




Name: _____

Band: _____

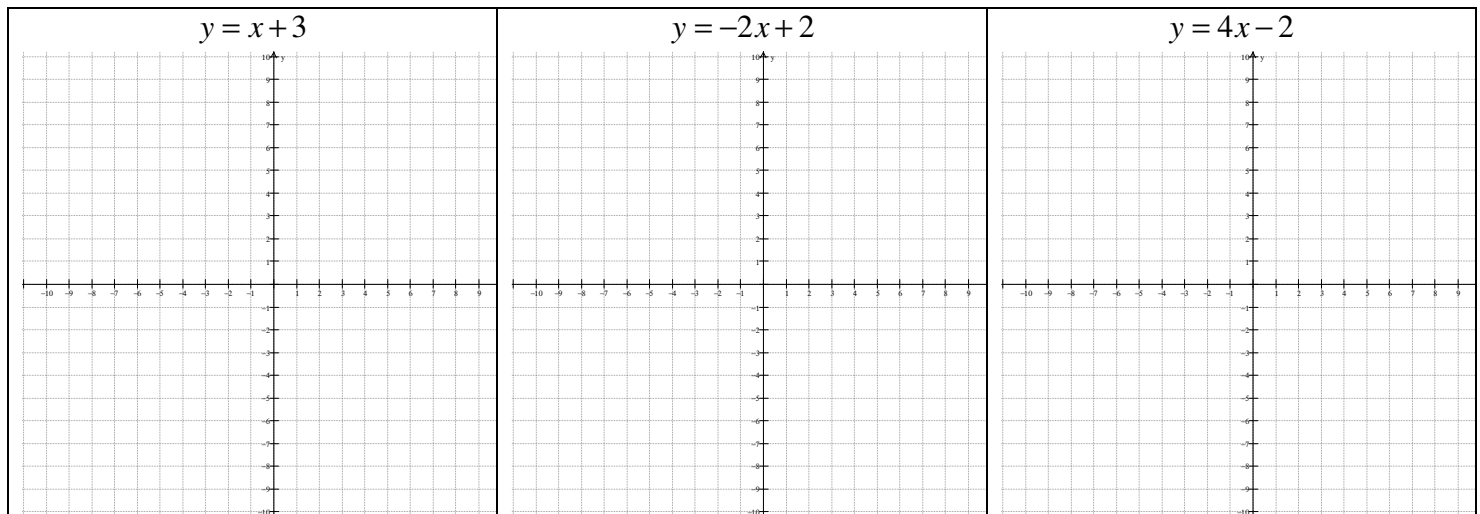
Algebra II | Packer Collegiate Institute | 2008-2009

Quadratic Inequalities

SECTION I: Graph the following inequalities on a number line & write the solution in interval notation

$x + 3 \leq 0$ Interval Notation:	
$-2x + 2 > 0$ Interval Notation:	
$4x - 2 \leq 0$ Interval Notation:	

Section II: Graph the lines



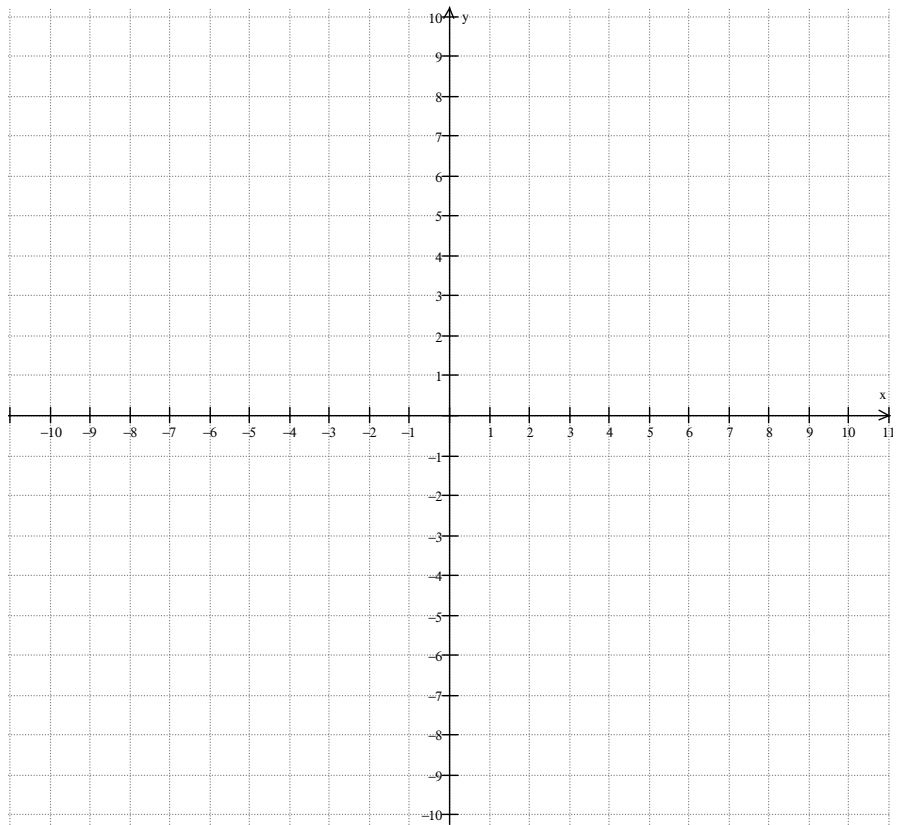
Do you see a connection between the graphs of the lines in Section 2 and the solution to the problems in Section I?

SECTION III: Graph the quadratic, and rewrite the quadratic in standard form

$$y = x^2 - x - 6$$

The equation in vertex form is:

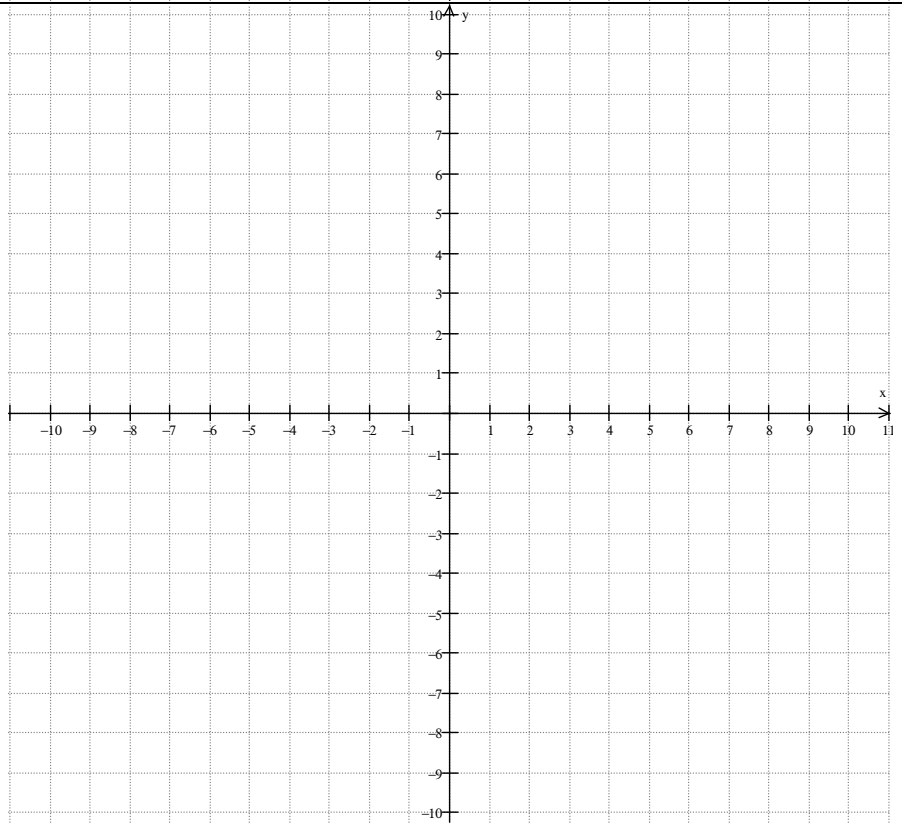
The zeros are (hint: factor):



$$y = -x^2 + 4$$

The equation in vertex form is:

The zeros are (hint: factor):



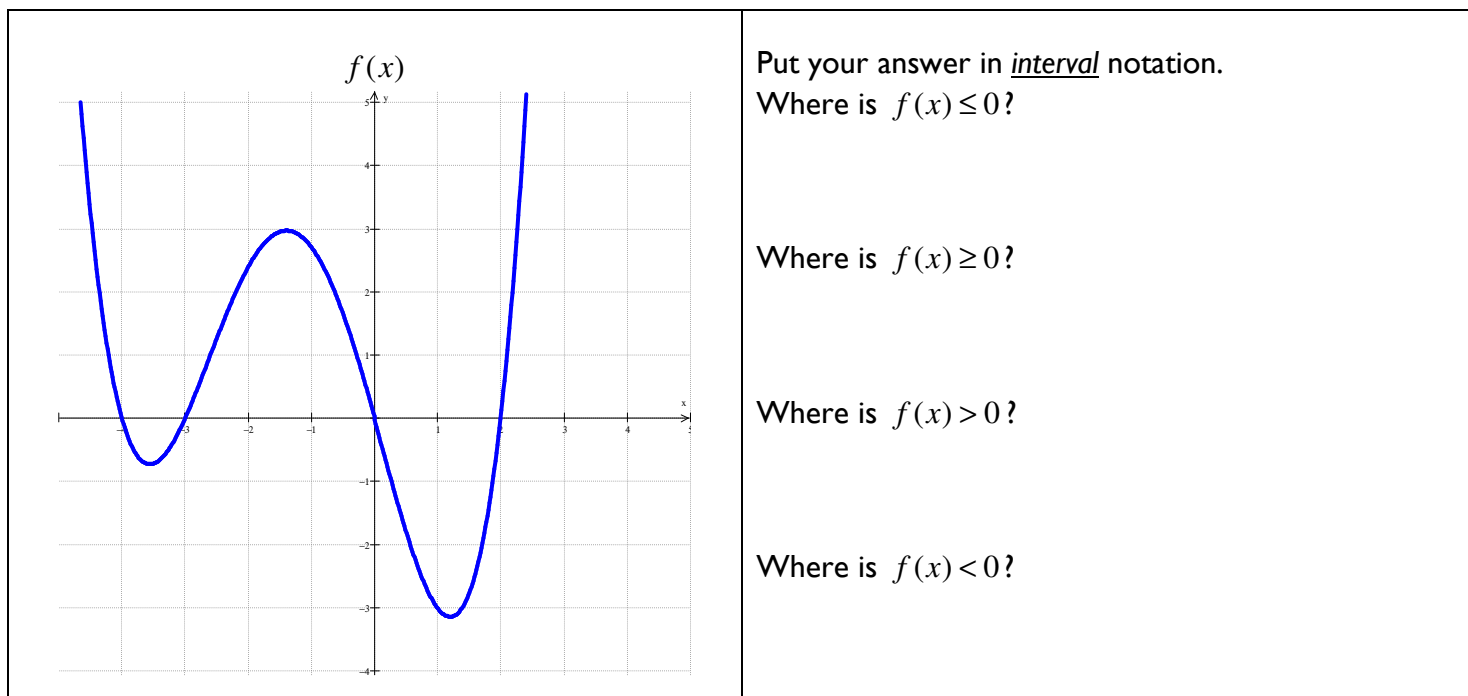
(a) If I asked you the interval(s) where $x^2 - x - 6 > 0$, what might you say? Look at the graph above!

(b) If I asked you the interval(s) where $x^2 - x - 6 \leq 0$, what might you say? Look at the graph above!

(c) If I asked you the interval(s) where $-x^2 + 4 < 0$, what might you say? Look at the graph above!

(d) If I asked you the interval(s) where $-x^2 + 4 \geq 0$, what might you say? Look at the graph above!

Section IV: Reading Graphs



Section V: SIGN ANALYSIS

A way to solve these problems *without* graphing!

STEP 0: Make the inequality an equality

STEP 1: Find the zeros of the quadratic (factor, quadratic formula, complete the square)

STEP 2: Make a number line and plot the zeros on it

STEP 3: Perform a sign analysis

STEP 4: Look at your original inequality. Write your answer!

Problem I: Find where $x^2 - x - 6 > 0$	Problem II: Find where $-x^2 + 4 \geq 0$
Step 1:	Step 1:
Step 2:	Step 2:
Step 3/4:	Step 3/4:
Step 5:	Step 5:

Sometimes when you are looking for the zeros, your equation is *not* factorable like in the two examples above. *Sigh*. But you just learned another way to find the zeros of a quadratic!

Try this problem: Find where $x^2 + 2x - 1 \leq 0$

HOMEWORK

There are some special cases you want to consider. This set of homework problems will lead you through them. Please do them on a separate sheet of graph paper. When you solve each problem, check your answer using your graphing calculator.

1. (a) Find where $x^2 - 7 < 0$
(b) Find where $x^2 - 7 > 0$

2. (a) Find where $x^2 + 2x + 1 > 0$
(b) Find where $x^2 + 2x + 1 < 0$
(c) Find where $x^2 + 2x + 1 \geq 0$
(d) Find where $x^2 + 2x + 1 \leq 0$

3. Find where $x^2 - 6x + 5 \leq 0$

4. Find where $x^2 - 2x + 63 > 0$

5. (a) Find where $x^2 + 5 > 0$
(b) Find where $x^2 + 5 < 0$
(c) Find where $x^2 + 5 \geq 0$
(d) Find where $x^2 + 5 \leq 0$

6. Find where $x^2 + 3x + 1 \leq 0$