Radical Functions

a - vertical stretch/compression
reflection over x-axis

Vertical Translation

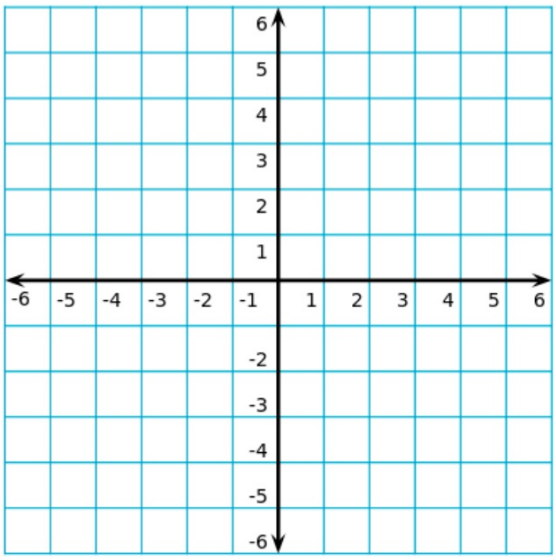
$$f(x) = a\sqrt{x - h} + k$$

Horizontal Translation

parent function

$f(x) = \sqrt{x}$

x	$\sqrt{x}$	y
-1		
0		
1		
4		



Point of Origin: (h, k)

We cannot graph imaginary numbers on the coordinate plane, therefore, the x values have a stopping point (point of origin).

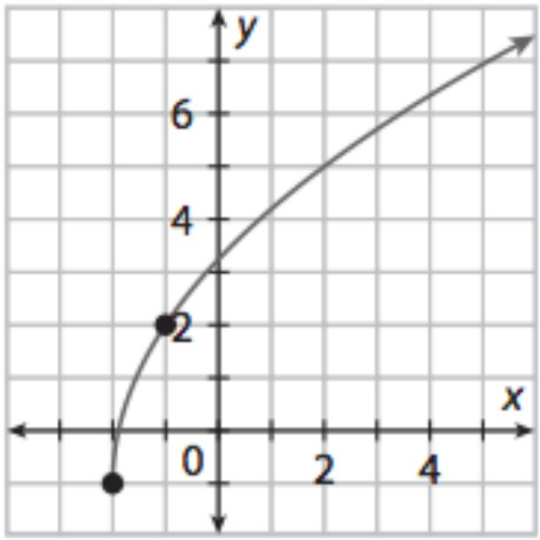
Domain and Range

domain: all possible x values within the function
range: all possible y values within the function

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

1) a = _____ h = _____ k = _____

2) Transformations:



3) Domain:

set notation:

interval notation:

4) Range:

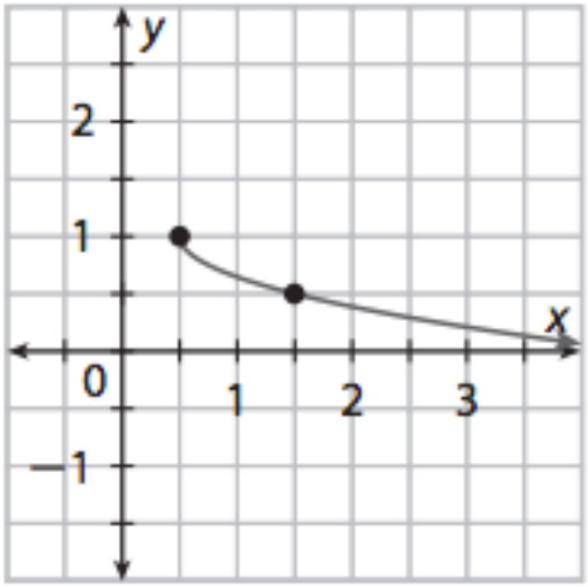
set notation:

interval notation:

$$y = -0.5\sqrt{x - 0.5} + 1$$

1) a = _____ h = _____ k = _____

2) Transformations:



3) Domain:

set notation:

interval notation:

4) Range:

set notation:

interval notation:

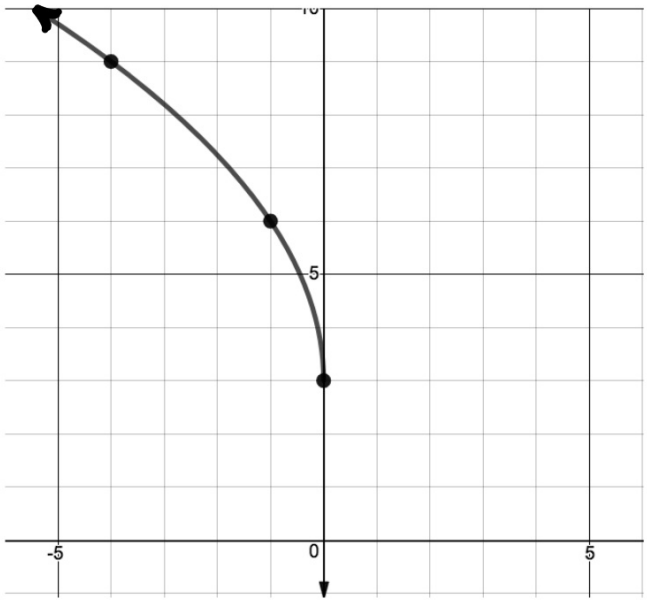
What is different about this function rule???

$$y = -3\sqrt{-x} + 3$$

1) a = _____ h = _____ k = _____

b = _____

2) Transformations:



3) Domain:

set notation:

interval notation:

4) Range:

set notation:

interval notation:

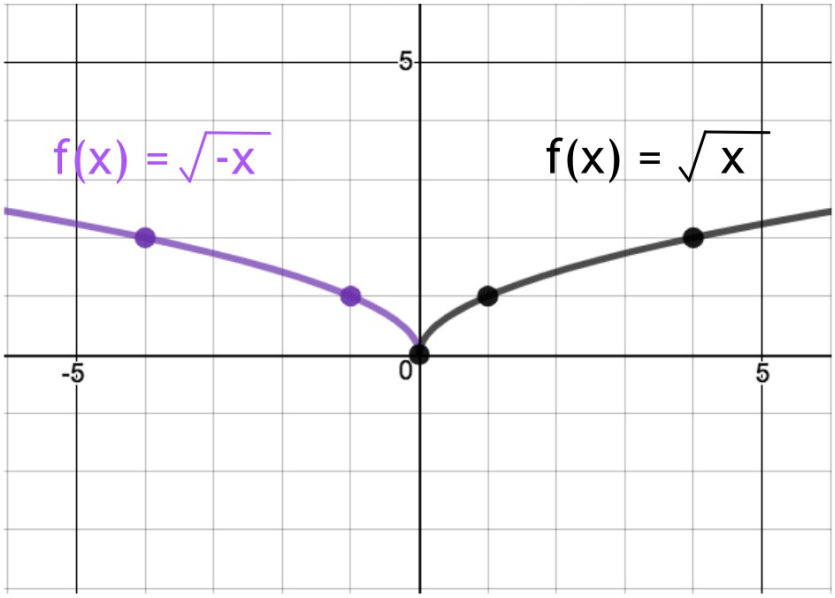
a - vertical stretch/compression
reflection over x-axis

Vertical Translation

$$f(x) = a\sqrt{b(x - h)} + k$$

b < 0 reflection over the y-axis

Horizontal Translation

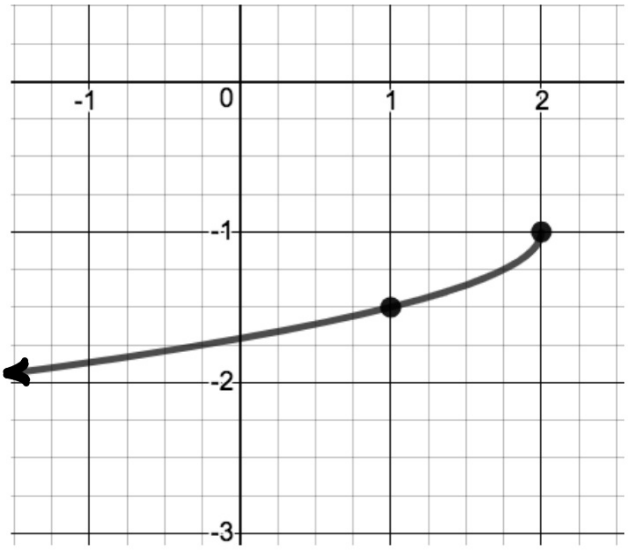


$$y = -{}^{1}/_{2}\sqrt{-(x - 2)} - 1$$

1) a = _____ h = _____ k = _____

b = _____

2) Transformations:



3) Domain:

set notation:

interval notation:

4) Range:

set notation:

interval notation: