

Linear Inequalities Review

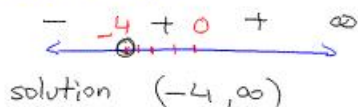
- Solve the following inequalities:

A. $x+4 > 0$ *positive*
 $x > -4$
 The inequality $x+4 > 0$ is true when x is greater than -4

B. $2x+3 < 0$

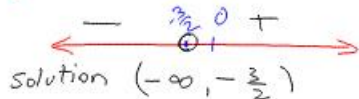
the quantity $x+4$ is positive when x is greater than -4

C. $-x+5 > 0$



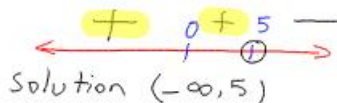
B. $2x+3 < 0$ *negative*

$2x+3=0$ -3 -3
 $\frac{2x}{2} = \frac{-3}{2}$
 $x = -\frac{3}{2}$



C. $-x+5 > 0$

$-x+5=0$
 $+x$
 $5=x$



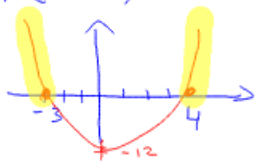
Solving Quadratic Inequalities

- Section P7: p54-59

Graphically

- Find the zeros (by factoring)
- Find the parts of the parabola that satisfy the inequality (either above the x axis or below the x axis)
- Find the corresponding x values

1. $(x-4)(x+3) > 0$



$x^2 - x - 12 > 0$
 means parts of the parabola above the x -axis.
 $(-\infty, -3) \cup (4, \infty)$

Solve the Quadratic Inequality Algebraically

$x^2 - x - 12 > 0$

- Factor it and find the zeros
- Draw a number line (or table) and locate the zeros
- Fill out the signs for each factor, then find the sign of the whole expression
- Choose the correct interval

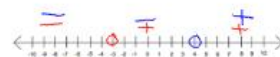
1. $x^2 - x - 12 = 0$

-12
 -4×3
 -1

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

$x-4=0$
 $x=4$

$x+3=0$
 $x=-3$



whole expression $+$ $-$ $+$
 Solution: $(-\infty, -3) \cup (4, \infty)$

Example 4 p55

$2x^2 + 3x \leq 20$

- Solve the above inequality graphically and algebraically

Graphically

$2x^2 + 3x - 20 \leq 0$
 $a=2$ $b=3$ $c=-20$

-20
 -5×4
 3

20
 4×5
 8

$(x-5)(x+4)$
 $(2x-5)(x+4)$

