

## 2.3 Solving Radical Equations Graphically

Tuesday, September 11, 2018 11:33 AM

Pre-Calculus 12

### 2.3 Solving Radical Equations Graphically

**Ex. #1:** Solve  $\sqrt{x+4} - 3 = 0$

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

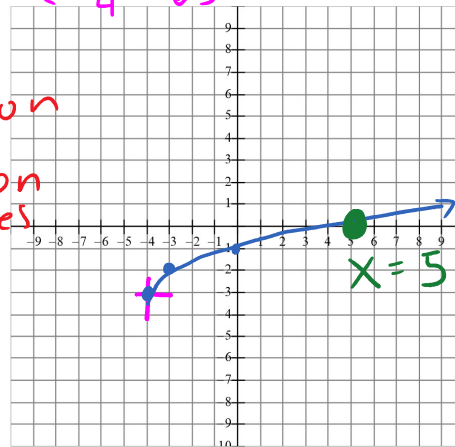
← 4      ↓ 3

To solve an equation in this form we:

- Write the equation as a function
- Graph the function find where it crosses the x-axis

Check:

$$\begin{aligned} \sqrt{5+4} - 3 &= 0 \\ \sqrt{9} - 3 &= 0 \\ 3 - 3 &= 0 \\ 0 &= 0 \end{aligned}$$



$$y = \sqrt{x}$$

$$\begin{array}{r} 0 \overline{) 0} \\ \underline{1} \phantom{0} \\ 1 \phantom{0} \\ \underline{4} \phantom{0} \\ 2 \phantom{0} \\ \underline{9} \phantom{0} \\ 3 \phantom{0} \end{array}$$

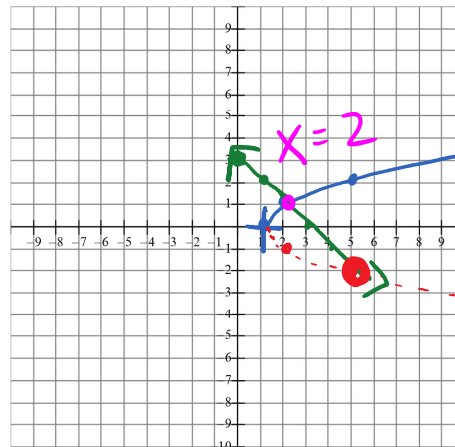
**Ex. #2:** Solve the following equation graphically,  $\sqrt{x-1} = -x+3$

To solve an equation in this form we:

- Make 2 functions
- Graph functions Find where they intersect

Check:

$$\begin{aligned} \sqrt{2-1} &= -2+3 \\ \sqrt{1} &= 1 \\ 1 &= 1 \end{aligned}$$



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

Radical →

$$y = -x + 3$$

line  
slope = -1 =  $-\frac{1}{1}$   
y-int = 3

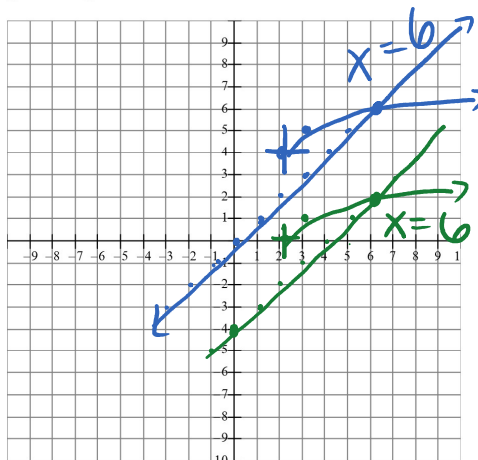
$$y = x \quad \text{or} \quad y = \sqrt{x-2} + 4$$

$$y = x - 4 \quad \text{or} \quad y = \sqrt{x-2}$$

**Ex. #3:** Solve the equation  $x = \sqrt{x-2} + 4$  graphically.

Check:

$$\begin{aligned} 6 &= \sqrt{6-2} + 4 \\ 6 &= \sqrt{4} + 4 \\ 6 &= 2 + 4 \\ 6 &= 6 \end{aligned}$$



**Ex. #4:** Solve the equation  $2\sqrt{x+2} = 1 - x$  graphically.

$$y = 2\sqrt{x+2}$$

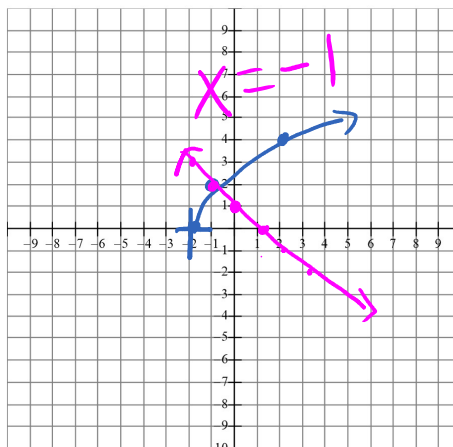
$\leftarrow 2$

$$\begin{aligned} y &= 1 - x \\ y &= mx + b \\ y &= -x + 1 \\ y\text{-int} &= 1 \\ \text{slope} &= -1 \end{aligned}$$

$a = 2$   
Mult  $y$ 's by (2)

old	0	0
1	1	1
4	2	

new	0	0
1	2	
4	4	



$$\begin{aligned} 2\sqrt{-1+2} &= 1 - (-1) \\ 2\sqrt{1} &= 2 \\ -2 &= 2 \end{aligned}$$