The Book does OK on

Vertical Stretchs $af(x)$

Vertical Shifts $f(x)+k$

Horizontal Shifts $f(x-h)$

Book is NOT so good at

Horizontal Flips $f(-x)$

Horizontal Shrinks $f(ax)$

This is Writing Project 2 Stuff

METHODS:
① Do stretches first. (Flips handled in stretches step)
② Wait 'til end to do horizontal stretches/flips.

METHOD 1

$g(x) = -2\sqrt{5x+10} + 11$

Re-write $5x+10$ as $5\left(x+\frac{10}{5}\right) = 5(x+2)$

Then the moves to handle $5x+10$, inside, are

$x \longmapsto 5x \longrightarrow 5(x+2)$

$\sqrt{x} \longrightarrow \sqrt{5x} \longrightarrow \sqrt{5(x+2)}$

$x \to x+2$ LEFT 2 (Early Start) "Advance"

$(1,1) \longrightarrow \left(\frac{1}{5},1\right) \longrightarrow \left(\frac{1}{5}-2,1\right) = \left(-\frac{9}{5},1\right)$

It gets there 5 times quicker, so it gets "1" in $\frac{1}{5}$ the time

$g(x) = -2\sqrt{5x+10} + 11 = -2\sqrt{5(x+2)} + 11$

Safe Roadmap:

$f(x) = \sqrt{x}$ (1,1)

$-2f(x) = -2\sqrt{x}$ (1,−2)

$-2\sqrt{5x} = -2f(5x)$ $\left(\frac{1}{5},-2\right)$

$-2\sqrt{5(x+2)} = -2f(5(x+2))$ (−2,0) $\left(-\frac{9}{5},-2\right)$

$-2\sqrt{5(x+2)} + 11 = g(x)$

Check y-int.

$g(0) = -2\sqrt{5} + 11$ is positive.

(Tells me how to locate x- & y-axes, basically)

(−2,11) $\left(-\frac{9}{5},9\right)$ $(0,-2\sqrt{5}+11)$

On your projects, I will want you to track movements of 2 or 3 (usually 3) key points. We tracked (0,0) & (1,1), here

$-2\sqrt{5(x+2)} + 11 = g(x)$

$\sqrt{x}$	$-2\sqrt{x}$	$-2\sqrt{5x}$	$-2\sqrt{5(x+2)}$
(0,0)	(0,0)	(0,0)	(−2,0)
(1,1)	(1,−2)	$\left(\frac{1}{5},-2\right)$	$\left(-\frac{9}{5},-2\right)$

$\frac{1}{5} - 2 = -\frac{9}{5}$

$-2\sqrt{5(x+2)} + 11$

(−2,11)
$\left(-\frac{9}{5},9\right)$
} where (0,0) & (1,1) ended up after all the mean things I did to f(x) to get to g(x).

^y