

Name: _____

Date: _____

Notes: Solving and Graphing Radical Equations

Do Now: *ALGEBRAICALLY* solve each equation.

$$\sqrt{x} = 3$$

Why did you choose to do the first step you did to solve this equation?

$$\sqrt{x + 7} = 3$$

Why did you choose to do the first step you did to solve this equation?

What Should I Be Able to Do?

- I can solve equations with a radical on one side of the equation.
- I can solve equations with a radical on both sides of the equation.
- I can solve equations with two radicals on one side of the equation.
- I can graph radical equations.
- I can explain why the graph of a radical equation ends where it does.

Solve the following equations.

1) $\sqrt{2x + 7} - 5 = 6$

2) $\sqrt{4x - 6} + 12 = 8$

Vocab Corner

Extraneous Solution: A solution that is found when solving an equation but is not a valid solution to the equation.

Do Now Part II: Solve the following equation.

$$\sqrt{8x - 1} = \sqrt{3x + 4}$$

Why did you choose to do the first step you did to solve this equation?

Do Now Part III: Solve the following equation.

$$\sqrt{3x + 5} - \sqrt{7x - 3} = 0$$

Why did you choose to do the first step you did to solve this equation?

Checkpoint:

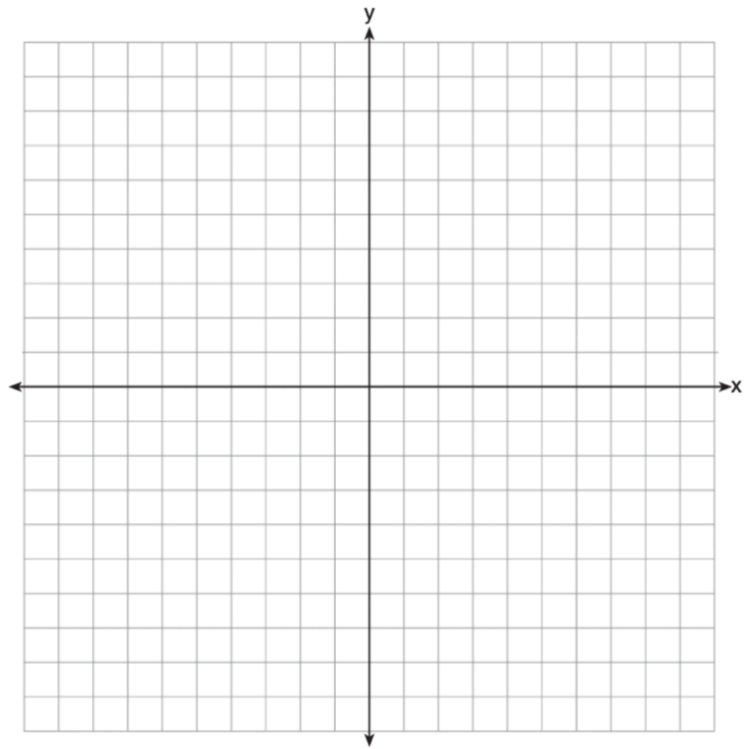
Solve each of the following equations.

1) $-4\sqrt{2x + 10} - 2 = -10$

2) $\sqrt{2x + 8} + \sqrt{6x + 16} = 0$

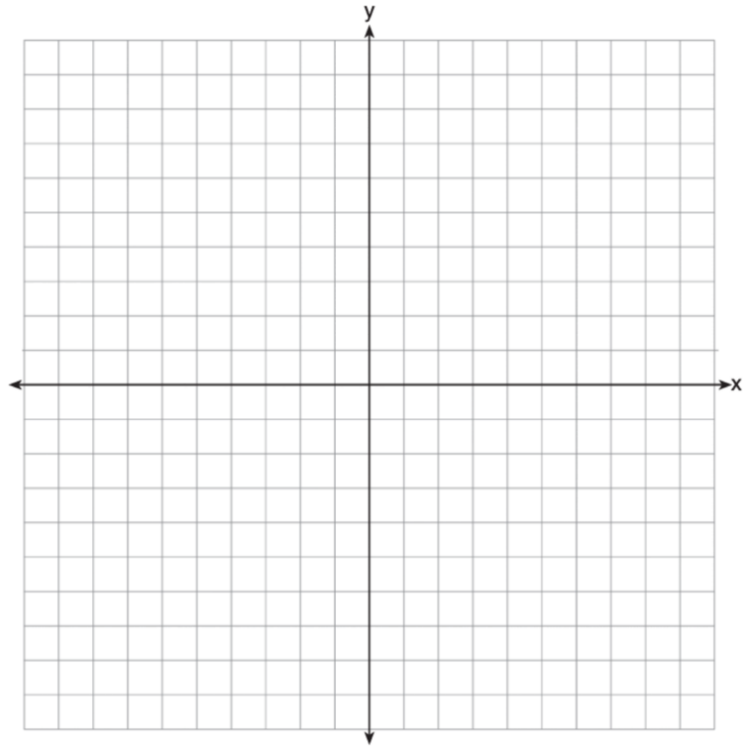
3) $\sqrt{\frac{1}{2}x + 1} = \sqrt{\frac{2}{3}x - 4}$

Graph the equation $y = \sqrt{x}$.



Why does the graph of $y = \sqrt{x}$ behave in the way you are seeing? Talk about both the *left-end behavior* and the *right-end behavior*.

Graph the equation $y = \sqrt{x} + 2$.



Success Criteria

- I can solve equations with a radical on one side of the equation.

Solve the following equations.

1) $-2\sqrt{12x - 8} - 4 = -10$

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

- I can solve equations with a radical on both sides of the equation.

Solve the following equations.

1) $\sqrt{-3x + 15} = \sqrt{4x + 24}$

2) $\sqrt{\frac{1}{5}x + 9} = \sqrt{5x - 2}$

- I can solve equations with two radicals on one side of the equation.

Solve the following equations.

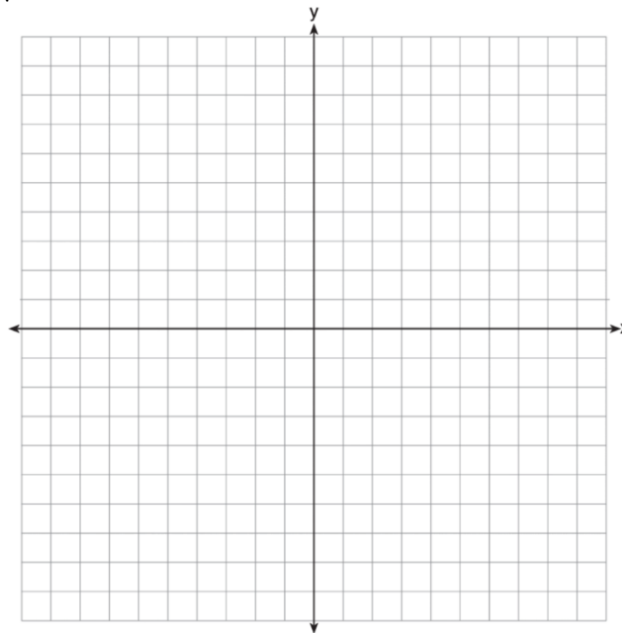
1) $\sqrt{6x - 2} - \sqrt{2x + 14} = 0$

2) $\sqrt{3x + 6} + \sqrt{6x + 12} = 0$

- I can graph radical equations.

- I can explain why the graph of a radical equation ends where it does.

Graph the equation $y = \sqrt{x}$.



Why does the graph of $y = \sqrt{x}$ behave in the way you are seeing? Talk about both the *left-end behavior* and the *right-end behavior*.

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Classwork: Solving and Graphing Radical Equations

Solve each of the following equations.

1) $\sqrt{-x + 17} - \sqrt{-9x - 11} = 0$

2) $\sqrt{-0.45x - 1} = \sqrt{41 + 0.3x}$

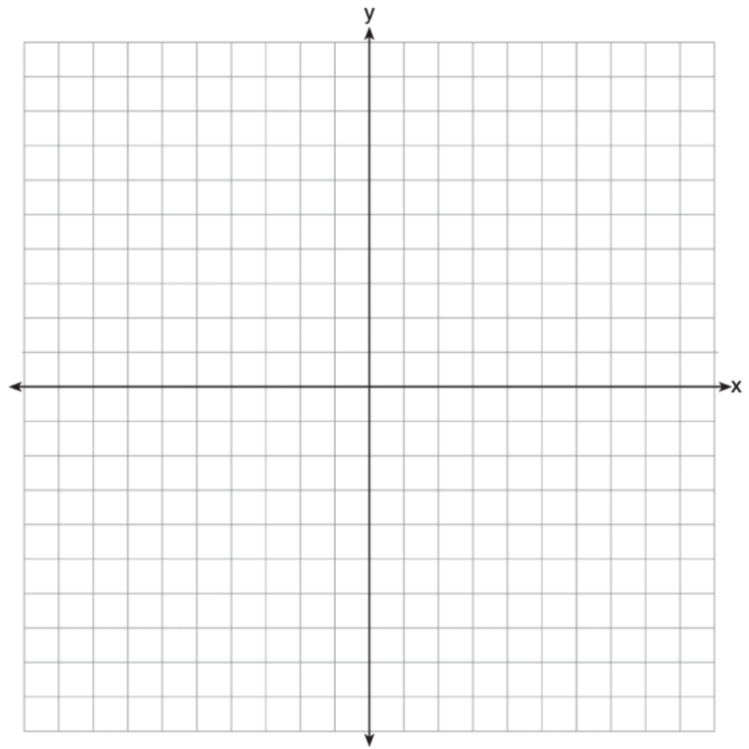
3) $\frac{\sqrt{3-x}}{6} + 10 = 18$

4) $\sqrt{6x + 4} + \sqrt{3x + 12} = 0$

5) $20\sqrt{2x} - 2 = -12$

6) $\sqrt{13x + 32} = \sqrt{13x + 21}$

7) Graph the equation $y = \sqrt{x - 1}$.



8) Solve the following equation:

$$\left(\frac{1}{4x+1}\right)^{-1/2} = \frac{\left(\frac{x}{3}+5\right)^{-7/2}}{\left(\frac{x}{3}+5\right)^{-4}}$$