

For each of the following:

a) Describe the translation

b) Write the translation rule

1)  $y = (x + 7)^2 - 3$

2)  $y = |x - 13| + 2$

a) Left 7, Down 3

a) Right 13, up 2

b)  $(x, y) \rightarrow (x - 7, y - 3)$

b)  $(x, y) \rightarrow (x + 13, y + 2)$

For each of the following: a) Describe the transformations b) Write the <sup>transformation</sup> translation rule

3)  $y = 3x^2$

4)  $y = (3x)^2$

5)  $y = \frac{1}{2}x^2$

6)  $y = \left(\frac{1}{2}x\right)^2$

a) Vertical Stretch by 3

a) Horizontal Shrink/Compression by  $\frac{1}{3}$

a) Vertical Shrink/Compression by  $\frac{1}{2}$

a) Horizontal Stretch by 2

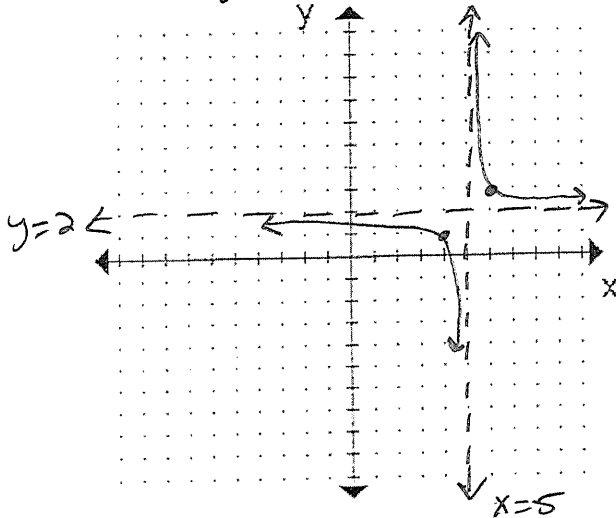
b)  $(x, y) \rightarrow (x, 3y)$

b)  $(x, y) \rightarrow \left(\frac{1}{3}x, y\right)$

b)  $(x, y) \rightarrow \left(x, \frac{1}{2}y\right)$

b)  $(x, y) \rightarrow (2x, y)$

7) Graph  $y = \frac{1}{x-5} + 2$  WITHOUT a calculator.  
 x-5  $\rightarrow$  up 2  
 Rights



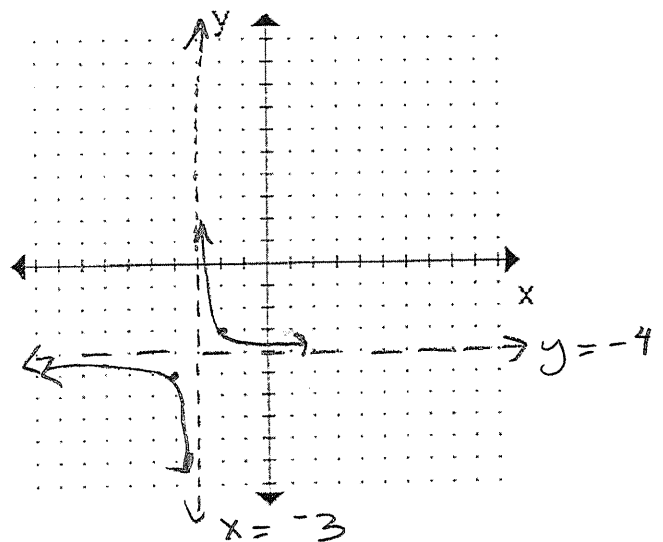
a) Write the equations of the asymptotes.

$x = 5$        $y = 2$

b) Domain:  $\{x \mid x \neq 5\}$

c) Range:  $\{y \mid y \neq 2\}$

8) Graph  $y = \frac{1}{x+3} - 4$  WITHOUT a calculator.  
 x+3  $\rightarrow$  Down 4  
 Left 3



a) Write the equations of the asymptotes.

$x = -3$        $y = -4$

b) Domain:  $\{x \mid x \neq -3\}$

c) Range:  $\{y \mid y \neq -4\}$