Name: _____

Solving Quadratic Inequalities
Writing Zeros in Interval Notation

To solve a quadratic inequality, you must first know, generally, what the graph of the quadratic will look like: Will it open up ($+x^2$) or down ($-x^2$)? Will it be solid ($\leq$ *or* $\geq$) or dotted ($<$ *or* $>$)? Will it be shaded inside the parabola or outside of it?

You must also solve for the roots of the quadratic (also known as the "zeros" or "*x*-intercepts"). Once you have this information, then you will write the zeros in interval notation.

There are only four ways that the intervals can be written, depending on where the graph is shaded and whether the inequality used "or equal to" or not

	***Using* $\leq$ *or* $\geq$**	***Using* $<$ *or* $>$**
Shaded Inside of the Parabola:	$[zero, zero]$	$(zero, zero)$
Shaded Outside of the Parabola:	$(-\infty, zero] \cup [zero, \infty)$	$(-\infty, zero) \cup (zero, \infty)$

Find the zeros and write them in interval notation.

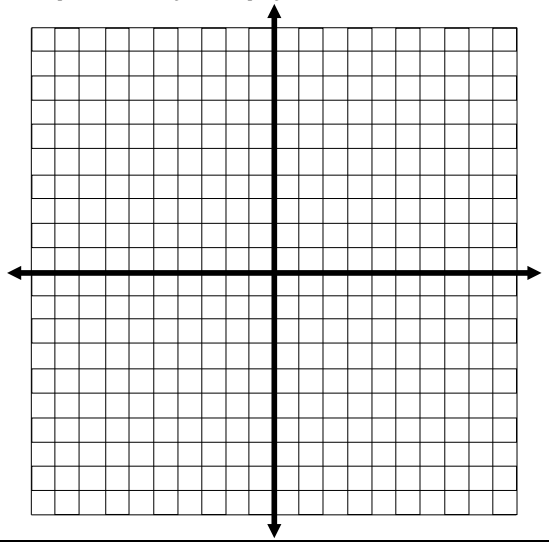
1. $f(x) > -x^2 - 8x + 15$

2. $g(x) < -x^2 - 8x + 15$

3. $h(x) \geq -x^2 - 8x + 15$

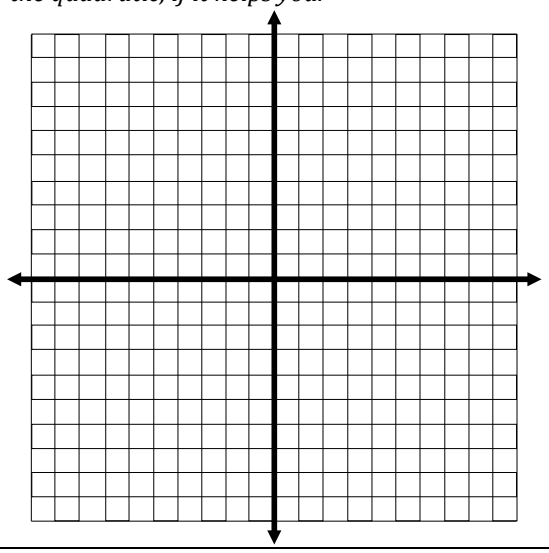
4. $k(x) \leq -x^2 - 8x + 15$

Draw the quadratic, if it helps you.



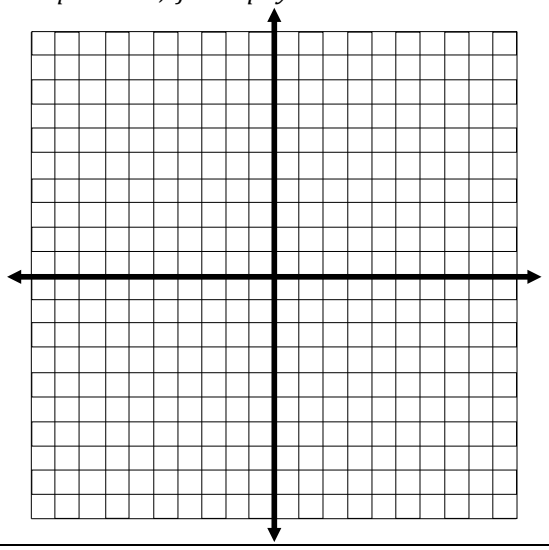
Workspace for problems 1-4:

Find the zeros and write them in interval notation.

5. $f(x) > -3x^2 - 10x - 8$	*Draw the quadratic, if it helps you.* 
6. $g(x) \geq -3x^2 - 10x - 8$	
7. $h(x) < -3x^2 - 10x - 8$	
8. $k(x) \leq -3x^2 - 10x - 8$	

Workspace for problems 5 – 8:

Find the zeros and write them in interval notation.

9. $f(x) \geq 4x^2 + 8x - 5$	*Draw the quadratic, if it helps you.* 
10. $g(x) \leq 4x^2 + 8x - 5$	
11. $h(x) < 4x^2 + 8x - 5$	
12. $k(x) > 4x^2 + 8x - 5$	

Workspace for problems 9 – 12: