

# Graphs of Square Root and Cube Root Functions

First, let's look at the parent graph of the square root function  $f(x) = \sqrt{x}$ . We can build an x/y table and graph the points to get a basic understanding of the shape and the behavior of the graph.

Starting Point  
Vertex (0,0)

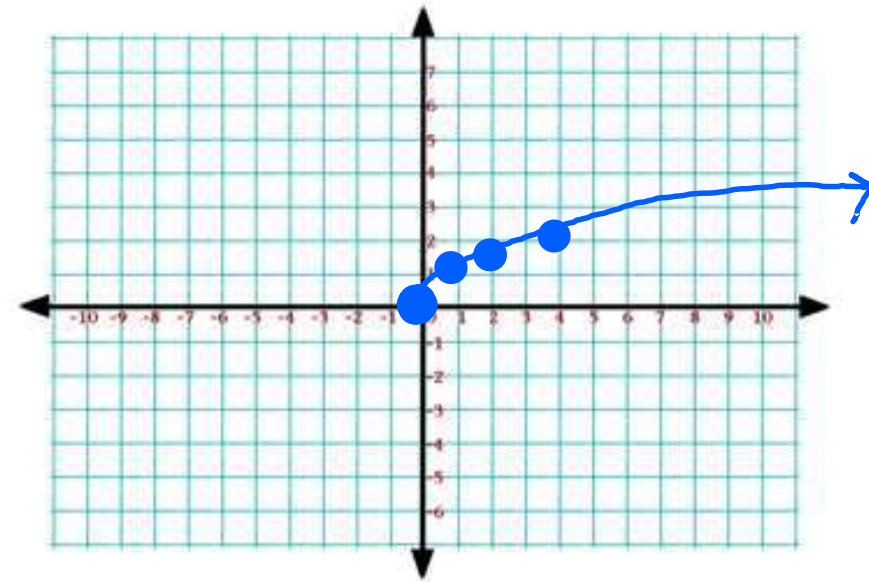
Domain  $[0, \infty)$   
(Left, Right)

Range  $[0, \infty)$   
(Low, high)

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

x	f(x)
0	0
1	1
2	1.4
3	1.7
4	2
9	3

$\sqrt{0}$   
 $\sqrt{1}$   
 $\sqrt{2}$   
 $\sqrt{3}$   
 $\sqrt{4}$   
 $\sqrt{9}$



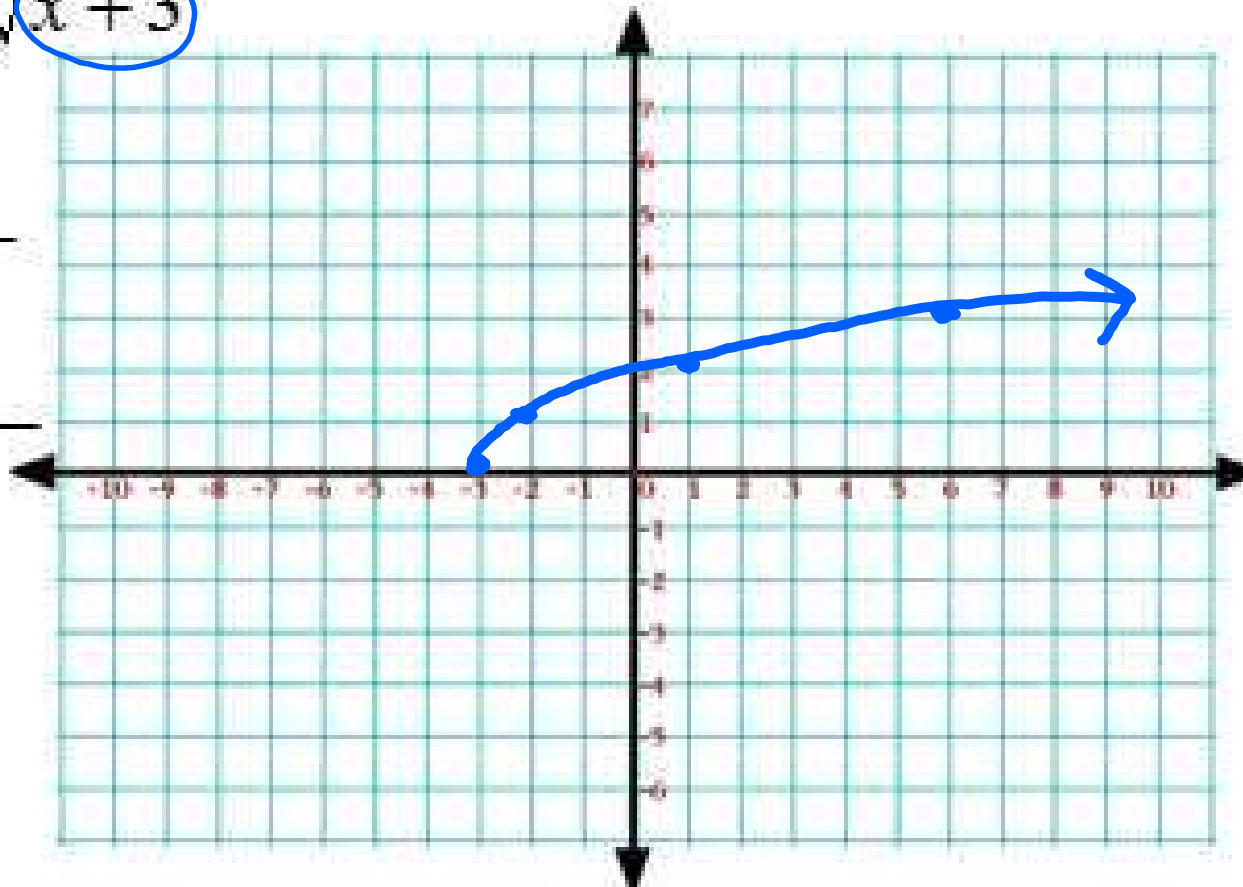
Example 1:  $y = \sqrt{x+3}$

Domain  $[-3, \infty)$

Range  $[0, \infty)$

St. Pt  $(-3, 0)$

$$\begin{aligned}x+3 &= 0 \\-3 &-3 \\x &= -3\end{aligned}$$



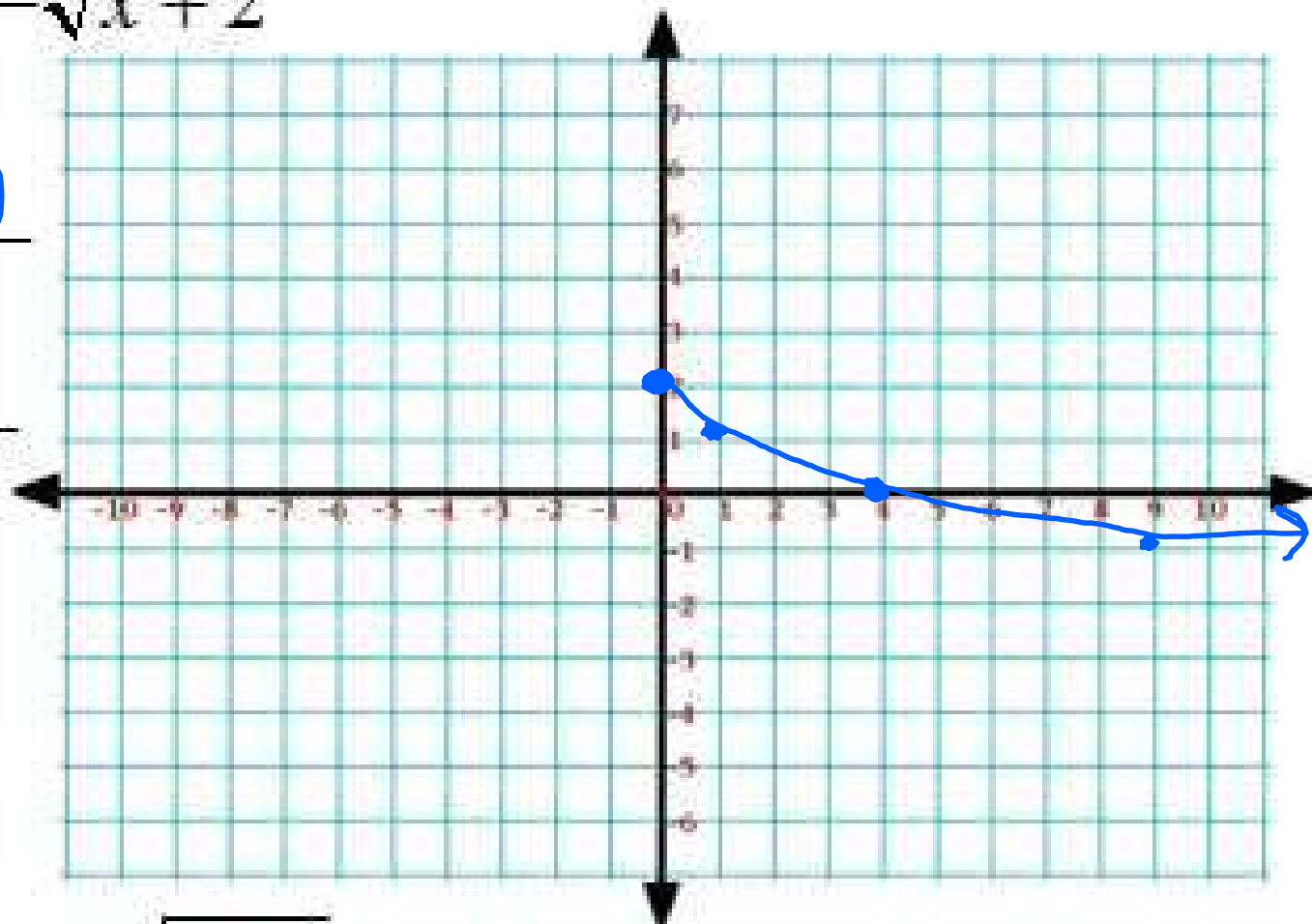
Example 2:  $y = -\sqrt{x} + 2$

Domain  $[0, \infty)$

Range  $(-\infty, 2]$

St Pt  $(0, 2)$

$x=0$



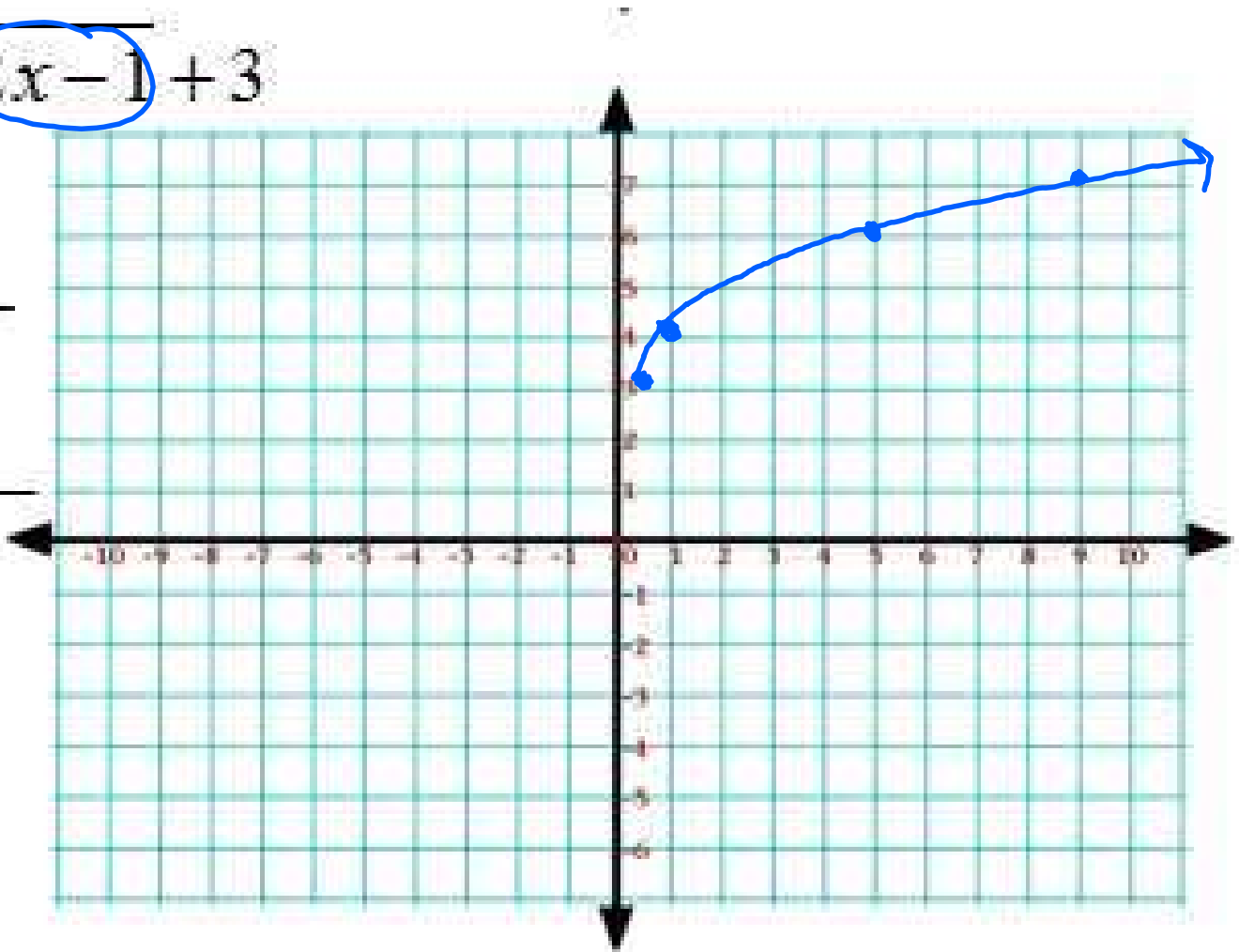
Example 3:  $y = \sqrt{2x-1} + 3$

Domain  $[\frac{1}{2}, \infty)$

Range  $[3, \infty)$

Start Pt  $(\frac{1}{2}, 3)$

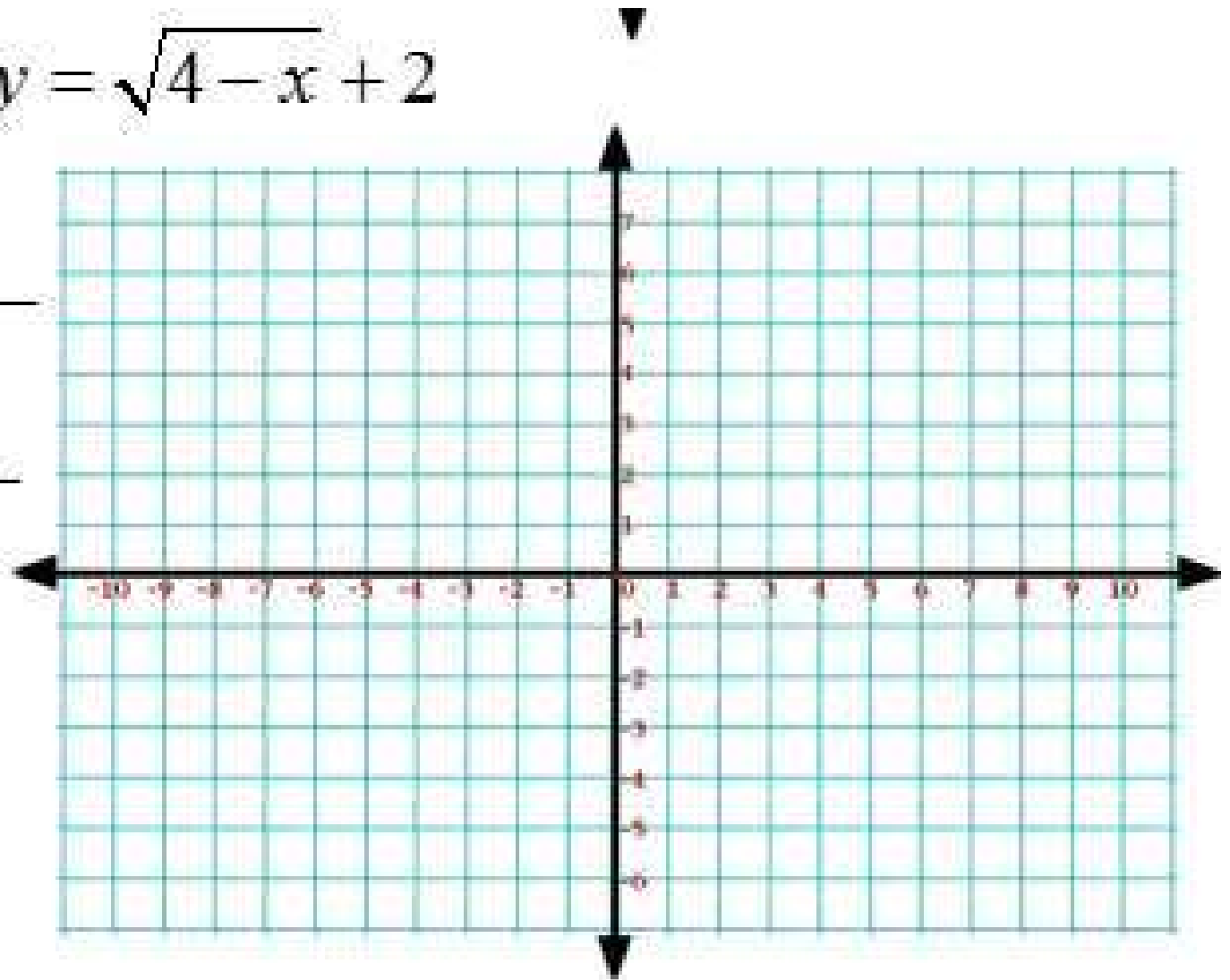
$$\begin{array}{r} 2x-1=0 \\ +1 \quad +1 \\ \hline 2x=1 \\ \frac{1}{2} \quad \frac{1}{2} \\ \hline x=\frac{1}{2} \end{array}$$



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

Domain

Range



Your turn:

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

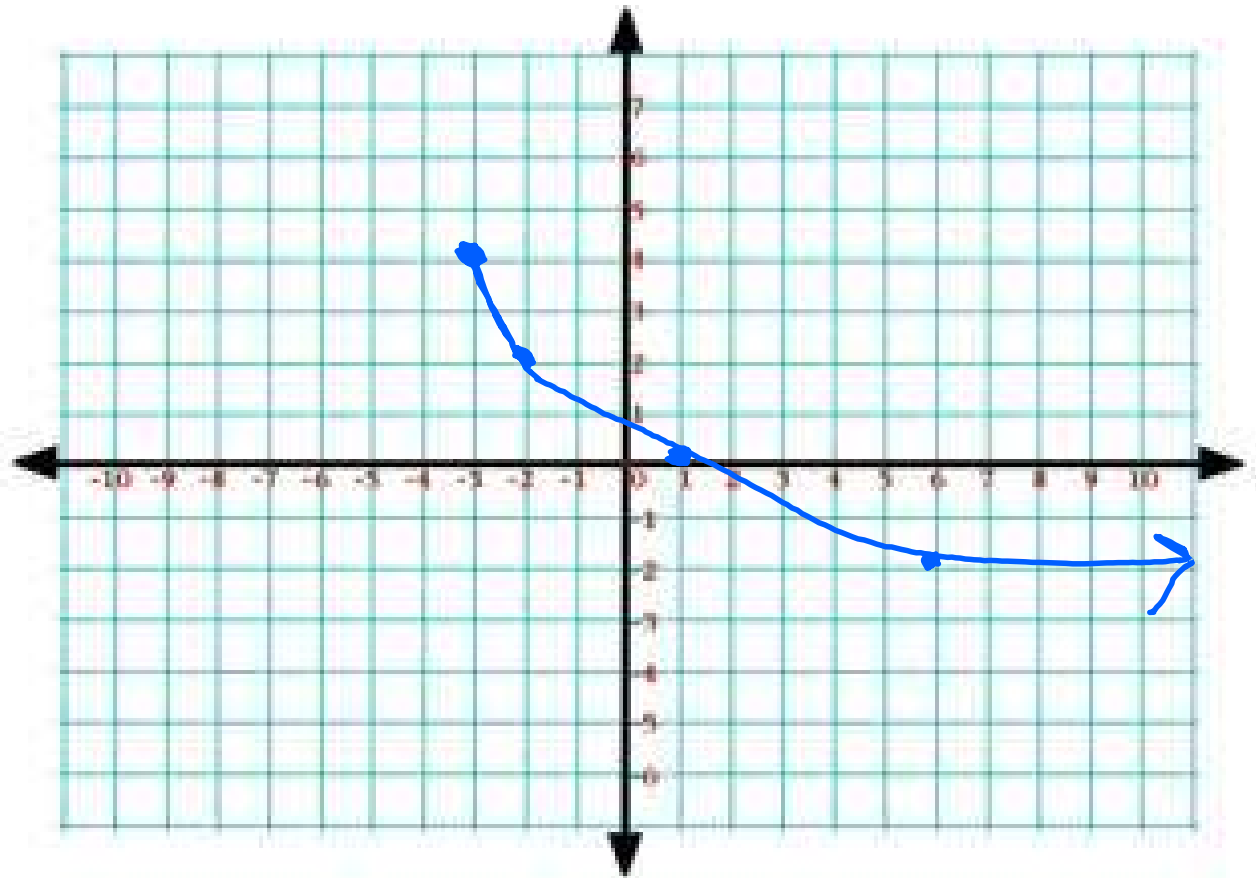
Domain  $[-3, \infty)$

Range  $(-\infty, 4]$

st pt  $(-3, 4)$

$$x+3=0$$

$$\begin{array}{r} -3 \\ -3 \\ \hline x = -3 \end{array}$$



$$y = \sqrt{2-x} - 5$$

Domain \_\_\_\_\_

Range \_\_\_\_\_

