

# AA PREP: GRAPHING RATIONAL FUNCTIONS WITH TRANSFORMATIONS—WORKSHEET #1

Graph the rational parent function. Then, graph each of the following rational functions using transformations. State domain and range.

1.  $y = \frac{1}{x}$

x	y
-3	$-\frac{1}{3}$
-2	$-\frac{1}{2}$
-1	-1
0	$\frac{1}{0} = \text{UNDEF.}$
1	1
2	$\frac{1}{2}$
3	$\frac{1}{3}$

Domain:  $\mathbb{R}, x \neq 0$       Range:  $\mathbb{R}, y \neq 0$

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

↑  
V STRETCH  
x 2  
(y-VALUES)  
x 2

Domain:  $\mathbb{R}, x \neq 0$       Range:  $\mathbb{R}, y \neq 0$

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

↑  
V TRANSLATION  
2 (↑)

Domain:  $\mathbb{R}, x \neq 0$       Range:  $\mathbb{R}, y \neq 2$

4.  $y = \frac{1}{x-2}$

↑  
H TRANSLATION  
2 (→)

Domain:  $\mathbb{R}, x \neq 2$       Range:  $\mathbb{R}, y \neq 0$

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

↑  
REFLECTS  
OVER  
X-AXIS

Domain:  $\mathbb{R}, x \neq 0$       Range:  $\mathbb{R}, y \neq 0$

6.  $g(x) = \frac{1}{x+2} - 2$

↑  
H TRANSLATION  
2 (←)  
↑  
V TRANSLATION  
2 (↓)

Domain:  $\mathbb{R}, x \neq -2$       Range:  $\mathbb{R}, y \neq -2$