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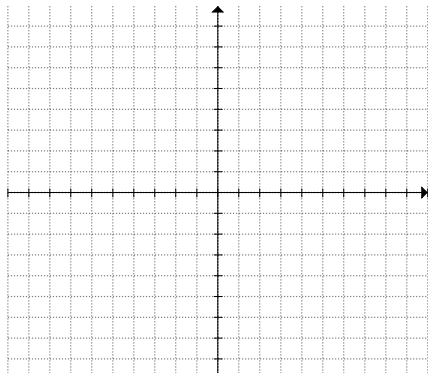
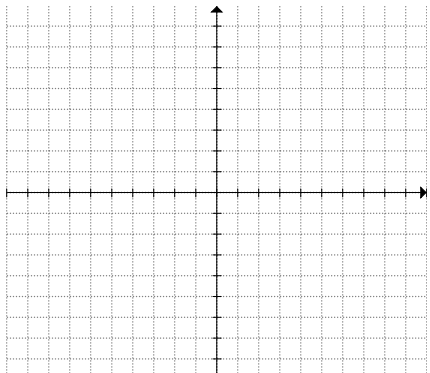
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Math 10/11 Enriched: Section 5.3 Solving Systems of Equations with Radicals

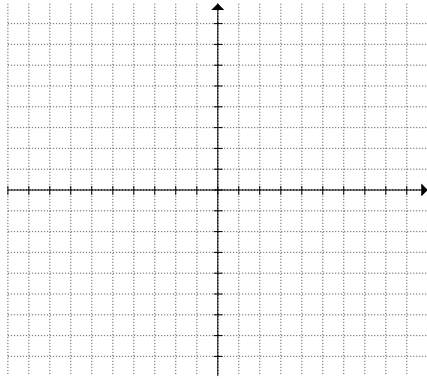
1. Solve for "x". Indicate any extraneous roots and restrictions on the domain:

a) $\sqrt{x} = 5$	b) $2\sqrt{x+1} = 5$	c) $\sqrt{3x+1} = 16$
d) $-3\sqrt{4x-1} = -2$	e) $15 + \sqrt{4x-3} = 9$	f) $\sqrt{2x+25} = \sqrt{x+14}$
g) $\sqrt{x} = x+3$	h) $\sqrt{3x+1} = 2x-6$	i) $3\sqrt{3x+1} = -(x+5)$

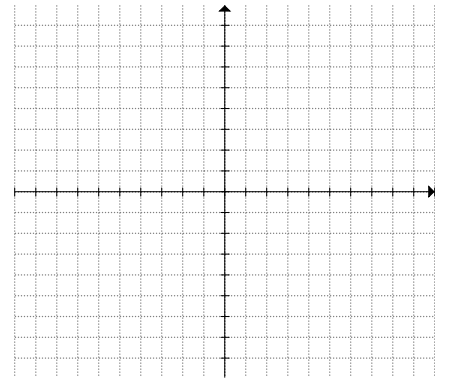
2. Graph the system with the left side as Y1 & right side as Y2. Solve the system by finding all intersection points

a) $\sqrt{x+5} = -x-5$ 	b) $\sqrt{3x+1} = x-9$ 
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$$c) \sqrt{-x} = \frac{x}{x+2}$$



$$d) \sqrt{\frac{37}{2}\left(\frac{x}{3}+1\right)} = \frac{1}{(x+2)^2}$$



3. Solve each of the following equations. Indicate an extraneous roots:

$$a) \sqrt{x+2} = \frac{1}{\sqrt{x+2}}$$

$$b) \sqrt{x^2 - 8} = \sqrt{3x+2}$$

$$c) \sqrt{x^2 + 3} = x+1$$

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

$$\text{e) } \sqrt{2x+3} - \sqrt{x+2} = 2$$

$$\text{f) } \sqrt{x-8} + \sqrt{x} = 2$$

$$\text{g) } \sqrt{x} + \sqrt{x-3} = 9$$

$$\text{h) } \sqrt{x-2} + \sqrt{3x-3} = 3$$

$$\text{i) } \sqrt{x+6} = \frac{2}{\sqrt{x+1}} + \sqrt{x+1}$$

$$\text{f) } \frac{3}{\sqrt{x}} - 5 = \frac{1-2\sqrt{x}}{\sqrt{x}}$$

4. Solve for all real value(s) of "x" $\sqrt{x+10} - \frac{6}{\sqrt{x+10}} = 5$

5. Find all "z" such that $\sqrt{5z+5} - \sqrt{3-3z} - 2\sqrt{z} = 0$

6. It so happens that $\sqrt{1800} + \sqrt{200} = \sqrt{n}$, where "n" is an integer. What is the value of "n"?

7. Find all real values of "x" which satisfy $\sqrt{x^2+1} + x^2 + 1 = 90$

8. Find $2x+5$ if "x" satisfies $\sqrt{40-9x} - 2\sqrt{7-x} = \sqrt{-x}$

9. Solve for "x" $\sqrt{x+\sqrt{x+11}} + \sqrt{x-\sqrt{x+11}} = 4$

10. Determine the sum of the solution for "x": $\sqrt{2x-7} = 2 + \sqrt{x-7}$

11. Determine the domain of the following function: $y = \sqrt{190 - \sqrt{x}}$

12. For how many real values of "x" is $\sqrt{2211 - \sqrt{x}}$ an integer?

13. If $\sqrt{\frac{3}{1} \times \frac{5}{3} \times \frac{7}{5} \times \dots \times \frac{2n+1}{2n-1}} = 9$, then what is the value of "n"? Fermat #21

14. What are all real values of "x" which satisfy:

$$\sqrt{x + 2\sqrt{x-1}} + \sqrt{x - 2\sqrt{x-1}} = 2\sqrt{x-1} ?$$