

Part I: Describe the transformations that each equation underwent assuming the original function is either $y = x^2$ or $y = |x|$.

1) $y = x^2 - 7$

down 7

2) $y = |x - 7|$

right 7

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

left 7

4) $y = |x| + 7$

up 7

4) $y = (x + 6)^2 - 11$

left 6
down 11

5) $y = |x - 3| - 7$

right 3
down 7

6) $y = |x + 3| + 13$

left 3
up 13

Part II: Write an equation for each graph described below.

1) Shift the graph of $y = x^2$ right 3 units

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

2) Shift the graph of $y = x^2$ down 5 units

$$y = x^2 - 5$$

3) Shift the graph of $y = |x|$ left 9 units

$$y = |x + 9|$$

4) Shift the graph of $y = |x|$ up 10 units

$$y = |x| + 10$$

5) Shift the graph of $y = |x|$ up 12 and right 4

$$y = |x - 4| + 12$$

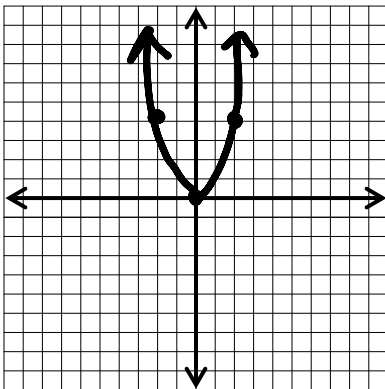
6) Shift the graph of $y = x^2$ down 2 and left 8

$$y = (x + 8)^2 - 2$$

Part III: Given is a graph of $y = x^2$ or $y = |x|$. Also given is a list of points that lies on the original graph. For each *transformed* equation, do the following:

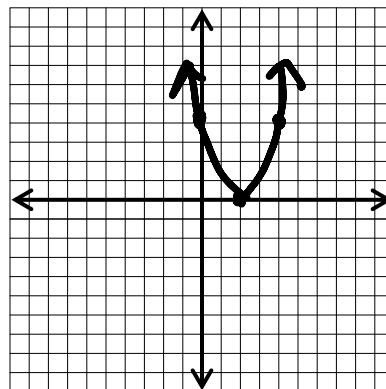
a) List the transformations (i.e. left 5, up 2, etc)

b) Draw the graph of the new function – plot specific points based on the transformations from part a. An example below has been done for you. ****If you shift up/down, change the y-values; If you shift left/right, change the x-values!**



Original: $y = x^2$

x	y
0	0
2	4
-2	4



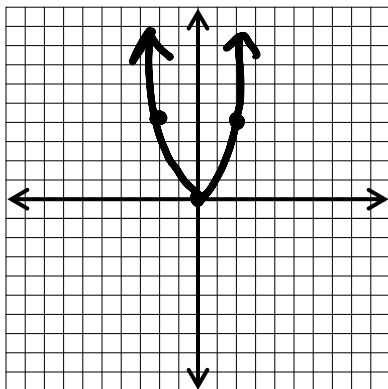
Transformed Equation:

$$y = (x - 2)^2$$

* Right 2
 * Add 2 to the x's to make it go right!

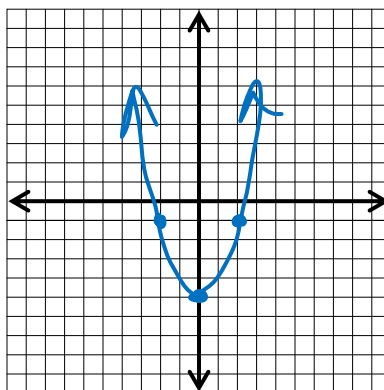
x	y
2	0
4	4
0	4

1)



Original: $y = x^2$

x	y
0	0
2	4
-2	4

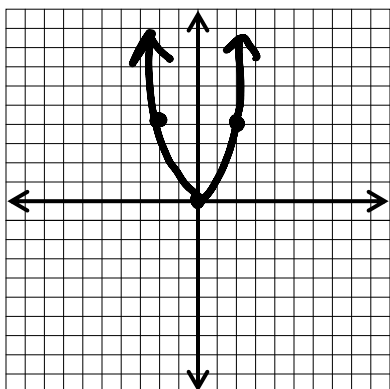


Transformed Equation:

$y = x^2 - 5$
 * down 5
 * subtract 5 from y's

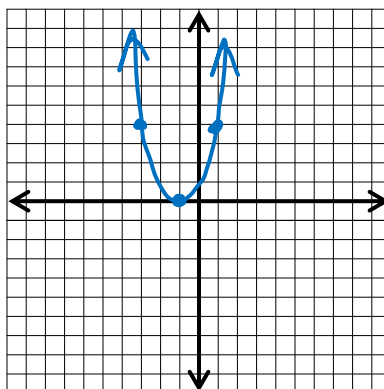
x	y
0	-5
2	-1
-2	-1

2)



Original: $y = x^2$

x	y
0	0
2	4
-2	4

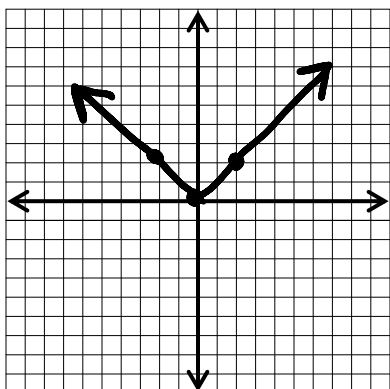


Transformed Equation:

$y = (x+1)^2$
 * left 1
 * subtract 1 from x's

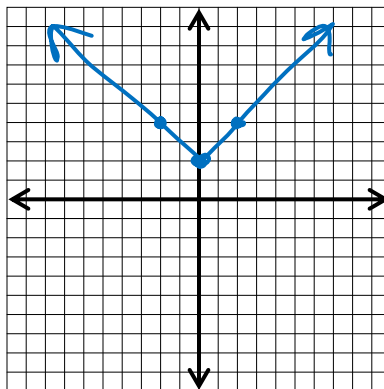
x	y
-1	0
1	4
-3	4

3)



Original: $y = |x|$

x	y
0	0
2	2
-2	2

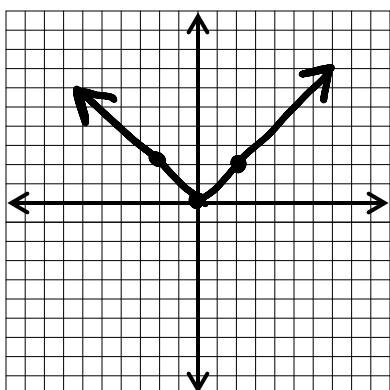


Transformed Equation:

$y = |x| + 2$
 * up 2
 * add 2 to y's

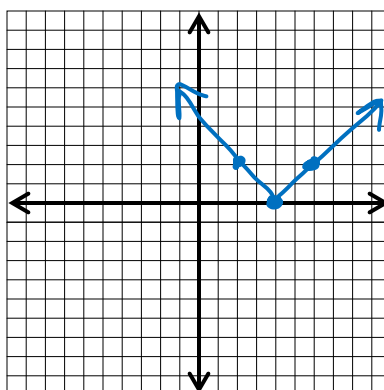
x	y
0	2
2	4
-2	4

4)



Original: $y = |x|$

x	y
0	0
2	2
-2	2



Transformed Equation:

$y = |x-4|$
 * right 4
 * add 4 to x's

x	y
4	0
6	2
2	2