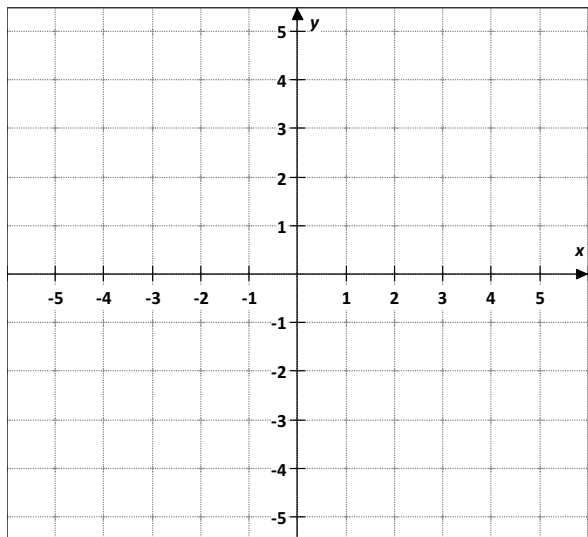


# Parent Functions and Transformations Assignment

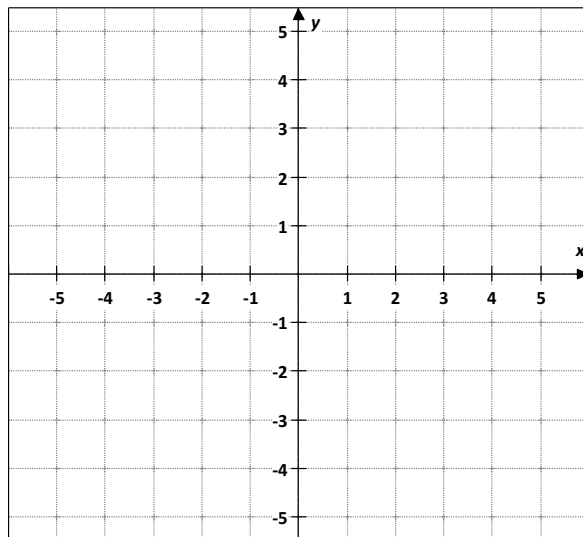
Identify the parent function, sketch the graph, and find the domain and the range for each function.

1.  $f(x) = x^2$



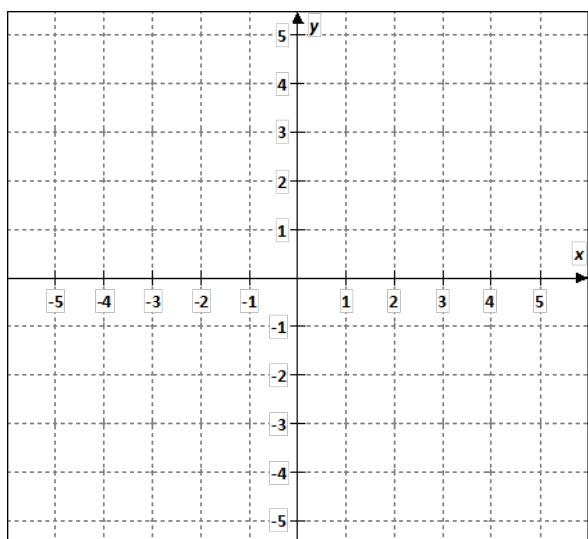
Domain  
Range

2.  $f(x) = -3$



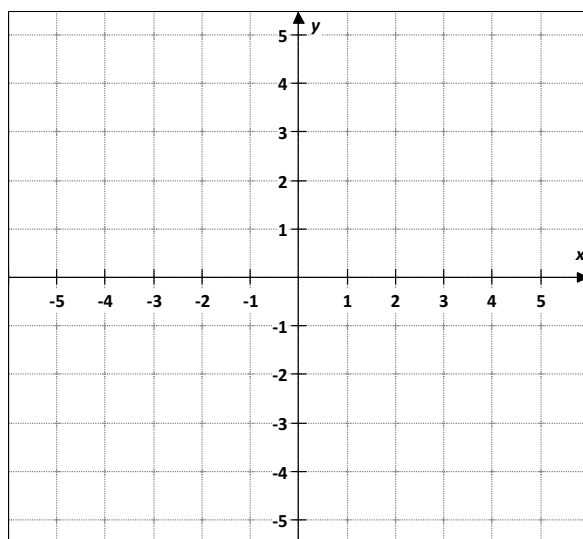
Domain  
Range

3.  $f(x) = x^3$



Domain  
Range

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



Domain  
Range

# Parent Functions and Transformations Assignment

Identify the parent function and describe the transformations.

5.  $f(x) = (x + 4)^3$                       Parent :  
Transformation:

6.  $f(x) = -2|x - 4|$                       Parent :  
Transformation:

7.  $f(x) = \frac{1}{x} - 18$                       Parent:  
Transformation:

8.  $f(x) = -\sqrt{x + 1} - 6$                       Parent :  
Transformation:

Given the parent function and a description of the transformation, write the equation of the transformed function  $f(x)$ .

9. **Square Root Function**  
Reflected in the x-axis  
Translated 12 units down

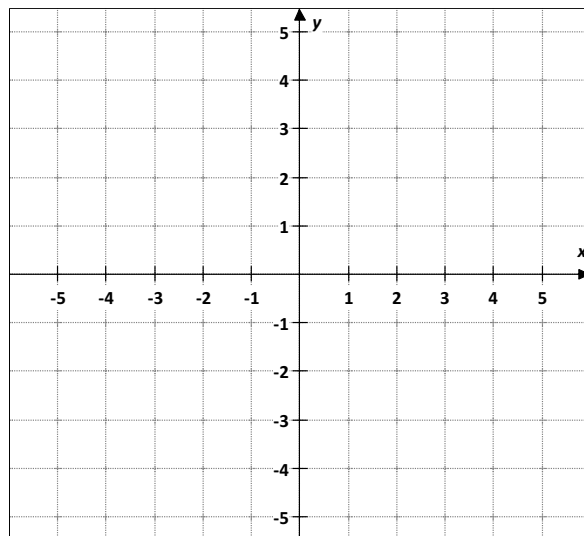
10. **Absolute value-**  
Translated 12 units up  
Translated 23 units left

11. **Reciprocal Function**  
Expanded vertically by a factor of 4  
Reflected in the x-axis and translated 2 units up

12. **Greatest Integer Function**  
Reflected in the y-axis and translated 16 units up

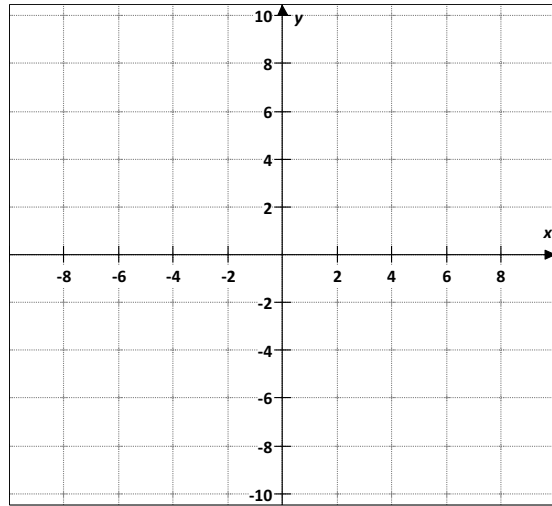
Use the graph of parent function to graph each function. Find the domain and the range of the new function.

13.  $h(x) = 3(x + 3)^3 - 1$

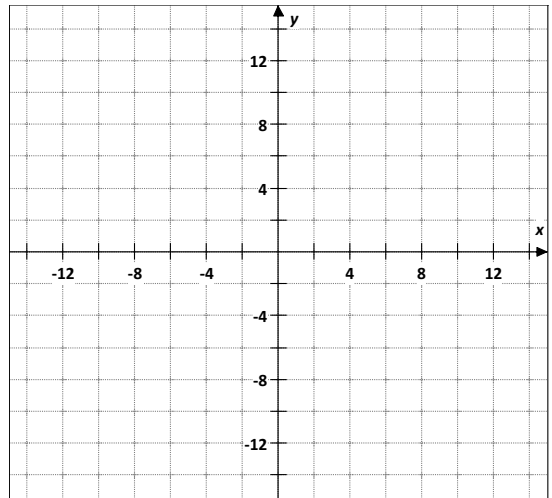


# Parent Functions and Transformations Assignment

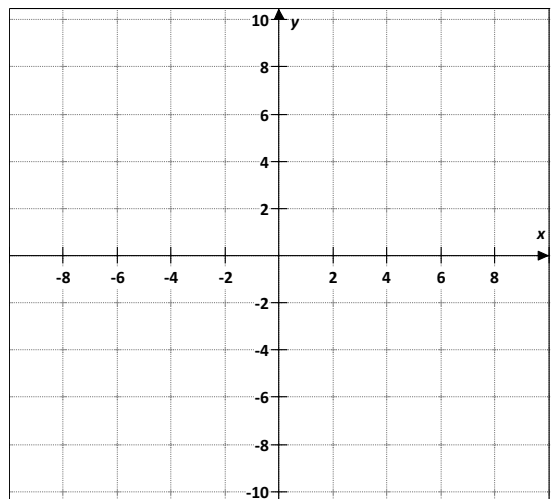
14.  $h(x) = \frac{1}{x-2} + 4$



15.  $h(x) = -\sqrt{x-5} - 2$



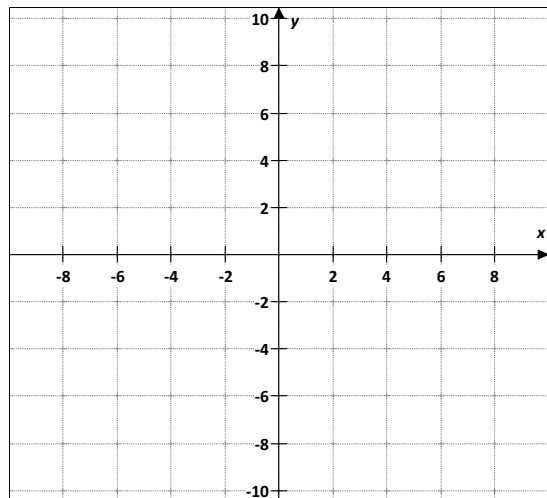
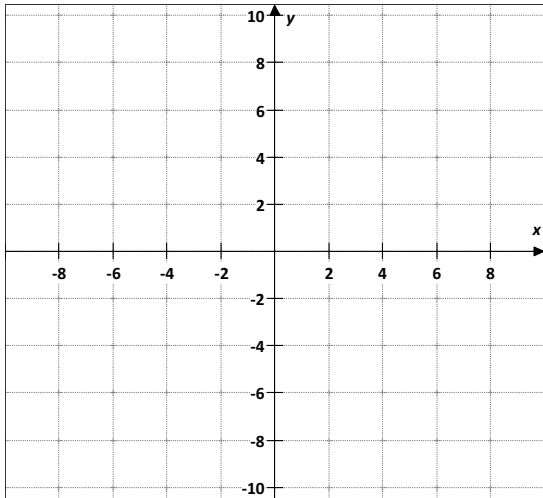
16.  $h(x) = |x-4| + 2$



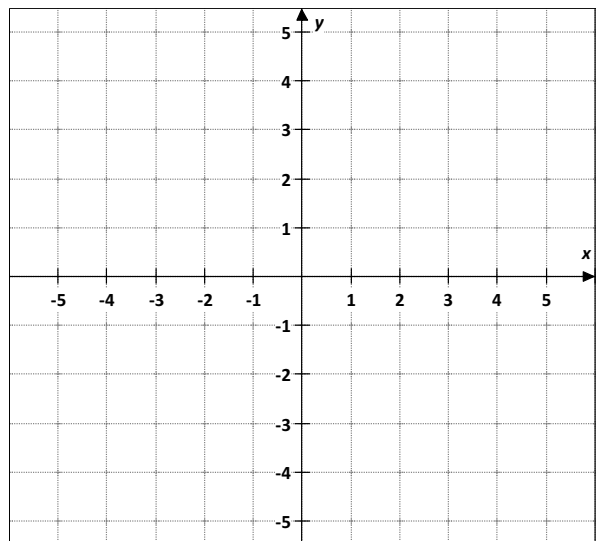
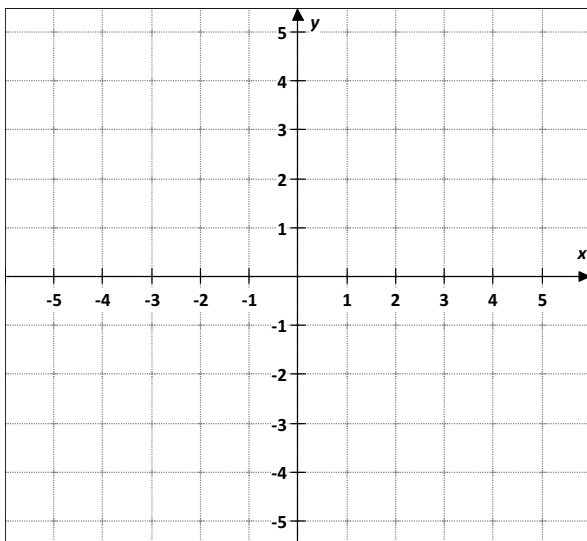
# Parent Functions and Transformations Assignment

Graph each function.

17.  $f(x) = x^4 - 2$  Graph  $h(x) = |x^4 - 2|$



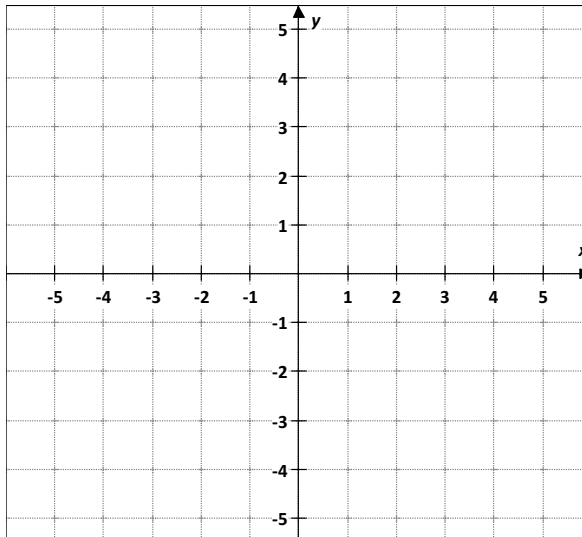
18.  $f(x) = -\frac{1}{x+1}$  Graph  $h(x) = -\frac{1}{|x+1|}$



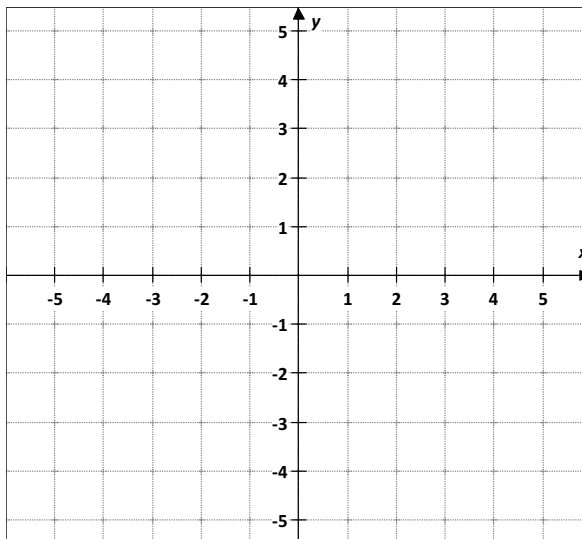
# Parent Functions and Transformations Assignment

Graph each piecewise function.

19. 
$$f(x) = \begin{cases} -\frac{1}{x+2} & \text{if } x < -3 \\ 2 & \text{if } -3 < x < 2 \\ x-1 & \text{if } x \geq 2 \end{cases}$$



20. 
$$f(x) = \begin{cases} 3 & \text{if } x \leq -1 \\ x^2 + 2 & \text{if } -1 < x < 1 \\ |x-1| & \text{if } x \geq 1 \end{cases}$$



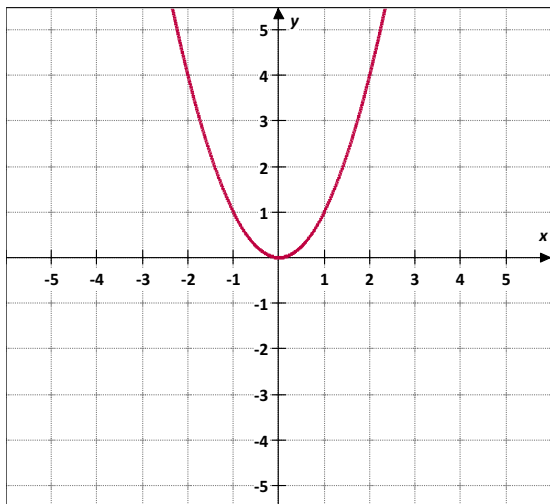
# Parent Functions and Transformations Assignment

## ANSWERS

Identify the parent function, sketch the graph, and find the domain and the range for each function.

1.  $f(x) = x^2$

Quadratic Function

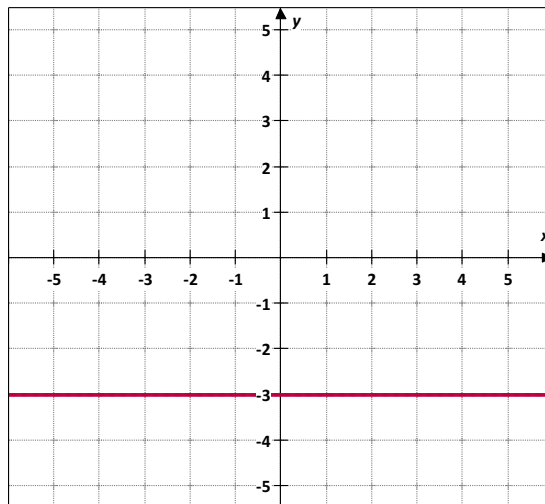


Domain =  $(-\infty, \infty)$

Range =  $[0, \infty)$

2.  $f(x) = -3$

Constant Function

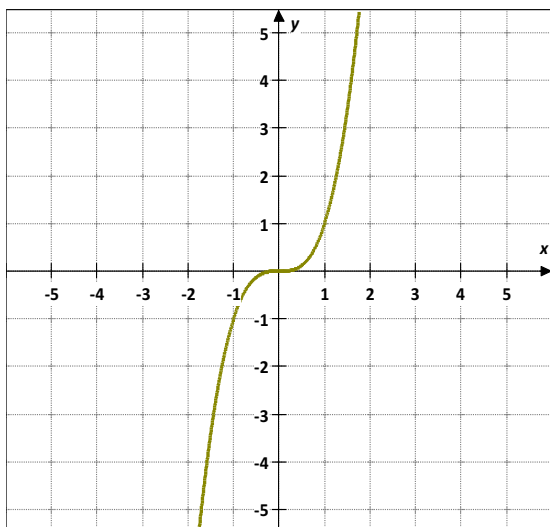


Domain =  $(-\infty, \infty)$

Range =  $[-3]$

3.  $f(x) = x^3$

Cubic Function

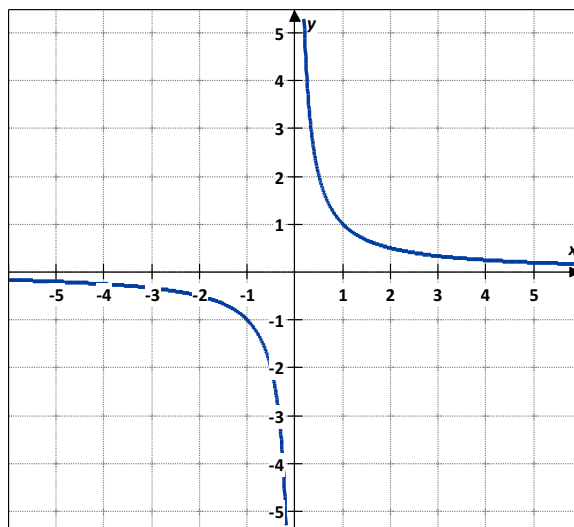


Domain =  $(-\infty, \infty)$

Range =  $(-\infty, \infty)$

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

Reciprocal Function



Domain =  $(-\infty, 0) \cup (0, \infty)$

Range =  $(-\infty, 0) \cup (0, \infty)$

# Parent Functions and Transformations Assignment

Identify the parent function and describe the transformations.

5.  $f(x) = (x + 4)^3$

Parent :  $f(x) = x^3$

Transformation: Translated 4 units left

6.  $f(x) = -2|x - 4|$

Parent :  $f(x) = |x|$

Transformation: Reflected in the x-axis  
Expanded vertically by a factor of 2  
Translated 4 units right

7.  $f(x) = \frac{1}{x} - 18$

Parent :  $f(x) = \frac{1}{x}$

Transformation: Translated 18 units down

8.  $f(x) = -\sqrt{x + 1} - 6$

Parent :  $f(x) = \sqrt{x}$

Transformation: Reflected in the x-axis  
Translated 6 units down  
Translated 1 unit left

Given the parent function and a description of the transformation, write the equation of the transformed function  $f(x)$ .

9. **Square Root Function**

Reflected in the x-axis  
Translated 12 units down

$f(x) = -\sqrt{x} - 12$

10. **Absolute value-**

Translated 12 units up  
Translated 23 units left

$f(x) = |x + 23| + 12$

11. **Reciprocal Function**

Expanded vertically by a factor of 4  
Reflected in the x-axis and translated 2 units up

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

12. **Greatest Integer Function**

Reflected in the y-axis and translated 16 units up

$f(x) = \lfloor -x \rfloor + 16$

Use the graph of parent function to graph each function. Find the domain and the range of the new function.

13.  $h(x) = 3(x + 3)^3 - 1$

$h(x) = 3(x + 3)^3 - 1$  →

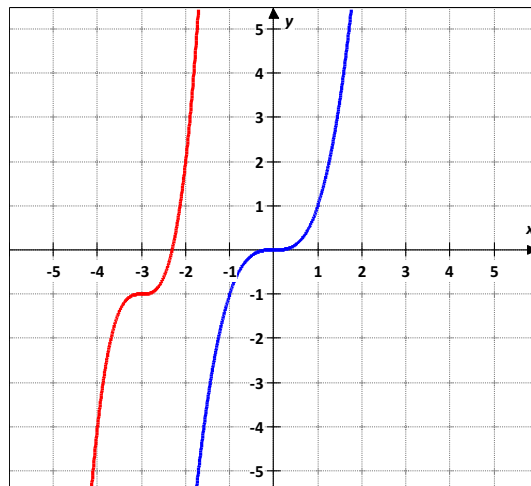
Parent function  $f(x) = x^3$  →

**Transformation:**

Expanded vertically by a factor of 3  
Translated 1 unit down  
Translated 3 units left

$D = (-\infty, \infty)$

$R = (-\infty, \infty)$



# Parent Functions and Transformations Assignment

14.  $h(x) = \frac{1}{x-2} + 4$

$h(x) = \frac{1}{x-2} + 4$  →

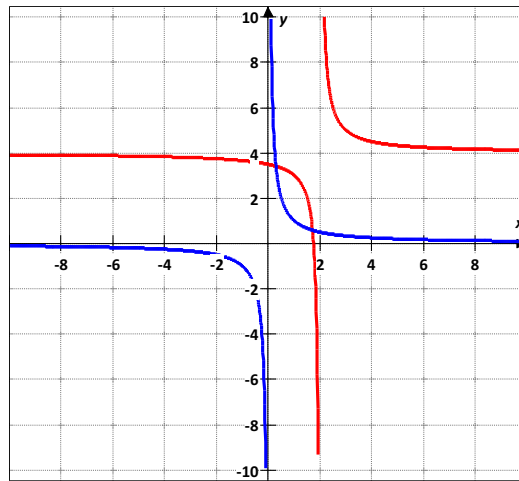
Parent function  $f(x) = \frac{1}{x}$  →

**Transformation:**

Translated 4 units up  
Translated 2 units right

$D = (-\infty, 2) \cup (2, \infty)$

$R = (-\infty, 4) \cup (4, \infty)$



15.  $h(x) = -\sqrt{x-5} - 2$

$h(x) = -\sqrt{x-5} - 2$  →

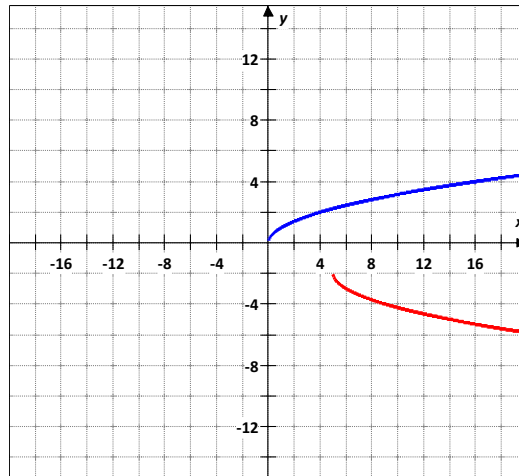
Parent function  $f(x) = \sqrt{x}$  →

**Transformation:**

Reflected in the x-axis  
Translated 2 units down  
Translated 5 units right

$D = [-5, \infty)$

$R = (-\infty, -2)$



16.  $h(x) = |x-4| + 2$

$h(x) = |x-4| + 2$  →

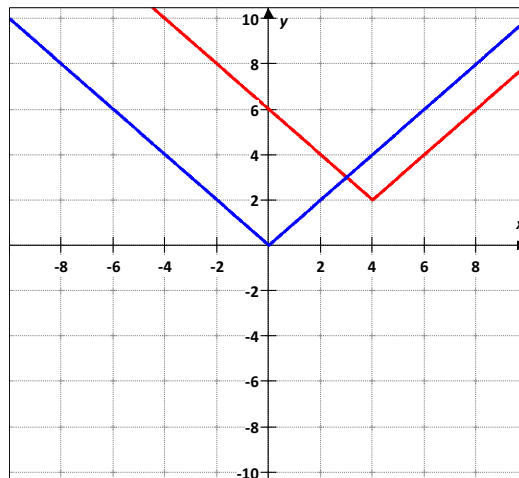
Parent function  $f(x) = |x|$  →

**Transformation:**

Translated 2 units up  
Translated 4 units right

$D = (-\infty, \infty)$

$R = [2, \infty)$





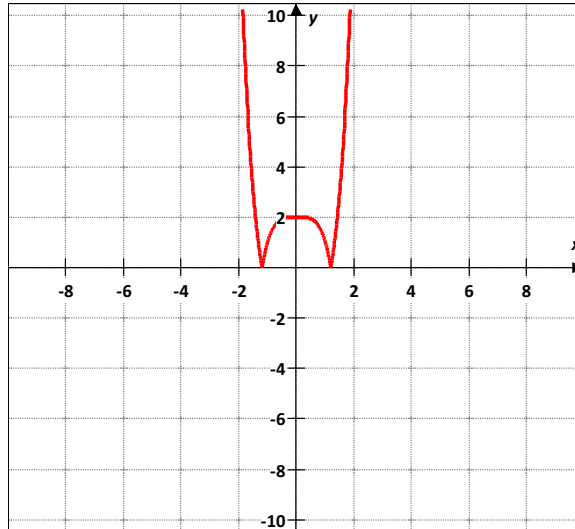
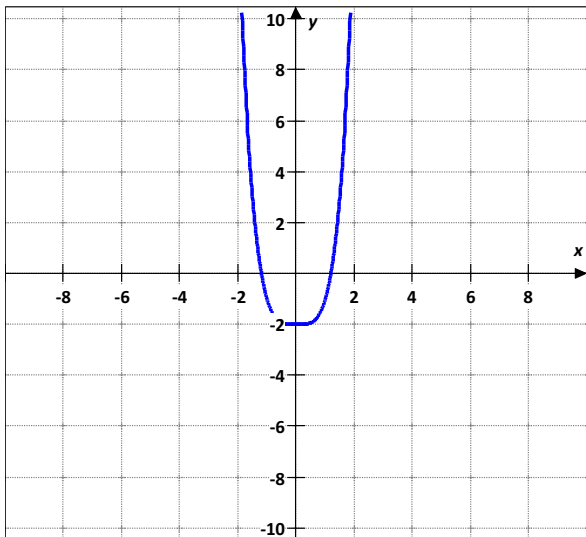
# Parent Functions and Transformations Assignment

Graph each function.

17.  $f(x) = x^4 - 2$  Graph  $h(x) = |x^4 - 2|$

$f(x) = x^4 - 2$  →  
 $h(x) = |x^4 - 2|$  →

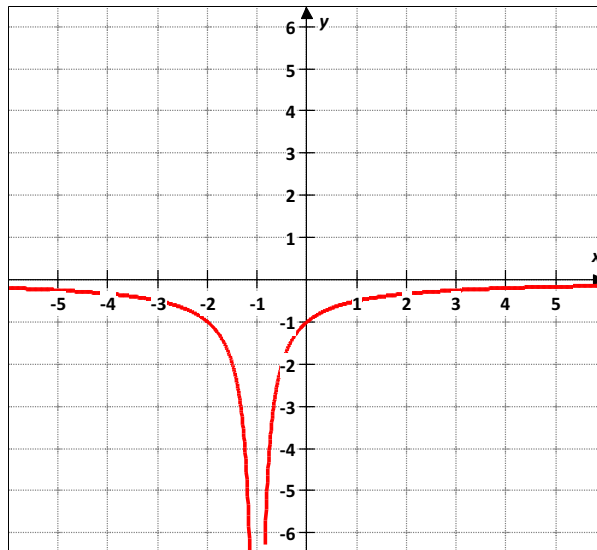
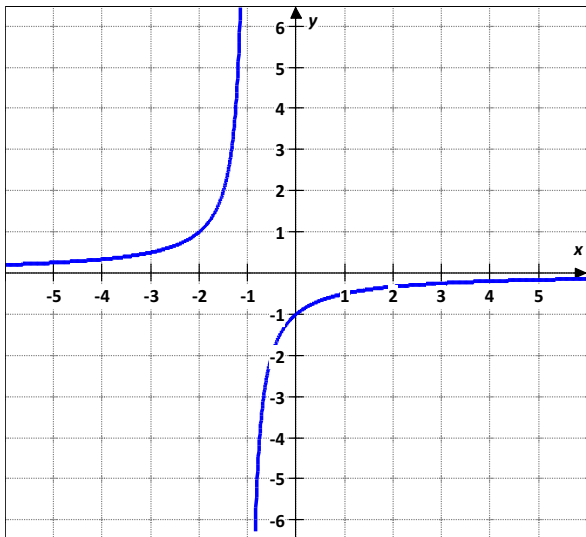
$D = (-\infty, \infty)$   
 $R = [0, \infty)$



18.  $f(x) = -\frac{1}{x+1}$  Graph  $h(x) = -\frac{1}{|x+1|}$

$f(x) = -\frac{1}{x+1}$  →  
 $h(x) = -\frac{1}{|x+1|}$  →

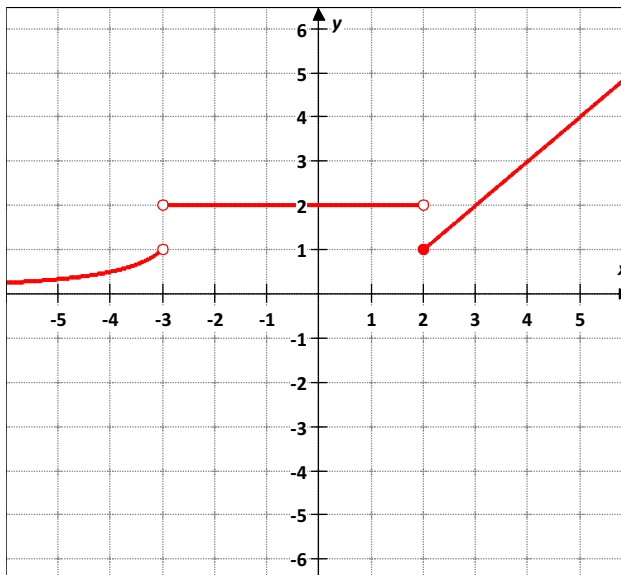
$D = (-\infty, -1) \cup (-1, \infty)$   
 $R = (-\infty, 0)$



# Parent Functions and Transformations Assignment

Graph each piecewise function.

19. 
$$f(x) = \begin{cases} -\frac{1}{x+2} & \text{if } x < -3 \\ 2 & \text{if } -3 < x < 2 \\ x-1 & \text{if } x \geq 2 \end{cases}$$



20. 
$$f(x) = \begin{cases} 3 & \text{if } x \leq -1 \\ x^2 + 2 & \text{if } -1 < x < 1 \\ |x-1| & \text{if } x \geq 1 \end{cases}$$

