Math II **TRANSFORMATIONS OF QUADRATIC FUNCTIONS PART C - WRITING THE NEW FUNCTION**

This is the last lesson in the three part series. This lesson only teaches you one thing, how write a new function after from the transformation form.

Given $f\left(x\right)=x^2$, the parent form of a quadratic function, build a new function based on the transformation $2f\left(x-3\right)+5$ Call the new function g(x).

$$2f\left(x-3\right)+5$$

$$g\left(x\right)=\_\_\_\left(x+\_\_\_\right)^2+\_\_\_$$

Given $f\left(x\right)=x^2$, build a new function based on the transformation described below. Call each new function g(x).

$f\left(x+1\right)+4\rightarrow g\left(x\right)=$ ____________________

$-3f\left(x-2\right)-9\rightarrow g\left(x\right)=$ ____________________

$5f\left(x-6\right)\rightarrow g\left(x\right)=$ ____________________

$\frac{1}{2}f\left(x\right)-6\rightarrow g\left(x\right)=$ ____________________

$-f\left(x+\frac{3}{4}\right)+\frac{1}{2}\rightarrow g\left(x\right)=$ ____________________

$Af\left(x-B\right)+C\rightarrow g\left(x\right)=$ ____________________

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In the case of a function NOT being in *Parent Form,* you use the same steps and apply the arithmetic to simplify.

Given $f(x) = -4(x+2)^2 + 5$, build a new function based on the transformation $2f(x-3)+1$
Call the new function g(x).

$$2f(x-3)+1$$

$$g(x) = -4 \bullet \_\_\_ (x+2)^2 + 5 \bullet \_\_\_$$

Simplify..... then add in shifts

$$g(x) = -8(x+2+\_\_\_)^2 + 10 + \_\_\_$$

$$g(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

Given $f(x) = (x+2)^2 + 5$, build a new function based on the transformation $2f(x+4)+1$
Call the new function g(x).

$$g(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

Given $f(x) = \frac{1}{2}x^2 + 1$, build a new function based on the transformation $-3f(x-3)+9$
Call the new function g(x).

$$g(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$

Given $f(x) = -(x+1)^2$, build a new function based on the transformation $-f(x)-1$
Call the new function g(x).

$$g(x) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_$$