

Walking Function Transformations – Class Handout

My group's initial location is $(x, f(x)) = (\text{—————}, \text{—————})$.

Section 1

In this section, fix your given x -coordinate and compute a new y -coordinate based on the transformation.

Example 1: Suppose the transformation is $f(x) + 1$ and your starting location is $(5, 6) = (x, f(x))$. Keep $x = 5$. Then, $y = f(x) + 1 = f(5) + 1 = 6 + 1 = 7$. The new location keeps $x = 5$, and now $y = 7$. Your new location is then $(5, 7)$.

Determine where your location moves under each of the transformations below. Fill in the first three columns.

Transformation	Fixed x Coordinate x	New y Coordinate y	New Location (x, y)	Description of Change
$f(x) + 1$				
$2f(x)$				
$\frac{1}{2}f(x)$				
$-f(x)$				

Stop here and wait for directions for whole class activity. You will be filling in the last column of the chart. Then some transformations you will be walking as a class are as follows.

$$f_1(x) = f(x) + 3, \quad f_2(x) = f(x) - 2, \quad f_3(x) = -2f(x), \quad f_4(x) = \frac{1}{2}f(x) - 2.$$

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Section 2

In this section, fix your given y -coordinate and determine the new x -coordinate that would result in your fixed y coordinate after applying the function.

Suppose the transformation is $f(x + 1)$ and your starting location is $(5, 6) = (x, f(x))$. Keep $y = 6 = f(x + 1) = f(5)$. Then, $x + 1 = 5$, and $x = 4$. The new location keeps $y = 6$, and now $x = 4$. Your new location is then $(4, 6)$.

Determine where your location moves under each of the transformations below. Fill in the first three columns.

Transformation	New x Coordinate x	Fixed y Coordinate y	New Location (x, y)	Description of Change
$f(x + 1)$				
$f(2x)$				
$f(\frac{1}{2}x)$				
$f(-x)$				

Stop here and wait for directions for whole class activity. You will be filling in the last column of the chart. Then some transformations you will be walking as a class are as follows.

$$g_1 = f(x + 3), g_2 = f(x - 2), g_3 = f(-2x).$$

Final challenge: Without knowing your initial coordinates, how would you move when applying each of the following functions? $h_1(x) = f(x - 1) + 2$, $h_2(x) = 2f(x + 1)$, $h_3(x) = f(2x) - 2$.