January 4, 2012

Get out your notes . . .

(assignment from yesterday will be due tomorrow)

1/4 - Transformations of Graphs of Functions

Question:

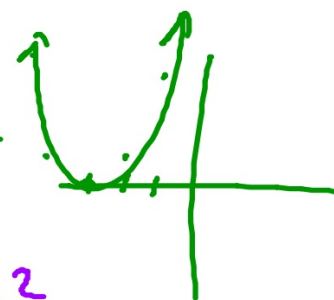What can you do to a graph and still have it maintain it s original shape and size?

Rotate it

Slide ⟶ honizontal
Vertical
both

Flip

If the original equation is $f(x) = x^2$

write the equation that is:

3 *units to the left* $g(x) = (x+3)^2$

4 *units to the right* $g(x) = (x-4)^2$

2 *units up* $g(x) = x^2 + 2$

5 *units down* $g(x) = x^2 - 5$

reflected over the $x - axis$ $g(x) = -x^2$

Summary of translations/reflections:

c units to the left	$g(x) = f(x + c)$
c units to the right	$g(x) = f(x - c)$
c units up	$g(x) = f(x) + c$
c units down	$g(x) = f(x) - c$
reflected over the x − axis	$g(x) = -f(x)$

c is a positive real number

x	y
-2	4
-1	1
0	0
1	1

$f(x)$

x	y
-3	4
-2	1
-1	0
0	1

$f(x+1)$

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

$f(x) + 1$
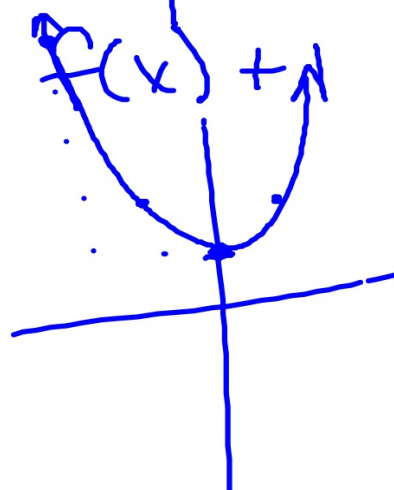
— f(x)

x	y
−2	−4
−1	−1
0	0
1	−1

What transformations are being used?
  Write answers as g(x) in terms of f(x).

$f(x) = x^2$

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

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

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

$f(x) = |x|$

$g(x) = |x| + 5$
$g(x) = f(x) + 5$

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

HOMEWORK

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Due: