CCSS Advanced Algebra 3 AA4: Transformations Review Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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

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

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| --- | --- | --- | --- | --- |
| Expression | $f(x+2)=$\_\_\_\_\_\_\_\_\_\_ | $2g(x)=$\_\_\_\_\_\_\_\_\_ | $h(x)-4=$\_\_\_\_\_\_\_\_ | $j(0.1x)=$\_\_\_\_\_\_\_\_ |
| Transformation |  |  |  |  |
| Expression: | $2k(x-1)=$\_\_\_\_\_\_\_\_\_\_ | $g(2x)+4=$\_\_\_\_\_\_\_ | $f(2(x-5))=$\_\_\_\_\_\_ | $4h(x)+3=$\_\_\_\_\_\_\_ |
| Transformation |  |  |  |  |

**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.

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

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.

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.

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.

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

**Part 3: Find the exact equation of each function described below.**

1. Parent *quadratic function* with a vertex of (2,-3) that passes through the point (3,12)

1. Parent *cubic function* with an inflection point of (-4, -3) that passes through the point (-5,2)

1. Parent *square root* function with a vertex of (3,5) that passes through the point (7,-3)

1. Parent *cube root* function with an inflection point of (-1,-1) that passes through the origin
2. Parent *absolute value* function with a vertex of (7, -3) that passes through the origin

**Part 4: Find the exact equation of each graph below:**

|  |  |  |
| --- | --- | --- |
|  |  |  |
| Equation: | Equation: | Equation: |
|  |  |  |
| Equation: | Equation: | Equation: |