Butterworth Math 120 Paper HW 12 , due 4/23

Reminders: Please **show all your work** neatly on this worksheet.
This should be some of your most careful work!

Name: _____

	Show your work neatly (when relevant). Place your answer in the box at the right	
1.	Describe the following radical function as a translation of the function $f(x) = \sqrt{x}$. Use terms like vertical translation up/down, horizontal translation left/right, vertical reflection (across the x-axis), vertical stretching/shrinking. Please use specify units & direction as needed. *The Translated Function Is:* $g(x) = -\sqrt{x} + 9$	
2.	Describe the following radical function as a translation of the function $f(x) = \sqrt{x}$. Use terms like vertical translation up/down, horizontal translation left/right, vertical reflection (across the x-axis), vertical stretching/shrinking. Please use specify units & direction as needed. *The Translated Function Is:* $g(x) = 2\sqrt{x-1}$	
3.	Describe the following radical function as a translation of the function $f(x) = \sqrt{x}$. Use terms like vertical translation up/down, horizontal translation left/right, vertical reflection (across the x-axis), vertical stretching/shrinking. Please use specify units & direction as needed. *The Translated Function Is:* $g(x) = {}^{1}/_{2}\sqrt{x+1} - 5$	
4.	Complete the statement: The vertex of the $f(x) = \sqrt{x}$ radical function is moved from the position (0,0) to the position _____ in the translated function $g(x) = \sqrt{x+1} - 2$.	
5.	Complete the statement: The y-values of the function $f(x) = \sqrt{x}$ are _____ (doubled/halved) in the translation $g(x) = 2\sqrt{x}$	
6.	Complete the statement: The graph of the function $f(x) = \sqrt{x}$ is flipped over the _____-axis in the translation $g(x) = -\sqrt{x}$.	
7.	Complete the statement: The graph of the function $f(x) = \sqrt{x}$ is flipped over the _____-axis in the translation $g(x) = \sqrt{-x}$.	

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8. Complete the statement:
The x-values of the function $f(x) = \sqrt{x}$ are _____
(doubled/halved) in the translation $g(x) = \sqrt{2x}$

9. Complete the table of values for the function that follows as a translation (represented by x′ or y′) of the function $f(x) = \sqrt{x}$.

$g(x) = \sqrt{x} + 3$

x	$y = f(x) = \sqrt{x}$	$y' = g(x) = \sqrt{x} + 3$
0	0	
1	1	
4	2	
9	3	

10. Complete the table of values for the function that follows as a translation (represented by x′ or y′) of the function $f(x) = \sqrt{x}$.

$h(x) = \sqrt{x-1} + 3$

x′	x	$y = f(x) = \sqrt{x}$	$y' = h(x) = \sqrt{x-1} + 3$
	0	0	
	1	1	
	4	2	
	9	3	

11. Complete the table of values for the function that follows as a translation (represented by x′ or y′) of the function $f(x) = \sqrt{x}$.

$j(x) = 2\sqrt{x}$

x	$y = f(x) = \sqrt{x}$	$y' = j(x) = 2\sqrt{x}$
0	0	
1	1	
4	2	
9	3	

12. Complete the table of values for the function that follows as a translation (represented by x′ or y′) of the function $f(x) = \sqrt{x}$.

$k(x) = -2\sqrt{x}$

x	$y = f(x) = \sqrt{x}$	$y' = k(x) = -2\sqrt{x}$
0	0	
1	1	
4	2	
9	3	

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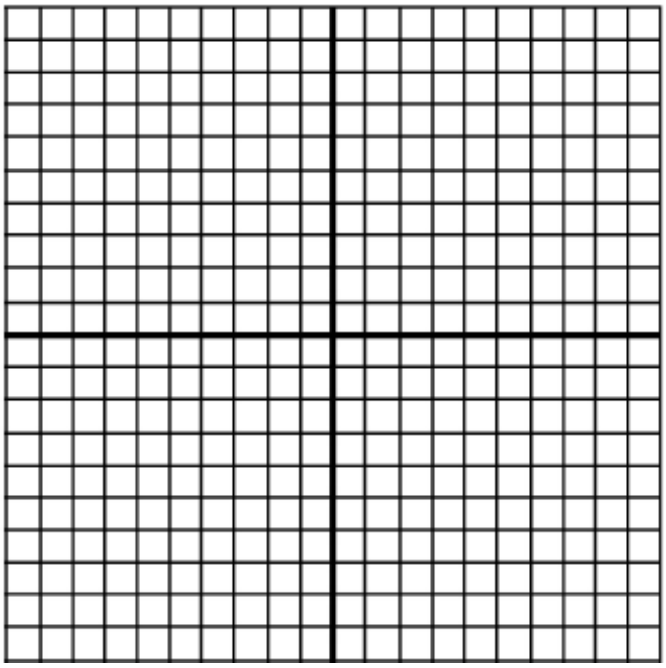
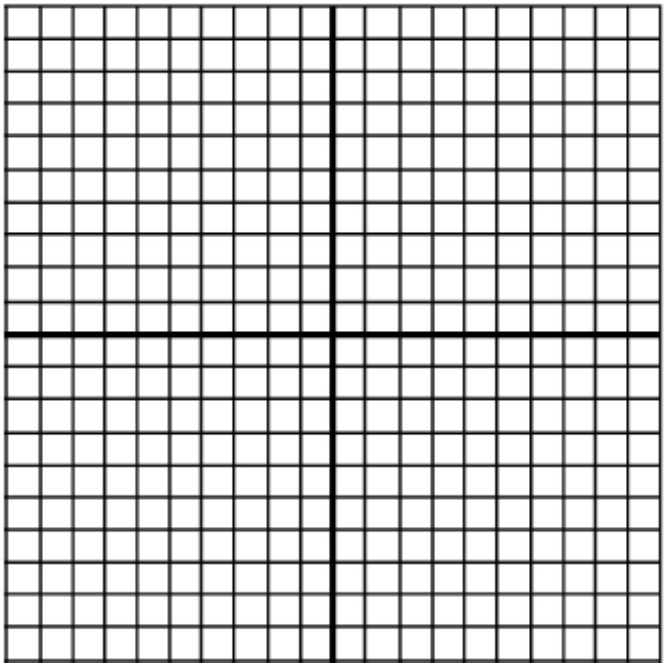
13. Use your table of values in problems 9 & 10 to graph $f(x) = \sqrt{x}$, $g(x) = \sqrt{x} + 3$ and $h(x) = \sqrt{x-1} + 3$ on the coordinate system. Label each of the functions with f(x), g(x) and h(x) respectively. Put each point on the graph but you don't need to label with an ordered pair this time.

14. Use your table of values in problems 11 & 12 to graph $f(x) = \sqrt{x}$, $j(x) = 2\sqrt{x}$ and $k(x) = -2\sqrt{x}$ on the coordinate system. Label each of the functions with f(x), j(x) and k(x) respectively. Put each point on the graph but you don't need to label with an ordered pair this time.

#13



#14



15. Discuss any observations for the graphs in **a)** Problem #13 and **b)** Problem #14.