Name: Key Date: _____

Solving Quadratic Inequalities Algebraically

Steps:

1. Write in standard form
2. Change the inequality to equal sign
3. Solve
4. Graph solution(s)
5. Test 3 values, one from each section
6. Shade when true
7. Interpret the graph to write the solution as an inequality

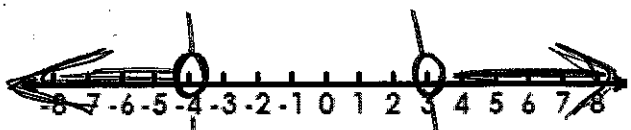
interval notation

Find the solution set for each inequality:

1. $x^2 + x - 12 > 0$

$(x+4)(x-3) = 0$

$x = -4 \quad x = 3$



yes No yes

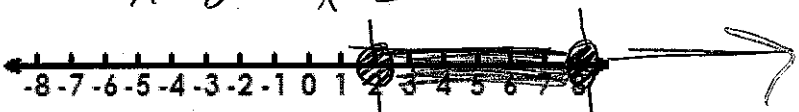
$(-\infty, -4) \cup (3, \infty)$

2. $-16 \geq x^2 - 10x$

$x^2 - 10x + 16 \leq 0$

$(x-8)(x-2) = 0$

$x = 8 \quad x = 2$



No yes

$[2, 8]$

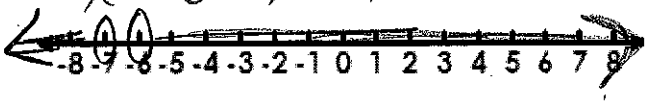
3. $2x^2 + 84 > -26x$

$2x^2 + 26x + 84 > 0$

$2(x^2 + 13x + 42) > 0$

$2(x+6)(x+7) > 0$

$x = -6 \quad x = -7$



$(-\infty, -7) \cup (-6, \infty)$

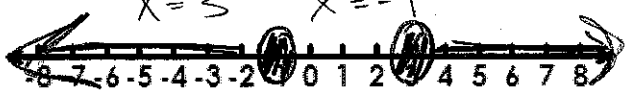
4. $0 \geq -x^2 + 2x + 3$

$-x^2 + 2x + 3 \leq 0$

$-(x^2 - 2x - 3) \leq 0$

$-(x-3)(x+1) = 0$

$x = 3 \quad x = -1$



$(-\infty, -1] \cup [3, \infty)$

Algebra 1 Name Key ID: 1

Homework Day 1 *Don't do #6 Date Period

Sketch the graph of each function.

1) $0 \geq x^2 + 6x + 8$

*Replace "y" with "0"

$x^2 + 6x + 8 \leq 0$

$(x+4)(x+2)$

$-4 \quad -2$

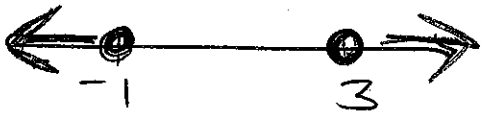
$[-4, -2]$

2) $0 \leq x^2 - 2x - 3$

$x^2 - 2x - 3 \geq 0$

$(x-3)(x+1)$

$(-\infty, -1] \cup [3, \infty)$



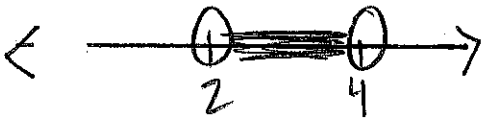
3) $0 > x^2 - 6x + 8$

$x^2 - 6x + 8 < 0$

$(x-4)(x-2)$

$4 \quad 2$

$(2, 4)$



4) $0 \geq x^2 + 6x + 5$

$0 \geq x^2 + 6x + 5$

$(x+5)(x+1)$

$[-5, -1]$

5) $0 \leq x^2 - 8x + 15$

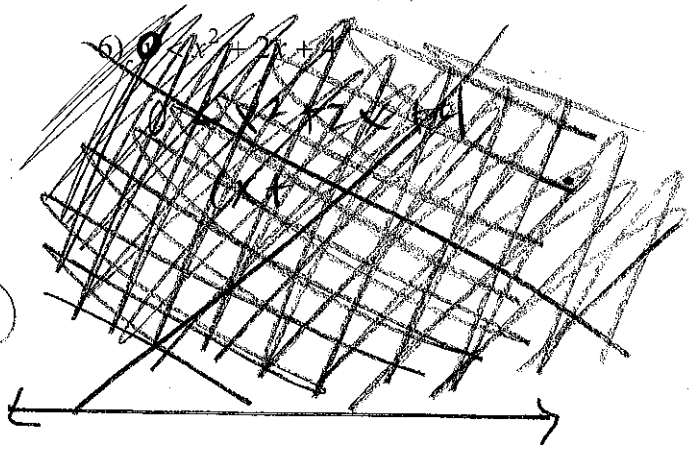
$0 \leq x^2 - 8x + 15$

$(x-5)(x-3)$

$5 \quad 3$

$(-\infty, 3] \cup [5, \infty)$

6) $0 \geq x^2 + 2x + 1$

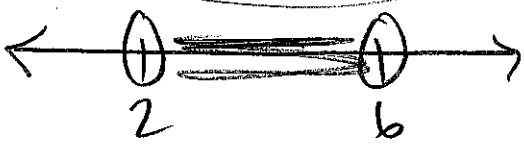


7) $0 > x^2 - 8x + 12$

$0 > (x-6)(x-2)$

$6 \quad 2$

$(2, 6)$



8) $0 > x^2 + 4x$

$0 > x(x+4)$

$x = 0 \qquad x = -4$

$(-4, 0)$