

## Assignment

Date \_\_\_\_\_ Period \_\_\_\_\_

Describe the transformations necessary to transform the graph of  $f(x)$  into that of  $g(x)$ .

1)  $f(x) = |x|$   
 $g(x) = |2(x-1)|$

horiz compression  
right 1

2)  $f(x) = |x|$   
 $g(x) = -|x-2|$

reflect over  $x$   
right 2

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

Vertical Compression  
up 3

4)  $f(x) = x^2$   
 $g(x) = (3(x+1))^2$

horiz comp  
left 1

5)  $f(x) = x^2$   
 $g(x) = 3x^2 + 2$

Vertical Stretch  
up 2

6)  $f(x) = \sqrt{x}$   
 $g(x) = -\sqrt{-x}$

reflect  $x$   
reflect  $y$

Transform the given function  $f(x)$  as described and write the resulting function as an equation.

- 7)
- $f(x) = |x|$
- 
- compress vertically by a factor of 3
- 
- reflect across the
- $x$
- axis
- 
- translate right 1 unit
- 
- translate up 2 units

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

- 8)
- $f(x) = x^3$
- 
- compress vertically by a factor of 3
- 
- reflect across the
- $x$
- axis
- 
- translate right 3 units
- 
- translate up 3 units

$$f(x) = -\frac{1}{3}(x-3)^3 + 3$$

9)  $f(x) = |x|$

- compress vertically by a factor of 2
- reflect across the x-axis
- translate right 2 units
- translate down 1 unit

$f(x) = -\frac{1}{2}|x-2|-1$

10)  $f(x) = |x|$

- expand vertically by a factor of 2
- reflect across the x-axis
- translate right 2 units
- translate down 2 units

$f(x) = -2|x-2|-2$

11)  $f(x) = |x|$

- expand horizontally by a factor of 2
- reflect across the x-axis
- translate right 2 units
- translate up 3 units

$g(x) = -|\frac{1}{2}(x-2)| + 3$   
 or  $-|\frac{1}{2}x-1| + 3$

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

- reflect across the y-axis
- expand vertically by a factor of 2
- reflect across the x-axis
- translate left 3 units
- translate up 3 units

$g(x) = -2\sqrt{-(x+3)} + 3$

Sketch the graph of each function.

13)  $g(x) = -\frac{1}{2}|x-2| + 1$

x axis reflect  
 Vert Comp  
 right 2 up 1

14)  $g(x) = -\sqrt{-2(x-2)} - 3$

x axis reflect  
 y axis reflect  
 hori Comp  
 right 2 up 3

15)  $g(x) = -\frac{1}{3}|x-3| + 1$

x axis reflect  
 Vertical Comp  
 right 3 up 1

16)  $g(x) = -\frac{1}{2}(x+3)^2 - 1$

x axis reflect  
 Vertical Comp  
 left 3 down 1

17)  $g(x) = -\frac{1}{3(x-1)} - 1$

x axis Reflec  
 Vertic Comp  
 right 1 down 1

18)  $g(x) = -\sqrt{-3(x-3)} - 1$

x axis reflect  
 y axis Ref  
 hori Comp  
 right 3 down 1