

Transformations Quiz Review

Key!

Standard form of a function using a, b, c and d.  $y = a f[b(x-c)] + d$

The order to perform transformations: bcad  
x's      y's

For each of the following, list the parent function, the transformations, and then graph.

1)  $y = \frac{1}{2}(x-2)^2 - 3$

2)  $y = -4\sqrt{-1(x+2)} - 1$

3)  $y = -|2(x+1)| - 5$

PF:  $f(x) = x^2$

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

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

Transformations:

- b —
- c  $(x+2, y)$
- a  $(x+2, \frac{1}{2}y)$
- d  $(x+2, \frac{1}{2}y-3)$
- 2 4  $\rightarrow (0, -1)$
- 1 1  $\rightarrow (1, -2.5)$

Transformations:

- b  $(\frac{x}{-1}, y)$
- c  $(\frac{x}{-1} - 2, y)$
- d  $(-x-2, -4y)$
- d  $(-x-2, -4y-1)$

Transformations:

- b  $(\frac{x}{2}, y)$
- c  $(\frac{x}{2} - 1, y)$
- a  $(\frac{x}{2} - 1, -y)$
- d  $(\frac{x}{2} - 1, -y-5)$

List original points or sketch original graph.:

x	y
0	0
1	1
2	4

- $(2, -3)$
- $(3, -2.5)$
- $(4, -2)$

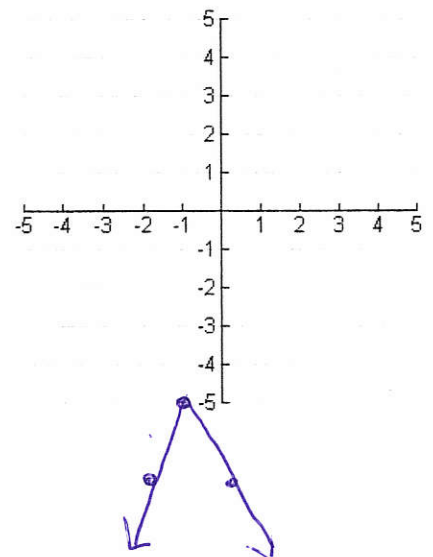
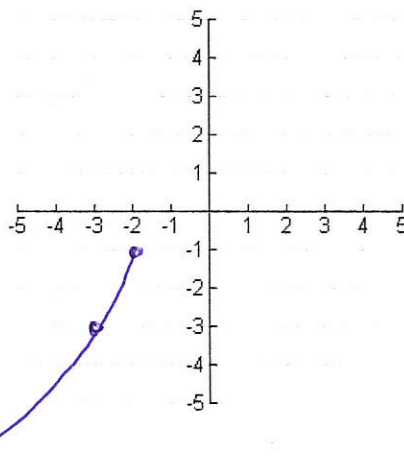
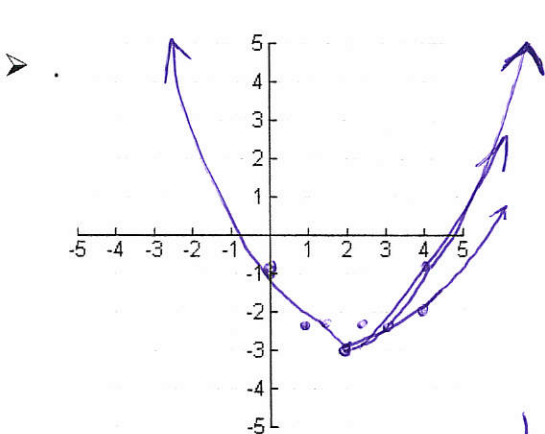
x	y
0	0
1	1
4	2

- $\rightarrow (-2, -1)$
- $\rightarrow (-3, -3)$
- $\rightarrow (-6, -9)$

x	y
-2	2
0	0
2	2

- $\rightarrow (-2, -2)$
- $\rightarrow (-1, -5)$
- $0, -7$

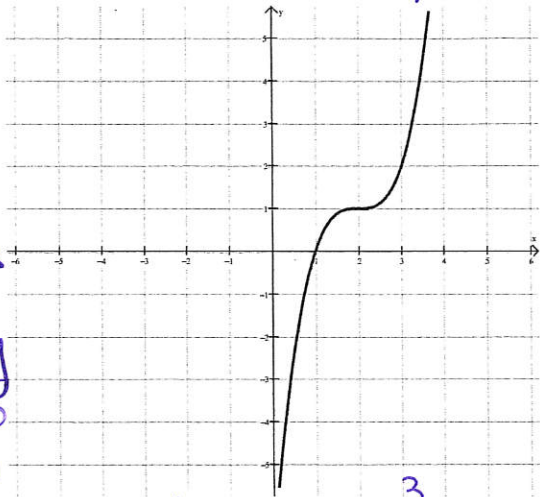
Transformed points/graph:



Write the equation for the graphs shown below.

$f(x) = x^3$

4.

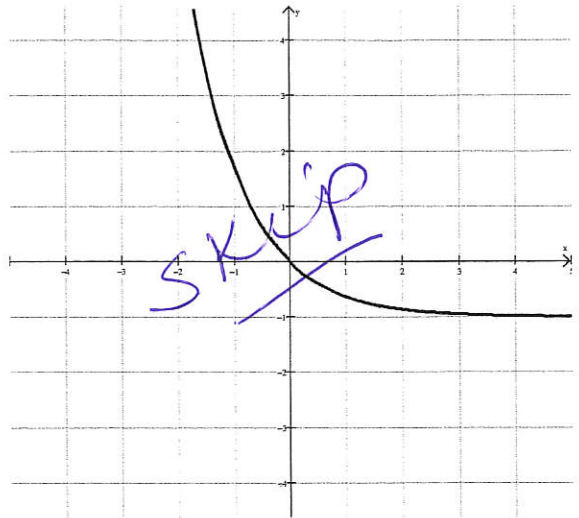


Rt 1  
Up 2

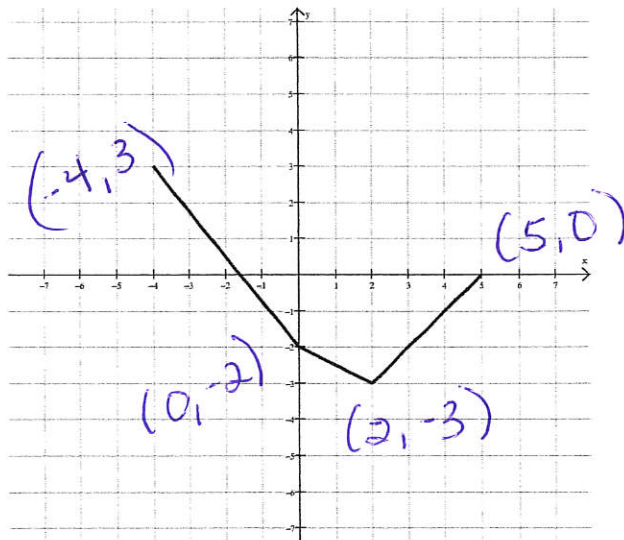
x	y
0	0
1	1
2	8

$g(x) = (x-2)^3 + 1$

5.



To the right is the graph of  $y = f(x)$ .

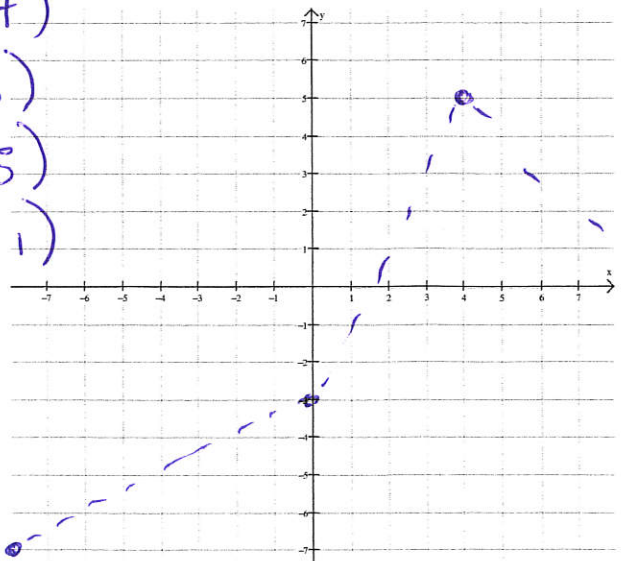


b  $\frac{1}{2}$   
 $c = \frac{1}{2} \therefore (2x, y)$   
 $a = -2 \quad (2x, -2y)$   
 $d = -1 \quad (2x, -2y - 1)$

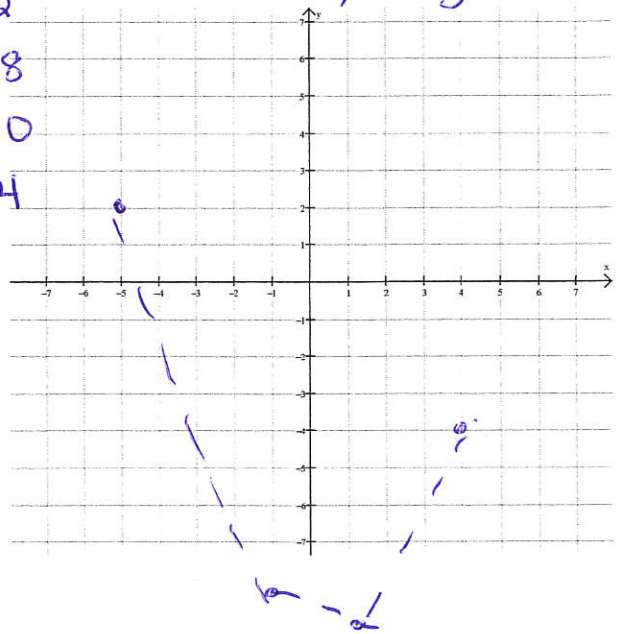
6. Sketch a graph of  $y = -2f(.5x) - 1$

7. Sketch a graph of  $y = 2f(1+x) - 4$

$(-8, -7)$   
 $(0, 3)$   
 $(4, 5)$   
 $(10, -1)$



-5 2  
 -1 -8  
 1 -10  
 4 -4



Write the equation of each parent function given the certain conditions. (HINT: Determine the parent function and  $a, b, c, d$  BEFORE writing the equation.)

8) Absolute Value: Vertical Compression of  $\frac{3}{4}$ , shifted up 4 units, shifted left 3 units, reflected about the y axis.

$$A = \frac{+3}{4} \quad B = -1 \quad C = -3 \quad D = 4$$

$$f(x) = \frac{+3}{4} |1(x+3)| + 4$$

9) Cubic: Shifted 3 down, shifted 1 left, and reflected across the x-axis.

$$A = -1 \quad B = - \quad C = -1 \quad D = -3$$

$$f(x) = -1(x+1)^3 - 3$$

10) Quadratic: Reflected across x-axis, vertical stretch of 3, shifted down 2, .

$$a = -1 \cdot 3 = -3 \quad b \quad c \quad d = -2$$

$$f(x) = -3x^2 - 2$$

11) Square root: Vertical Compression of  $\frac{5}{7}$ , shifted right 4, shifted up 1, reflected about the x axis and about the y axis. X values are MULTIPLIED BY 2 \*\*\*\*\*

$$f(x) = -\sqrt{-\frac{5}{7}(x-4)} + 1$$

Let  $C(r)$  represent the cost of taking  $r$  college credits. Write a function that would represent the following:

12. You take half the number of credits:  $C\left(\frac{r}{2}\right)$

13. You are charged an additional \$100 parking fee.  $C(r) + 100$

14. The cost of  $r$  credits is doubled:  $2C(r)$

15. You take 3 more credits:  $C(r + 3)$

16. Create your own function and graph it below. It must contain at least 3 points

Write a transformed function equation,  $g(x)$ , in terms of  $f(x)$  that uses at least 5 transformations. Try to make it so that it fits on the axes below!

Graph your transformed function,  $g(x)$ .

