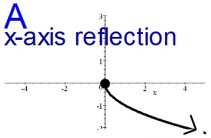
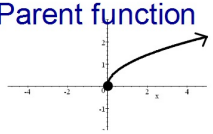
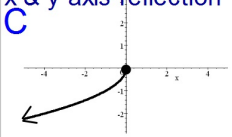
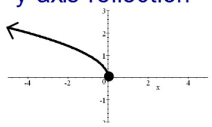
The shapes of the square root function:

A x-axis reflection  $y = -\sqrt{x}$	**B** Parent function  $y = \sqrt{x}$
C x & y axis reflection  $y = -\sqrt{-x}$	**D** y-axis reflection  $y = \sqrt{-x}$

Equation of a Squre Root Function:

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

Starting Point: (h,k)

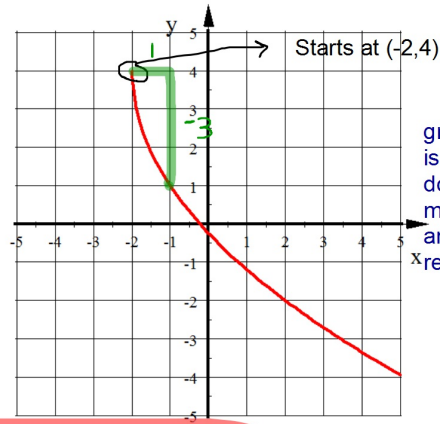
Vertical/Shrink Factor: $a = \dfrac{\text{Measure on Image}}{\text{Corresponding measure on original}}$

Write the equation of this function

This Function: rise 1, run 1, reflected (−3)

Parent Function: rise 1, run 1

Vertical Stretch/Shrink Factor: $a = \frac{-3}{1} = -3$



graph is upside down means an x-axis reflection

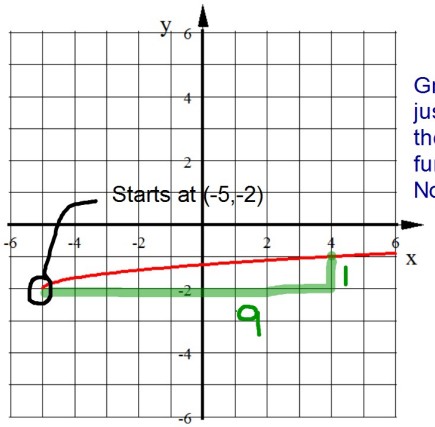
$y = -3\sqrt{x+2} + 4$

Write the equation of this function

This Function: rise 1, run 9

Parent Function: rise 3, run 9

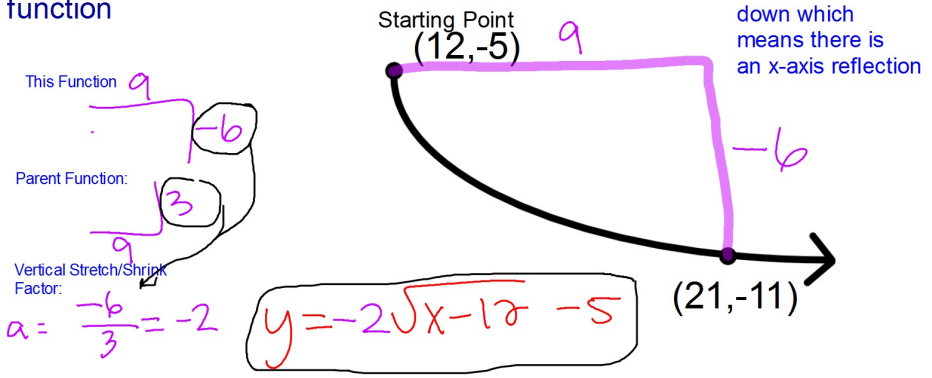
Vertical Stretch/Shrink Factor: $a = \frac{1}{3}$



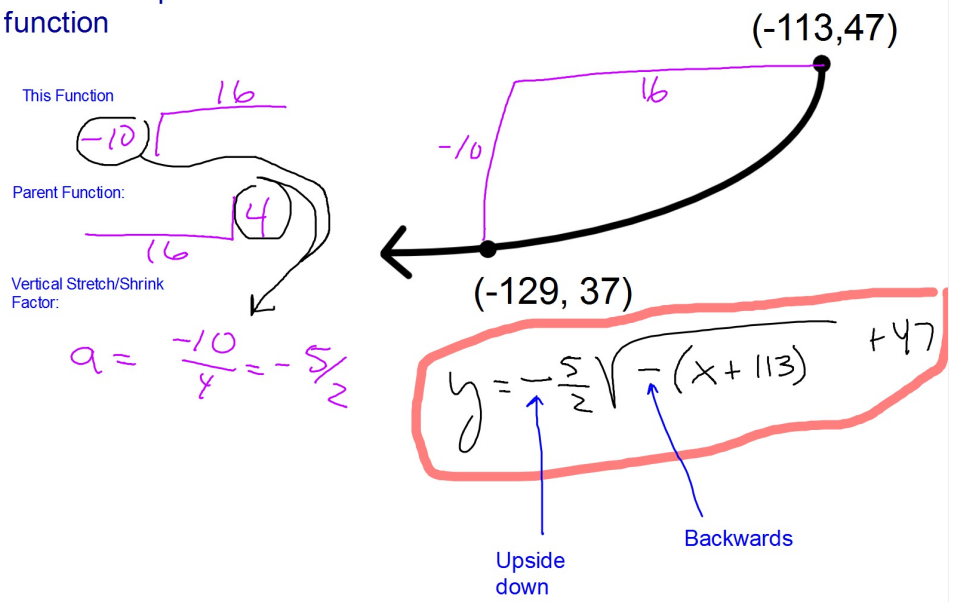
Graph looks just like the parent function. No reflection

$y = \frac{1}{3}\sqrt{x+5} - 2$

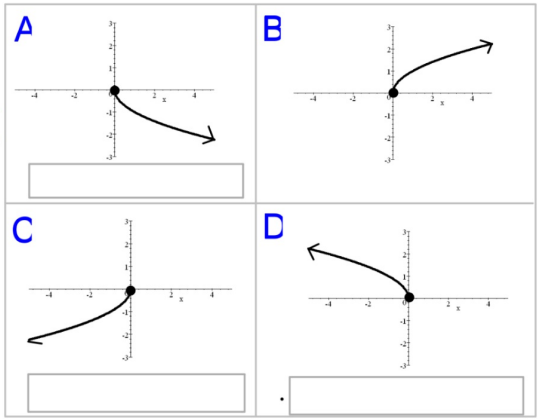
Write the equation of this function



Write the equation of this function



Domain and Range of Square Root Functions:



A: D: $[0,\infty)$ R: $(-\infty,0]$

B: D: $[0,\infty)$ R: $[0,\infty)$

C: D: $(-\infty,0]$ R: $(-\infty,0]$

D: D: $(-\infty,0]$ R: $[0,\infty)$

Find the Domain and Range of each.

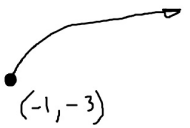
1. $y = 2\sqrt{x+1} - 3$

No negatives means no reflections therefore, graph looks like parent functior

starting point: (-1,-3)

Domain: $x \geq -1$ OR $[-1,\infty)$

Range: $y \geq -1$ OR $[-1,\infty)$



Finding Domain and Range algebraically.

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

Radicand can't be negative

$x + 1 \geq 0$

$-1 \quad -1$

$x \geq -1$

Domain: $x \geq -1$ OR $[-1, \infty)$

Range: $y \geq -3$ OR $[-3, \infty)$

X	Y
-1	-3
0	-1

use this domain (input) to find the range (output)

y starts with -3 and gets bigger

2. $y = -4\sqrt{x-5} + 6$

Upside down means it moves down and to the right

Starts at (5,6)

Domain: $x \geq 5$ or $[5, \infty)$

Range: $y \leq 6$ or $(-\infty, 6]$

(5,6)

You can now do Hwk #13

Practice Sheet Sec 7-8

This is the end of Chapter 7!!