CCSS Advanced Algebra 3 AA2: Transformations Review Name____________________

Part 1: Write the expression that fits each blank. Then name the transformation(s).

$f(x) = x^2$ $g(x) = |x|$ $h(x) = \sqrt{x}$ $j(x) = x^3$ $k(x) = \sqrt[3]{x}$

Expression	$f(x+2) =$ $(x+2)^2$	$2g(x) =$ $2\|x\|$	$h(x) - 4 =$ $\sqrt{x} - 4$	$j(0.1x) =$ $(0.1x)^3$
Transformation	Translate Left 2	Vertical Dilation by 2	Translate down 4	Horizontal Dilation by 10.
Expression:	$2k(x-1) =$ $2\sqrt[3]{x-1}$	$g(2x) + 4 =$ $\|2x\| + 4$	$f(2(x-5)) =$ $(2(x-5))^2$	$4h(x) + 3 =$ $4\sqrt{x} + 3$
Transformation	Shift right 1 Stretch up by 2	Shift up 4 Horizontal Compress of 2	Shift right 5 Horizontal Compress of 2	Shift up 3 Vertical stretch of 4

Part 2: Write the equation for each function described below:

1. Parent *Quadratic function* ($y = x^2$) is reflected over the x-axis, translated down 4 units and left 2 units.

$y = -(x+2)^2 - 4$

2. Parent *Cubic function* ($y = x^3$) is stretched vertically by a factor of 3, translated right 5 units and up 1 unit.

$y = 3(x-5)^3 + 1$

3. Parent *Square Root function* ($y = \sqrt{x}$) is reflected over the y-axis, compressed vertically by a factor of $\frac{1}{2}$ and translated left 4 units.

$y = \frac{1}{2}\sqrt{-(x+4)}$

4. Parent *Cube Root function* ($y = \sqrt[3]{x}$) is reflected over the y-axis, compressed horizontally by a factor of 8 and translated up 3.

$y = \sqrt[3]{-8x} + 3$

5. Parent *Absolute Value function* ($y = |x|$) is stretched vertically by a factor of 2, translated right 3 units and reflected over the x-axis.

$y = -2|x-3|$

6. Parent *Linear function* ($y = x$) is reflected over the x-axis, stretched vertically by a factor of 4 and translated right 2 units.

$y = -4(x-2)$