UNIT 3 LESSON 5 SQUARE ROOT FUNCTION
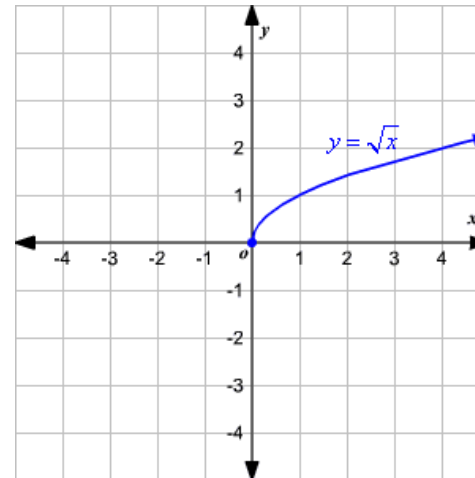
We will write the square root function using the graph given and the transformation rules.

Remember the transformation rules:

Parent function
Square root $\sqrt{x}$

$$y = a\sqrt{x-h} + k$$

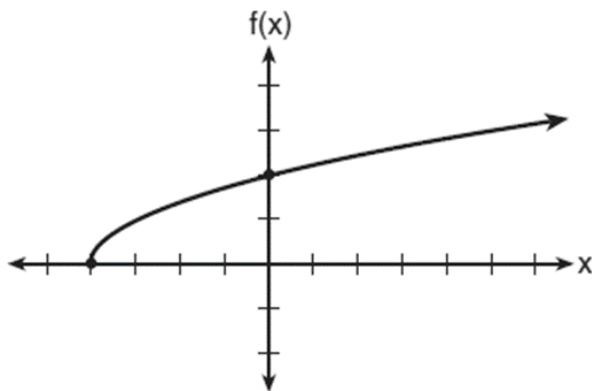|	
lal > 1	vertical stretch
lal < 1	vertical compression/shrink
a < 0	reflection over x-axis
h	move right (−) or left (+)
k	move up (+) or down (−)

STEPS TO WRITE SQUARE ROOT FUNCTION:

1) Start with the graph of the parent function $\sqrt{x}$

2) Determine the transformations of the graph given

3) Write the function based on $f(x) = a\sqrt{x-h} + k$

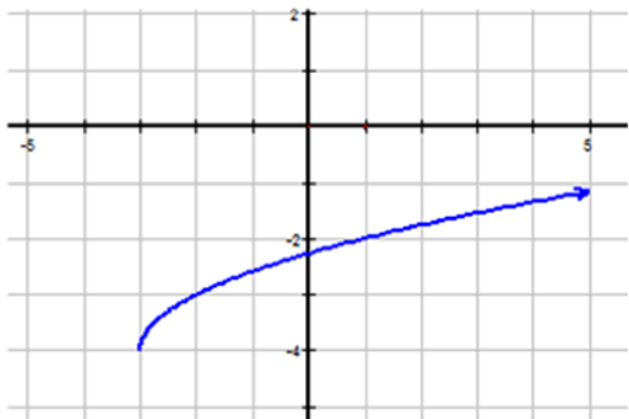Ex 1) What is the equation of the graphed function below?

The parent function square root $\sqrt{x}$ always starts from the origin. Determine the direction the graph has gone from the origin.

Example 1) The graph has moved 4 units to the left of the origin. Remember the variable "h" in the equation
$$f(x) = a\sqrt{x-h} + k$$

Moves left or right. When "h" moves left the equation will be f(x) = $\sqrt{x+4}$

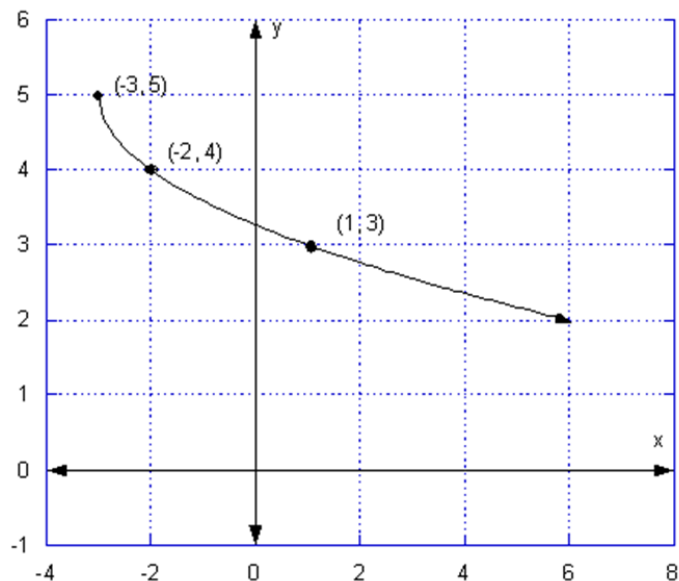Ex 2) What is the equation of the graphed function below?

The parent function square root $\sqrt{x}$ always starts from the origin. Determine the direction the graph has gone from the origin.

Example 1) The graph has moved 3 units to the left of the origin and 4 units down. Remember the variable "h" in the equation $f(x) = a\sqrt{x - h} + k$

Moves left or right. Remember the variable "k" in the equation moves up or down. When "h" moves left and "k" moves down the equation will be f(x) = $\sqrt{x + 3} - 4$

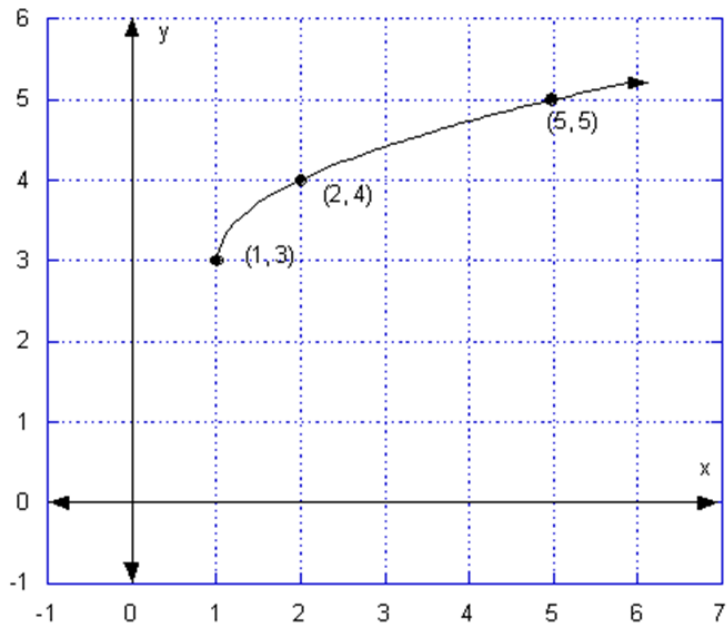Ex 3) What is the equation of the graphed function below?

The parent function square root $\sqrt{x}$ always starts from the origin. Determine the direction the graph has gone from the origin.

Example 1) The graph has moved 3 units to the left of the origin and 5 units up and has a reflection. Remember the variable "h" in the equation $f(x) = a\sqrt{x - h} + k$

Moves left or right. Remember the variable "k" in the equation moves up or down. Remember when "a" is negative the equation will reflect. When "h" moves left and "k" moves down and "a" is negative the equation will be

f(x) = $-\sqrt{x + 3} + 5$

Ex 4) What is the equation of the graphed function below?

The parent function square root $\sqrt{x}$ always starts from the origin. Determine the direction the graph has gone from the origin.

Example 1) The graph has moved 1 unit to the right of the origin and 3 units up. Remember the variable "h" in the equation $f(x) = a\sqrt{x - h} + k$

Moves left or right. Remember the variable "k" in the equation moves up or down. When "h" moves left and "k" moves down the equation will be $f(x) = \sqrt{x - 1} + 3$