

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## Homework: Solving and Graphing Radical Equations

Solve each of the following equations.

$$1) \frac{1}{3}\sqrt{2x} - 2 = 8 \quad 2) \sqrt{-5x + 10} + \sqrt{2x - 10} = 0 \quad 3) \sqrt{-3x - 1} = \sqrt{-x + 21}$$

$$4) \sqrt{13x + 15} - \sqrt{20x - 16} = 0$$

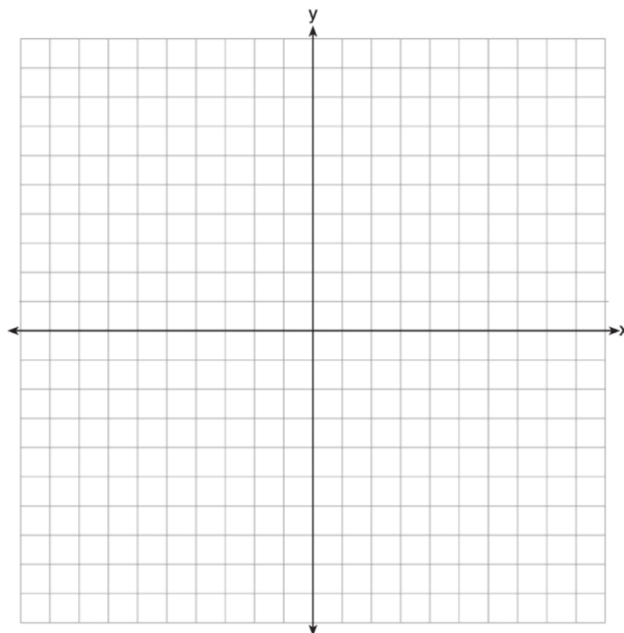
$$5) \sqrt{\frac{5}{4}x - 3} = \sqrt{\frac{9}{7}x - 7}$$

6) When solving the equation  $\sqrt{x + 4} - 16 = 5$ , Ralph decided to square both sides of the equation first then simplify each side. Ralph's work is below.

$$\begin{aligned} (\sqrt{x + 4} - 16)^2 &= (5)^2 \\ (\sqrt{x + 4} - 16)(\sqrt{x + 4} - 16) &= 25 \\ x + 4 - 16\sqrt{x + 4} - 16\sqrt{x + 4} + 236 &= 25 \\ x - 32\sqrt{x + 4} + 240 &= 25 \\ x - 32\sqrt{x + 4} &= -215 \end{aligned}$$

Explain why this first step is not the correct first step to take. Then solve to equation to find the solution.

7) 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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8) Solve the following equation:

$$\frac{(4x + 6)^{5/2}}{(4x + 6)^2} = \left(\frac{1}{10x - 2}\right)^{-1/2}$$