = \frac{1}{x-4}$

X	Y
2	$-\frac{1}{3}$
3	$-\frac{1}{2}$
4	-1
5	1
6	$\frac{1}{2}$
7	$\frac{1}{3}$
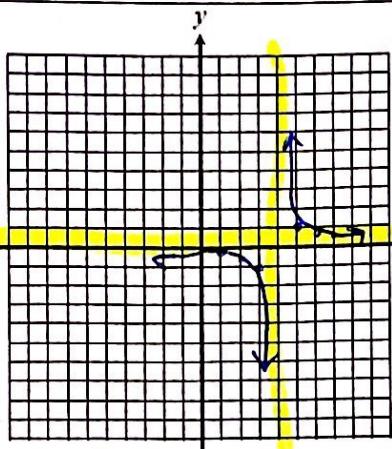
Domain: $\mathbb{R}\ x \neq 4$ VA: $x = 4$
Range: $\mathbb{R}\ y \neq 0$ HA: $y = 0$

10. $f(x) = \frac{3}{x+2} - 1$

| X	Y
-5	-2
-4	-2.5
-3	-4
-2	
-1	2
0	.5
1	0
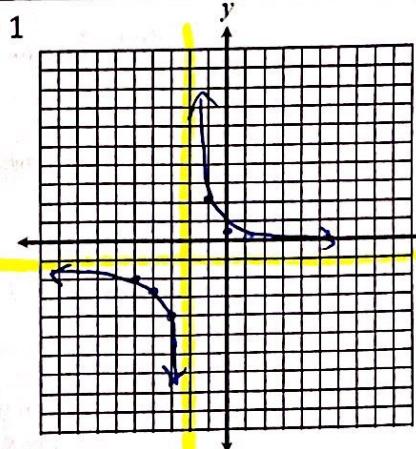
Domain: $\mathbb{R}\ x \neq -2$ VA: $x = 2$
Range: $\mathbb{R}\ y \neq -1$ HA: $y = -1$

11. $f(x) = \frac{2}{x} - 2$

X	Y
-3	-2.6
-2	-3
-1	-4
0	
1	0
2	-1
3	-1.3
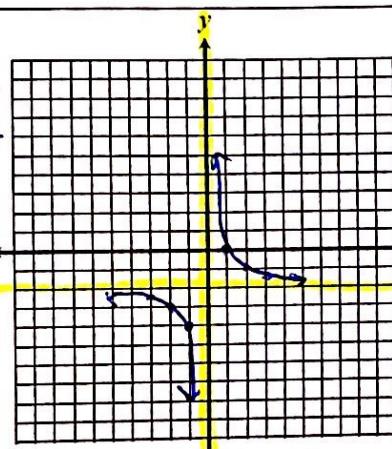
Domain: $\mathbb{R}\ x \neq 0$ VA: $x = 0$
Range: $\mathbb{R}\ y \neq -2$ HA: $y = -2$

12. $f(x) = \frac{-1}{x-6}$

X	Y
3	.3
4	.5
5	1
6	
7	-1
8	-.5
9	-.3
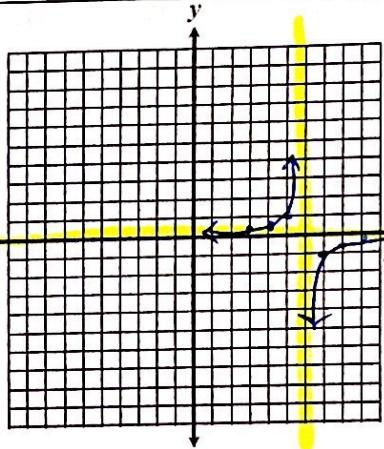
Domain: $\mathbb{R}\ x \neq 6$ VA: $x = 6$
Range: $\mathbb{R}\ y \neq 0$ HA: $y = 0$

13. $f(x) = \frac{4}{x-1} - 2$

| X	Y
-2	$-3\frac{3}{}$
-1	-4
0	-6
1	
2	2
3	0
4	-.6
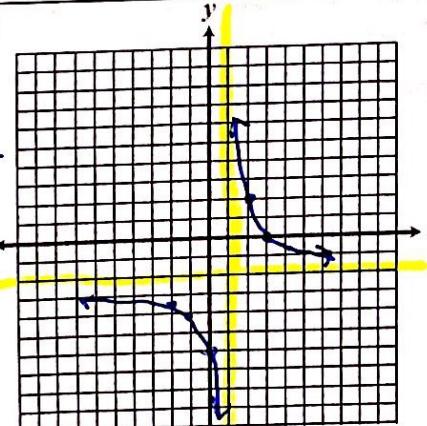
Domain: $\mathbb{R}\ x \neq 1$ VA: $x = 1$
Range: $\mathbb{R}\ y \neq 2$ HA: $y = -2$

14. $f(x) = \frac{-3}{x+5} + 4$

X	Y
-8	5
-7	5.5
-6	7
-5	
-4	1
-3	2.5
-2	3
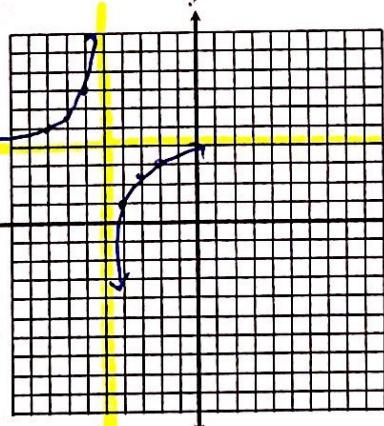
Domain: $\mathbb{R}\ x \neq -5$ VA: $x = -5$
Range: $\mathbb{R}\ y \neq 4$ HA: $y = 4$