

EXPLORE/EXPLAIN:

Name Kay

TRANSFORMATIONS

Compare	Describe the changes to the graph.	If $f(x) = x^2$ Show the transformations using function notation	Use coordinate notation to represent the transformations
$y = x^2$ and $y = 5x^2$	Vert. Stretch	$g(x) = 5f(x)$	$(x, 5y)$
$y = x^2$ and $y = \frac{1}{4}x^2$	vert. compression	$g(x) = \frac{1}{4}f(x)$	$(x, \frac{1}{4}y)$
$y = x^2$ and $y = -x^2$	Vert. Reflection	$g(x) = -f(x)$	$(x, -y)$
$y = x^2$ and $y = 5(x+3)^2 - 2$	Vert. Stretch left 3 down 2	$g(x) = 5f(x+3) - 2$	$(x-3, 5y-2)$

Compare	Describe the changes to the graph.	If $f(x) = x^2$ Show the transformations using function notation	Use coordinate notation to represent the transformations.
$y = x^2$ and $y = 2x^2 - 3$	Vert. Stretch down 3	$g(x) = 2f(x) - 3$	$(x, 2y-3)$
$y = x^2$ and $y = \frac{1}{3}x^2 + 4$	Vert. Comp. up 4	$g(x) = \frac{1}{3}f(x) + 4$	$(x, \frac{1}{3}y+4)$
$y = x^2$ and $y = -x^2 + 2$	vert. Reflection up 2	$g(x) = -f(x) + 2$	$(x, -y+2)$
$f(x) = x^2$ $g(x) = -5x^2 - 10$	vert. Reflection vert. Stretch down 10	$g(x) = -5f(x) - 10$	$(x, -5y-10)$

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Compare	Describe the changes to the graph.	If $f(x) = x^2$ Show the transformations using function notation	Use coordinate notation to represent the transformation.
$y = x^2$ and $y = (x-3)^2$	right 3	$g(x) = f(x-3)$	$(x+3, y)$
$y = x^2$ and $y = (x+4)^2$	left 4	$g(x) = f(x+4)$	$(x-4, y)$
$y = x^2$ and $y = (x-7)^2 + 2$	right 7, up 2	$g(x) = f(x-7) + 2$	$(x+7, y+2)$
$y = x^2$ and $y = 2(x-3)^2 - 5$	vert. stretch right 3, down 5	$g(x) = 2f(x-3) - 5$	$(x+3, 2y-5)$

$y = x^2$ and $y = (2x)^2 + 8$	horiz. compression up 8	$g(x) = f(2x) + 8$	$(\frac{1}{2}x, y+8)$
$y = x^2$ and $y = (\frac{1}{2}x)^2 - 6$	horiz. stretch down 6	$g(x) = f(\frac{1}{2}x) - 6$	$(2x, y-6)$
$y = x^2$ and $y = (-x)^2$	horiz. reflection	$g(x) = f(-x)$	$(-x, y)$
$y = x^2$ and $y = (\frac{-5}{4}(x-2))^2 + 16$	horizontal reflection horiz. compression right 2, up 16	$g(x) = f(\frac{-5}{4}(x-2)) + 16$	$(\frac{-4}{5}x+2, y+16)$

$$Y = a(b(x \pm h))^2 \pm k$$

Vert. stretch $a > 1$
vert. comp. $0 < a < 1$
vert. reflection

horiz. stretch $0 < b < 1$
horiz. comp. $b > 1$
horiz. reflection

+ h left
- h right

+ k up
- k down

Transformations from a Table

How do you identify the vertex from a table?

EX#1

f(x)	
X	Y
-1	0
0	-1
1	0
2	3
3	8



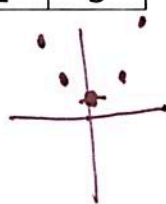
g(x)	
X	Y
-6	7
-5	2
-4	-1
-3	-2
-2	-1

Write the transformation from f(x) to g(x) in function notation.

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

EX#2

f(x)	
X	Y
-2	5
-1	2
0	1
1	2
2	5



g(x)	
X	Y
2	7
3	4
4	3
5	4
6	7

Write the transformation from f(x) to g(x) in function notation.

$$g(x) = f(x-4) + 2$$

Transformation Stations

Station 1: _____

Station 2: _____

Station 3: _____

Station 4: _____

Station 5: _____

Station 6: _____

Station 7: _____

Station 8: _____

Transformation Stations Worksheet

Station 1: Vertical stretch
right 4
up 7

Station 2: vert. Reflection, stretch
left 6, down 10

Station 3: $f(x) = 10(x-6)^2 + 3$

Station 4: $f(x) = 1/3(x+12)^2 - 26$

Station 5: widest
 $1/5x^2, 1/2x^2, -2/3x^2, -2x^2, -5x^2$
 $10x^2$

Station 6: $D: (-\infty, \infty)$
 $R: [5, \infty)$ OR $5 \leq y < \infty$
 $y \geq 5$

Station 7: vert. Reflection
horiz. Compression
right 3

Station 8: $(-\infty, -3]$
 $-\infty < y \leq -3$
OR $y \leq -3$

