Advanced Math

1-5
(Day 1)
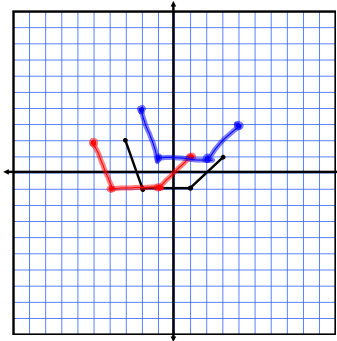Transformation of Functions

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Transformations

$$y = af(bx - c) + d$$

a → neg→ flips upside down
vertical stretch or compression

d → vertical translation (slides up + down)

b → horizontal stretch or compression (opposite of looks)
neg → flips left to right

c → horizontal translation, (slides left and right)
opposite of appearances
dependent upon b
translates $\boxed{\dfrac{c}{b}}$

The graph of $f(x)$ is shown.

Draw the graph of:

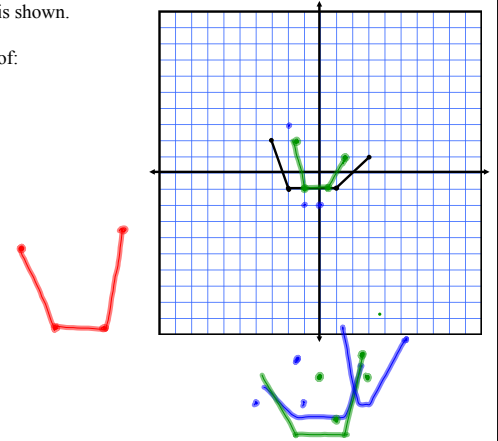a) $f(x + 2)$

b) $f(x - 1) + 2$

The graph of $f(x)$ is shown.
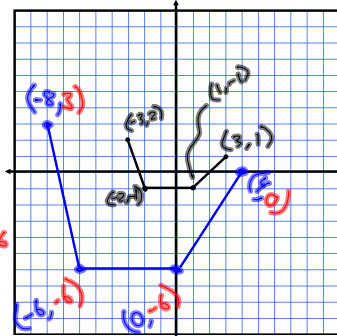
Draw the graph of:

c) $2f(-x)$

d) $f(2x)$

Why do changes in the parentheses work opposite of what we think, while changes outside work like normal?

Draw the graph of $3f\left(\frac{1}{2}x + 1\right) - 3$

Like y

$\frac{1}{2}x + 1 = -3$
$x = -8$

$\frac{1}{2}x + 1 = -2$
$x = -6$

$\frac{1}{2}x + 1 = 1$
$x = 0$

$\frac{1}{2}x + 1 = 3$
$x = 4$

$f(-3) = 2$

-3	2	$3(2) - 3 = 3$
-2	-1	$3(-1) - 3 = -6$
1	-1	$3(-1) - 3 = -6$
3	1	$3(1) - 3 = 0$

(-8, 3) (-3, 2) (1, -1) (3, 1) (-2, -1) (-6, -6) (0, -6)

Assignment:
Handout
16 graphs