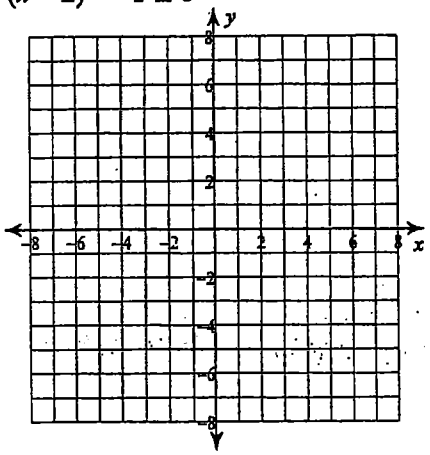
Pre-Calculus 11 Name_____

Quadratic Inequalities (Graphing)

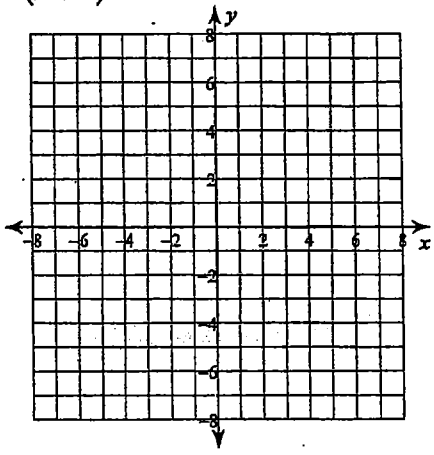
Date_____ Period____

Solve each quadratic inequality graphically. Answer #1-3 in set notation and #4-6 in interval notation.

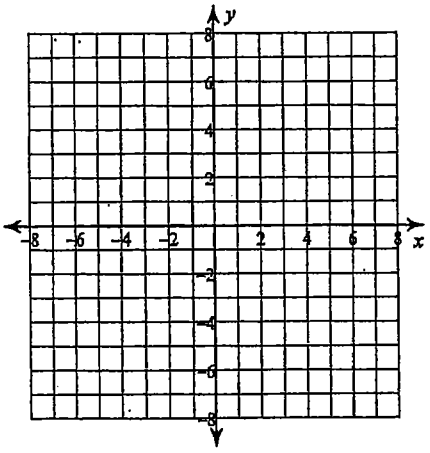
1) $(x-2)^2-1\geq 0$



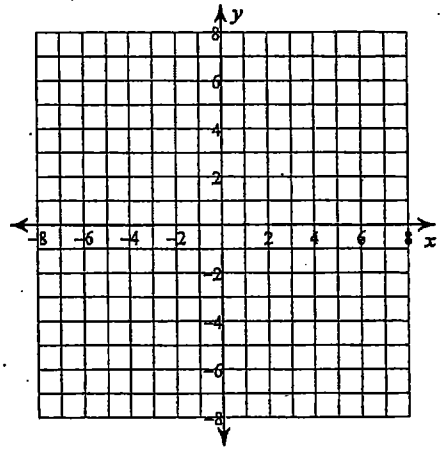
2) $-(x+3)^2+4<0$



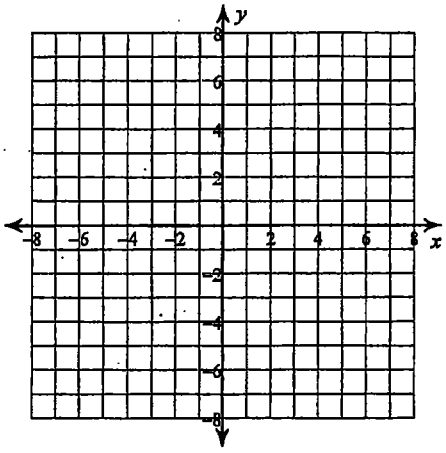
3) $-x^2+2x+8>0$



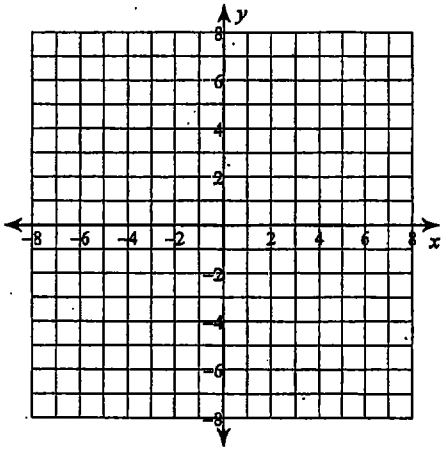
4) $x^2-2x\geq 0$



5) $x^2+6x+4\leq -1$

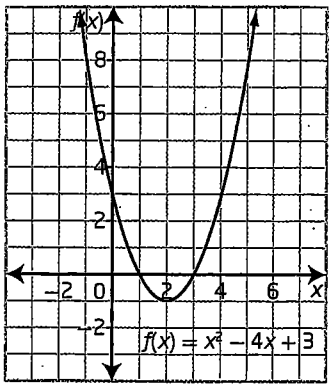


6) $-x^2+3x+1>x-2$



Practise

7. Consider the graph of the quadratic function $f(x) = x^2 - 4x + 3$.



What is the solution to

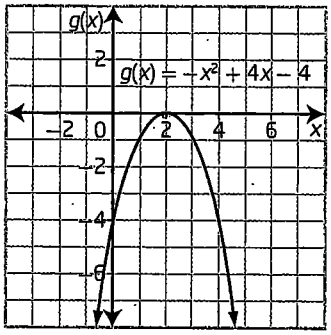
a) $x^2 - 4x + 3 \leq 0$?

b) $x^2 - 4x + 3 \geq 0$?

c) $x^2 - 4x + 3 > 0$?

d) $x^2 - 4x + 3 < 0$?

8 Consider the graph of the quadratic function $g(x) = -x^2 + 4x - 4$.



What is the solution to

a) $-x^2 + 4x - 4 \leq 0$?

b) $-x^2 + 4x - 4 \geq 0$?

c) $-x^2 + 4x - 4 > 0$?

d) $-x^2 + 4x - 4 < 0$?

9. Is the value of x a solution to the given inequality?

a) $x = 4$ for $x^2 - 3x - 10 > 0$

b) $x = 1$ for $x^2 + 3x - 4 \geq 0$

c) $x = -2$ for $x^2 + 4x + 3 < 0$

d) $x = -3$ for $-x^2 - 5x - 4 \leq 0$

Answers:

1. $\{x \mid x \leq 1 \text{ or } x \geq 3, x \in \mathbb{R}\}$

2. $\{x \mid x < -5 \text{ or } x > -1, x \in \mathbb{R}\}$

3. $\{x \mid -2 < x < 4, x \in \mathbb{R}\}$

4. $(-\infty, 0] \cup [2, \infty)$

5. $[-5, -1]$

6. $(-1, 3)$

7. a $\{x \mid 1 \leq x \leq 3 \; x \in \mathbb{R}\}$
   b $\{x \mid x \leq 1 \text{ or } x \geq 3 \; x \in \mathbb{R}\}$
   c $\{x \mid x < 1 \text{ or } x > 3 \; x \in \mathbb{R}\}$
   d $\{x \mid 1 < x < 3 \; x \in \mathbb{R}\}$

8. a $\{x \mid x \in \mathbb{R}\}$
   b $\{x \mid x = 2 \; x \in \mathbb{R}\}$
   c No solution
   d $\{x \mid x \neq 2 \; x \in \mathbb{R}\}$

9. a Not a solution
   b solution
   c solution
   d Not a solution