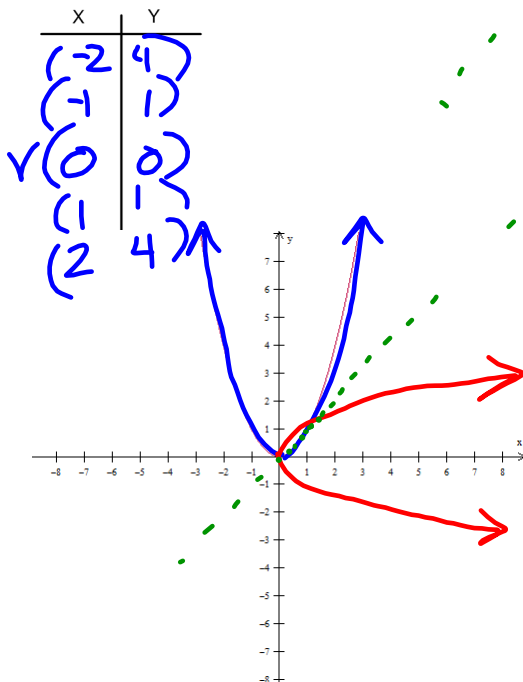


## 6-3 Square Root Functions and Inequalities

### Quadratic Function

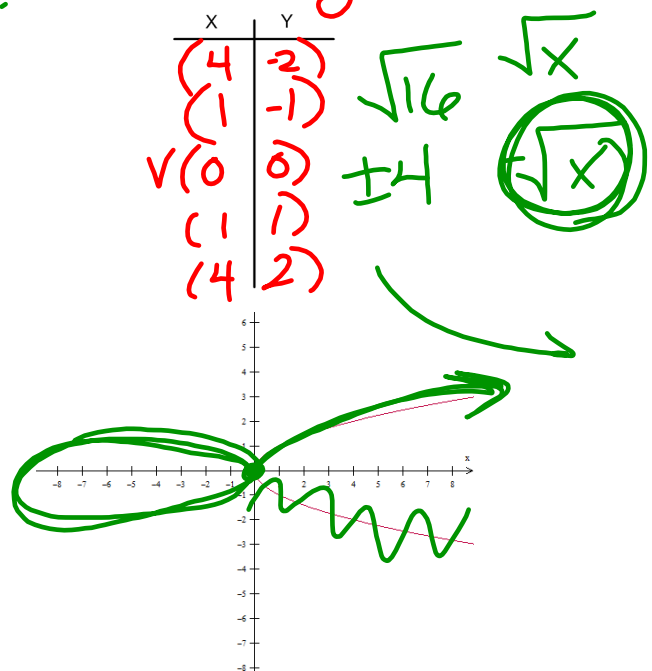
$$y = x^2$$



### Inverse

$$x = y^2$$

$$y = \pm\sqrt{x}$$



**square root function:** a function that contains a square root of a variable.

- it is a **portion** of the inverse function of a quadratic.

- the domain must be restricted to numbers that create **non-negative radicands**.

$$\sqrt{x}$$

$$y = \frac{1}{\sqrt{x}}$$

$\sqrt{\text{radicand}}$

### **To Graph:**

- identify the starting value for the domain: **radicand  $\geq 0$**
- make a table of values in accordance with the domain.
- plot the points, use the graph to determine range.

**Examples:** Graph the following square root functions. State the domain and range of each.

1.  $y = \sqrt{3x + 4}$

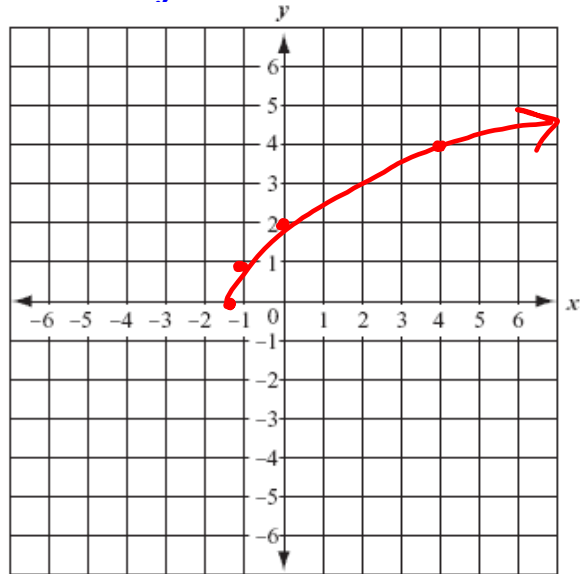
$3x + 4 \geq 0$

$3x \geq -4$

D:  $x \geq -\frac{4}{3}$

R:  $y \geq 0$

x	y
$-\frac{4}{3}$	0
-1	1
0	2
4	4



**Examples:** Graph the following square root functions. State the domain and range of each.

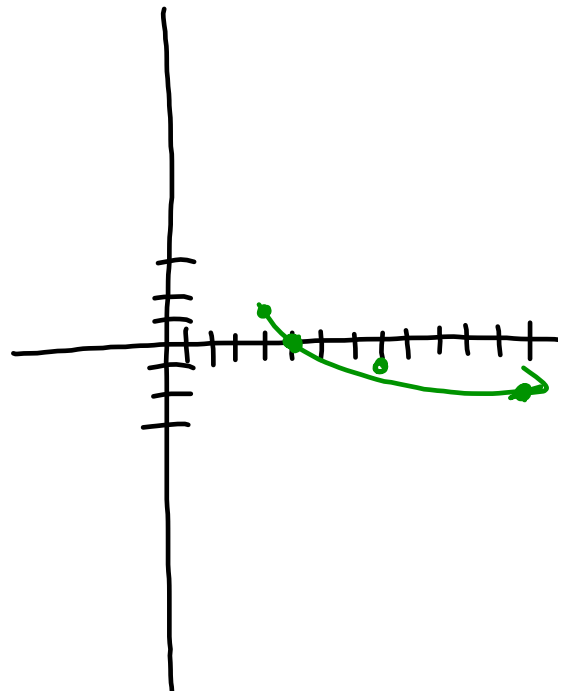
2.  $y = \sqrt{x - 4} + 1$

$x - 4 \geq 0$

D:  $x \geq 4$

R:  $y \leq 1$

x	y
4	1
5	0
8	-1
13	-2



**Square Root Inequalities:** an inequality involving square roots.

**To Graph**

- graph same as the square root equation.
- determine whether the graph should be
- shade the solutions - shade in accordance

Example: graph  $y > \sqrt{3x+5}$   $0 > \sqrt{5}$

$3x+5 \geq 0$

$3x \geq -5$

$x \geq -\frac{5}{3}$

x	y
$(-\frac{5}{3}, 0)$	
$(0, 2.2)$	
$(1, 2.8)$	
$(2, 3.3)$	

