ALGEBRA 2 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lesson 6.8 Graphing Radical Functions

Recall from graphing quadratic and absolute value functions that different transformations occurred when compared to the parent function.

1. Describe the transformations of the graph of y = (x – 3)2 + 4 when compared to its parent function y = x2.
2. Describe the transformations of the graph of y = -1/2| x | when compared to its parent function y = | x |.

The above transformations can be identified from each functions general or standard form. For example, the general form of a quadratic equation y = a(x – h)2 + k. A very similar process can be done when graphing radical functions, in particular square-root functions.

The general form for a square root function is $y=a\sqrt{x-h}+k$. Make a conjecture for what each variable does to the graph of the parent function y = $\sqrt{x}$.

1. a:

 h:

 k:

Use a graphing calculator to sketch a graph of the parent function y = $\sqrt{x}$.



1. Why are there no negative x-values graphed?
2. What is the domain of the parent function y = $\sqrt{x}$? What is its range?

STOP!—Check Point

From your conjectures in 3, graph the following functions and state its domain and range.

1. y = $\sqrt{x+4}$ 7. $y=\sqrt{x-2}+3$

 Domain: Domain:

 Range: Range:

 8. y = $-\sqrt{x}$ 9. $y=2\sqrt{x}$



 Domain: Domain:

 Range: Range:

STOP! –Check Point

These transformations can be applied to other radical functions as well.

 10. Describe the transformations of $y=2\sqrt[3]{x+1}-4$ compared to the parent function y = $\sqrt[3]{x}$.

When applying these transformation rules the coefficient of x has always been 1. In fact, to apply these rules, it has to be 1. Describe how you could change the following square root function so that you could use the transformation rules:

 11. $y=\sqrt{9x+18}$

 12. Rewrite the function to make it easy to graph using transformations of its parent function. Describe the graph.

 $y=\sqrt{25x-100}-1$