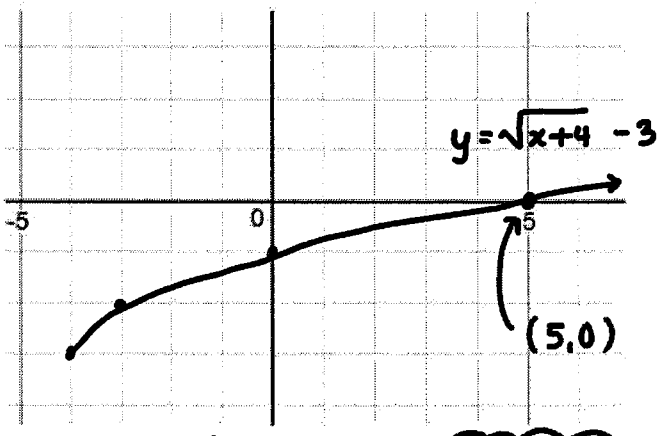
2.3 Solving Radical Equations Graphically

Example 1: Solve $\sqrt{x+4}-3=0$ graphically.

To solve an equation in this form we:

- write the equation as a function
  $y = \sqrt{x+4} - 3$
- graph the function
- find where the function crosses the x-axis.



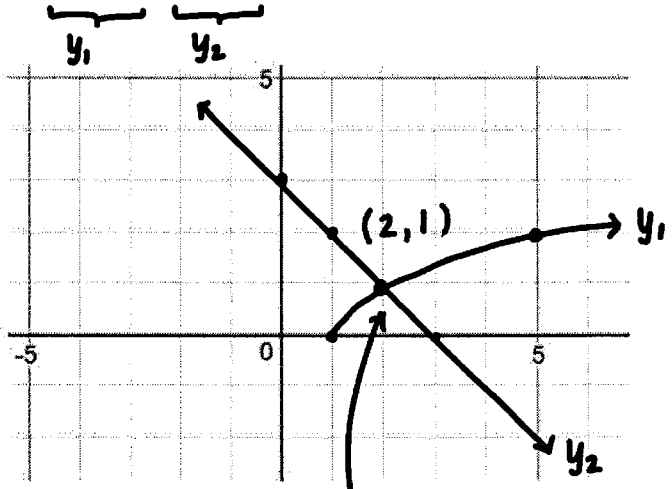
x	y
0	0
1	1
4	2
9	3

Solution: x = 5

Example 2: Solve the following equation graphically: $\sqrt{x-1}=-x+3$

To solve an equation in this form we:

- Make 2 functions
  $y_1 = \sqrt{x-1}$
  $y_2 = -x+3$
- graph each function
- find the intersection point (only want the "x" value)



Solution: x = 2

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

- rewrite (isolate the radical)

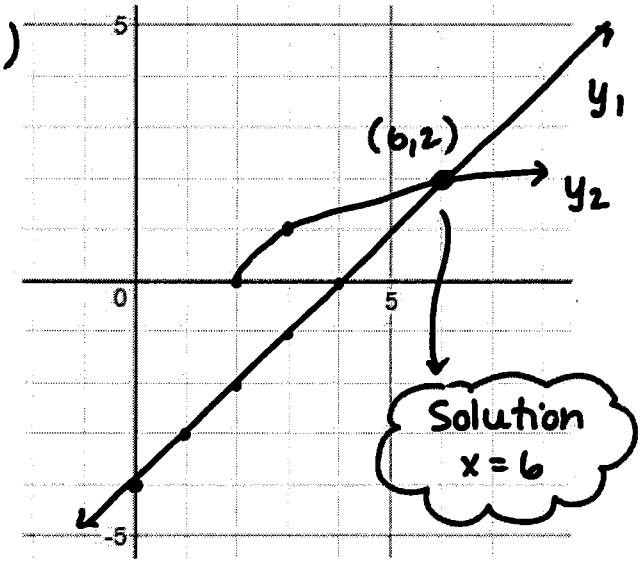
$$x - 4 = \sqrt{x-2}$$

- make 2 functions

$$y_1 = x - 4$$

$$y_2 = \sqrt{x-2}$$

- graph each function
- find the intersection point



Example 4: Solve the equation $\frac{1}{2}\sqrt{x-4} + 3 = x - 4$ graphically.

- rewrite (isolate the radical)

$$\frac{1}{2}\sqrt{x-4} = x - 7$$

or

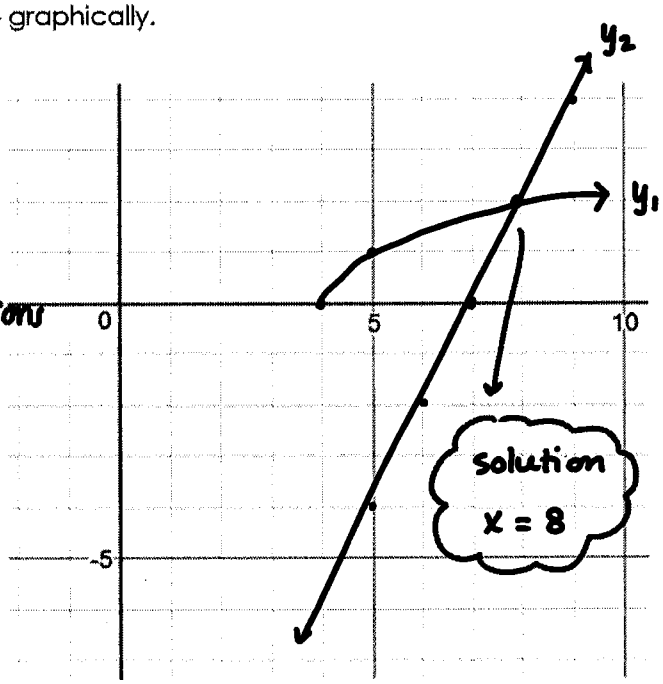
$$\sqrt{x-4} = 2(x-7)$$

- Don't rewrite, graph transformations as is
- make 2 functions

$$y_1 = \sqrt{x-4}$$

$$y_2 = 2(x-7)$$

- graph each function
- find the intersection point



Practice: p.96 #1, 2b, 5b, 7b and 2.3 Worksheet