

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

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

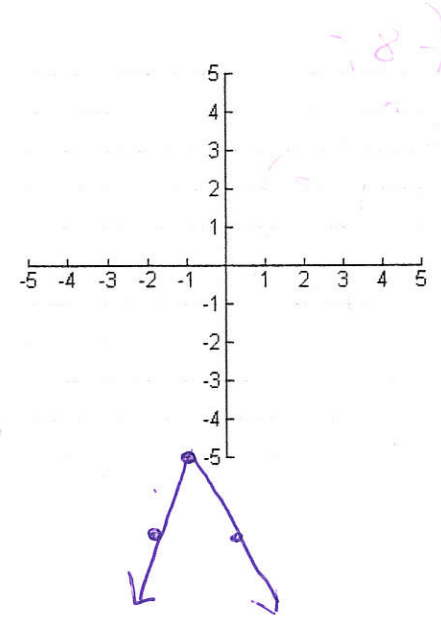
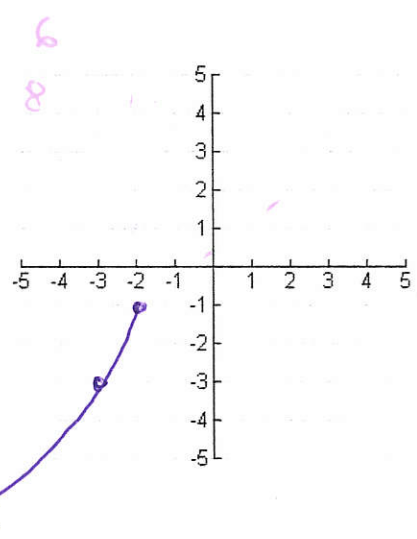
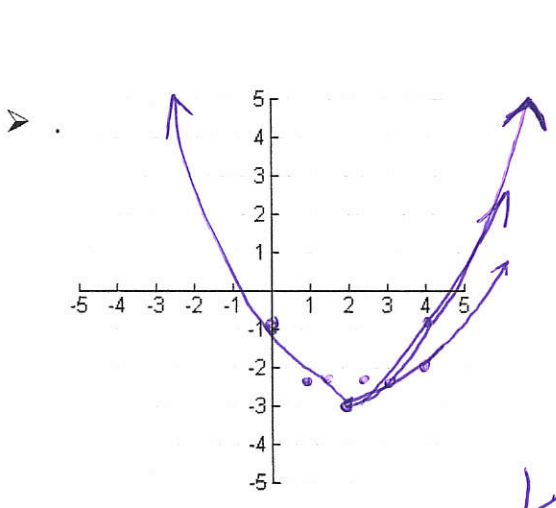
x	y
0	0
1	1
4	2

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

x	y
-2	2
0	0
2	2

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

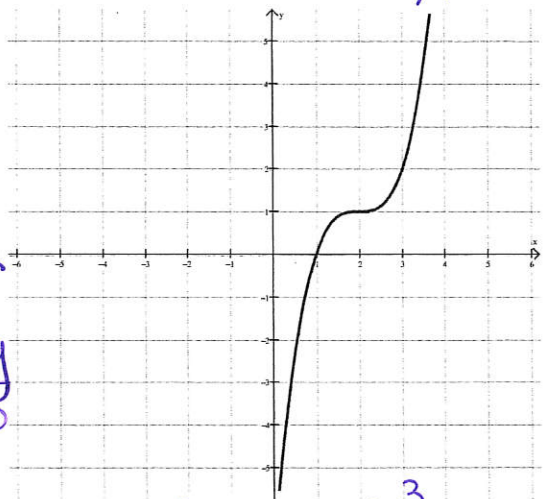
Transformed points/graph:



Write the equation for the graphs shown below.

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

4.

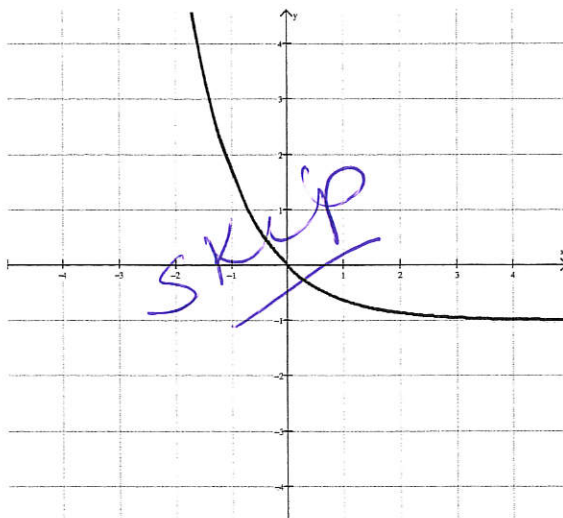


Rt 1
Up 2

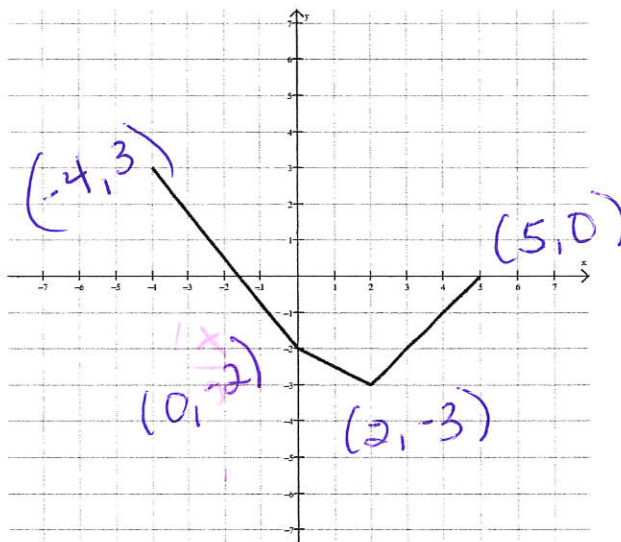
x	y
0	0
1	1
2	8

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

5.



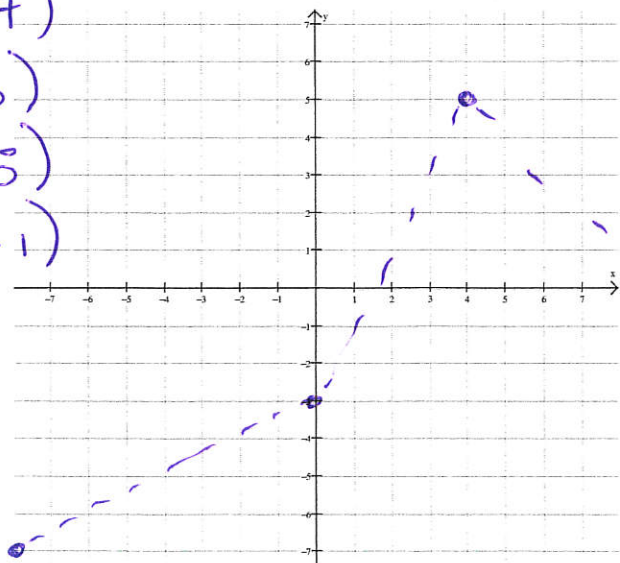
To the right is the graph of $y = f(x)$.



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

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

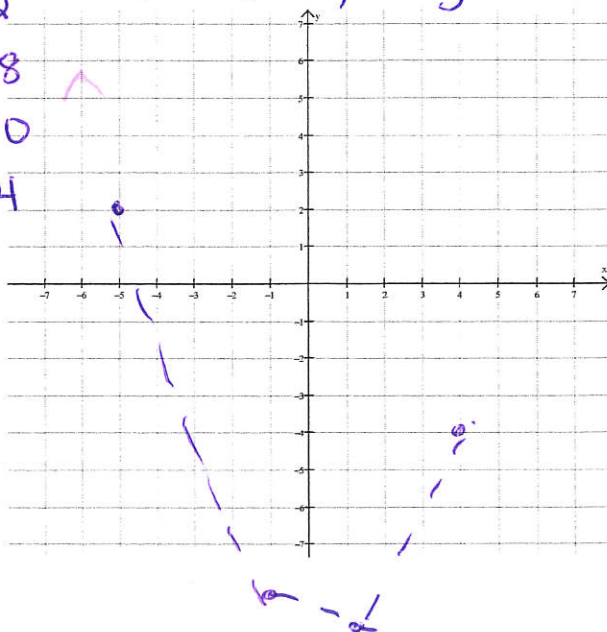
$(-8, -7)$
 $(0, 3)$
 $(4, 5)$
 $(10, -1)$



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

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

1 left; $2y - 4$



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, $g(x)$.

