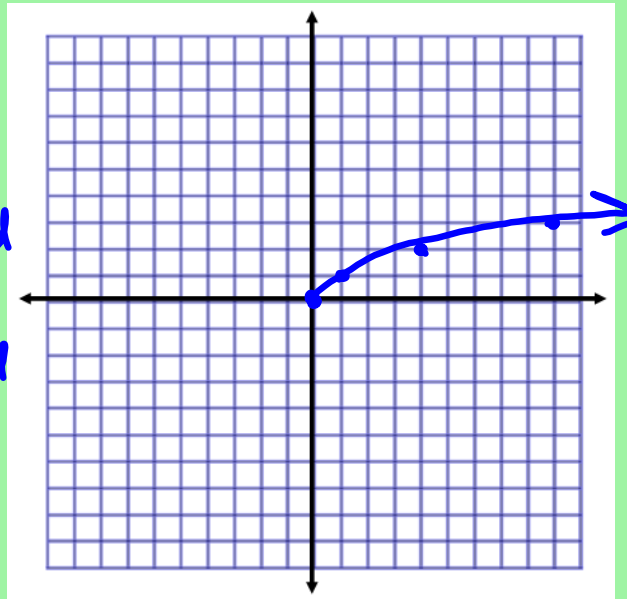


7.5 GRAPHING SQUARE ROOT & CUBE ROOT FUNCTIONS

Example 1

Graph $y = \sqrt{x}$.

x		y
-9	$\sqrt{-9}$	undefined
-4	$\sqrt{-4}$	undefined
-1	$\sqrt{-1}$	undefined
0	$\sqrt{0}$	0
1	$\sqrt{1}$	1
4	$\sqrt{4}$	2
9	$\sqrt{9}$	3



GRAPHS OF SQUARE ROOT FUNCTIONS

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

(h, k) is the starting point

h is the Opposite of what you see

k is exactly what you see

Make a table of values.

You want what is **under the radical** to be a **perfect square**.

Example 2

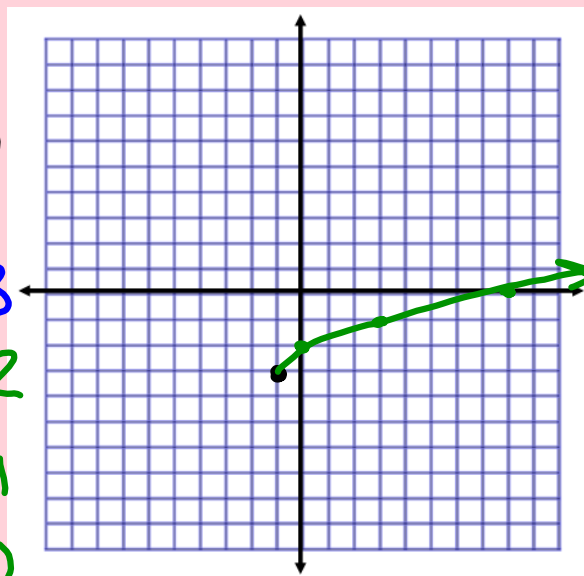
Graph the function below.

~~Then state the domain and range.~~

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

Starting point: $(-1, -3)$

X	Y
-1	-3
0	$\sqrt{0+1} - 3 = \sqrt{1} - 3 = 1 - 3 = -2$
3	$\sqrt{3+1} - 3 = \sqrt{4} - 3 = 2 - 3 = -1$
8	$\sqrt{8+1} - 3 = \sqrt{9} - 3 = 3 - 3 = 0$



$$x+1=1$$

$$x=0$$

$$x+1=4$$

$$x=3$$

$$x+1=9$$

$$x=8$$

Example 3

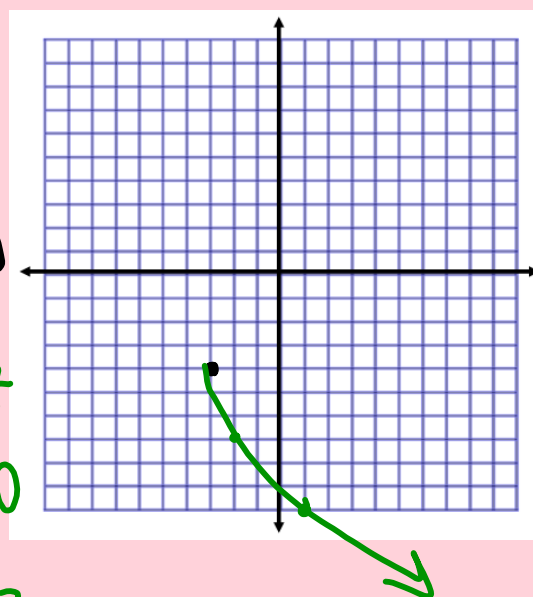
Graph the function below.

~~Then state the domain and range.~~

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

Starting point: $(-3, -4)$

X	Y
-3	-4
-2	$-3\sqrt{-2+3} - 4 = -3\sqrt{1} - 4 = -3 \cdot 1 - 4 = -3 - 4 = -7$
1	$-3\sqrt{1+3} - 4 = -3\sqrt{4} - 4 = -3 \cdot 2 - 4 = -6 - 4 = -10$
6	$-3\sqrt{6+3} - 4 = -3\sqrt{9} - 4 = -3 \cdot 3 - 4 = -9 - 4 = -13$



$$x+3=1$$

$$x=-2$$

$$x+3=4$$

$$x=1$$

$$x+3=9$$

$$x=6$$

Example 4

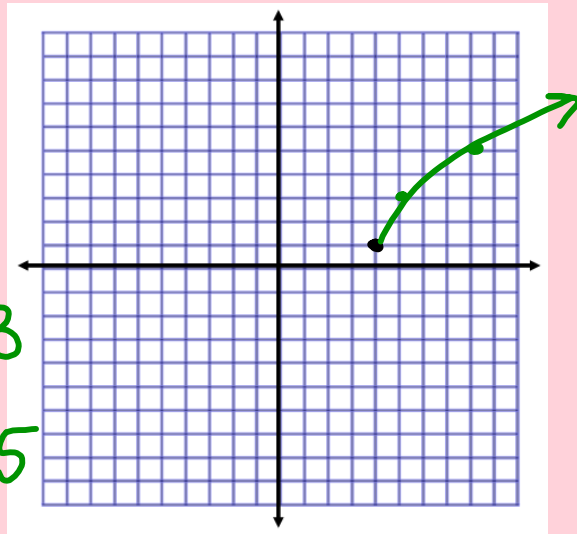
Graph the function below.

~~Then state the domain and range.~~

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

Starting point: (4, 1)

x	y
4	1
5	3
8	5
13	7



$$\begin{aligned} x-4 &= 1 \\ +4 & \quad +4 \\ x &= 5 \end{aligned}$$

$$\begin{aligned} x-4 &= 4 \\ +4 & \quad +4 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} x-4 &= 9 \\ +4 & \quad +4 \\ x &= 13 \end{aligned}$$