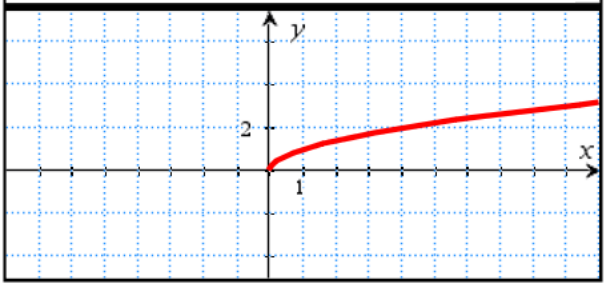
Problem 1

RADICAL TRANSFORMATIONS

Algebra 2

Transformations on Radical Functions

Examine the graph and **answer** the questions that follow.



What is the **domain** and **range** of $y = \sqrt{x}$?

Student: Type response here.

Why does the graph "stop" at the origin?

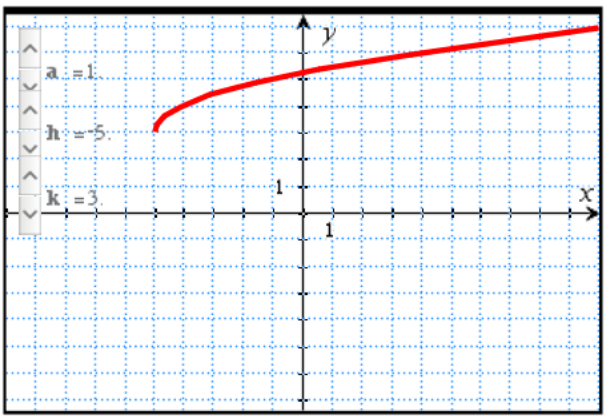
Student: Type response here.

When is the following statement true?
The graph of the square root function is completely in the first quadrant.

- ○ Always
- ○ Sometimes
- ○ Never

Problem 2

On the next page, **change** the values of the variables *a*, *h*, and *k* and **observe** the effects of the changes on the graph.



What does the graph look like when all three variables equal zero? Why?

Student: Type response here.

Based on your exploration, when is the following statement **true**?
The graph of the square root function is completely in the first quadrant.

- ○ Always
- ○ Sometimes
- ○ Never

Find two functions whose **domain** is $x \geq 3$.

Student: Type response here.

What is the **domain** of the function $f(x) = 4\sqrt{x+2} - 3$?
Check using the graph on page 2.2.

Student: Type response here.

Changing which variable will create a **horizontal** shift?

- ○ a
- ○ h
- ○ k

Find two functions whose **range** is $y \geq -2$.

Student: Type response here.

What is **range** of the function $f(x) = 4\sqrt{x+2} - 3$?
Check using the graph on page 2.2.

Student: Type response here.

Changing which variable will create a **vertical** shift?

- ○ a
- ○ h
- ○ k

What is the difference between the graphs of $f(x) = 4\sqrt{x+2} - 3$ and $g(x) = -4\sqrt{x+2} - 3$?

Student: Type response here.

What is the difference between the graphs of $f(x) = 4\sqrt{x+2} - 3$ and $g(x) = 2\sqrt{x+2} - 3$?

Student: Type response here.

What effect does the variable *a* have on the graph?

Student: Type response here.

What is the domain of the function using the general equation, $y = \sqrt{x-h} + k$?

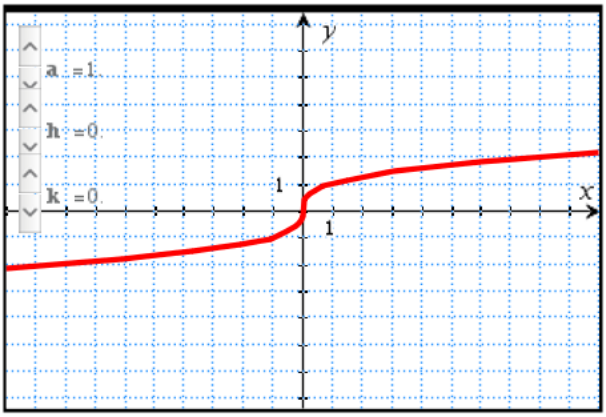
Student: Type response here.

What is range of the function using the general equation, $y = \sqrt{x-h} + k$?

Student: Type response here.

Problem 3

On the next page, change the values of the variables *a*, *h*, and *k* and observe the effects of the changes on the graph.



What is the domain and range of the function in terms of the general equation?

Student: Type response here.

Describe the effects of changing each variable on the graph.

Student: Type response here.