Precalculus – Mixed Six – Transformations with Radical Functions Calculator Neutral

1. Factual Recall

If f(x) = $\sqrt{x}$, describe how the change to the equation affects the graph of the parent function.

a. f(x) =a$\sqrt{x}$

b. f(x) =$\sqrt{x+b}$

c. f(x) = $\sqrt{x}$ + c

2. Carry out a Procedure

Let f(x) = a$\sqrt{(x+b)}$ +**c**
with a=2, b = -5, and c = 4

Determine:

a. f(9)

b. f(0)

c. f(13)

3. Classify a Mathematical Object

The function g is the result of transformations on the function f. Identify the transformations as M(multiplicative), ALR(additive, shifts left or right), AUD(additive, shifts up or down) or R(reflection). If more than 1 transformation, use multiple letters.

M/ALR/AUD/R	**f(x) = $\sqrt{x}$**
	g(x)=2$\sqrt{x-1}$
	g(x) = $\sqrt{x+3}$ -5
	g(x)= - $\sqrt{x}$+ 4

4. Prove, Show, Justify

Function *h* has the following values at selected values of *x*. Let $g = ah(x-b) + c$, where a, b, and c are positive constants. In the *xy*-plane, the graph of *g* is constructed by applying a vertical dilation(vertical stretch/shrink) by a factor of 4 and a horizontal translation(slide) of -2, and by a vertical translation of 3. Show that g(1) = 31

x	h(x)
0	4
3	7
5	9

5. Extend a Concept

x	-1	0	1	2
g(x)	6	-4	3	7

The table above gives values of a function *g* at selected values of *x*.

Let $f(x) = 3g(2(x+1)) + 4.$

a. Find f(-1)

b. Find a if f(a) = 25

6. Critique a Fallacy

Let g = af(x-b) + c, where *a, b,* and *c* are constants and f(x) = $\sqrt{x}$. In the *xy*-plane, the graph of *g* is constructed by applying a horizontal translation by 2 units left, a vertical dilation by a factor of 3, and a vertical translation of down 6 units.
Martin says that the equation for g(x) is

g(x) = 3$\sqrt{x-2}$ - 6 What is wrong with this expression for the function *g*?

Write a correct expression for the function *g*.

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