

Linear Inequalities

The rules for solving linear inequalities are the same as those for linear equalities except for one thing, if you multiply or divide the inequality by a negative number the inequality sign switches.

The solutions to linear inequalities are intervals of numbers, not individual numbers like in equalities.

Interval Notation

There are 2 symbols used to show the endpoints of intervals

(- endpoint of the interval not included

[- endpoint of interval included

Ex.

$(0,2)$ all numbers between 0 and 2 but not including 0 or 2

$[0,2)$ all numbers between 0 and 2 including 0 but not 2

$[0,2]$ all numbers between 0 and 2 including 0 or 2

$(-\infty, 2]$ all numbers less than or equal to 2

$(2, \infty)$ all numbers greater than 2 but not 2

Solving Inequalities

Ex.

Solve $3x + 2 > 0$ subtract 2 from each side

$3x > -2$ divide by 3

$x > -2/3$ $(-2/3, \infty)$

Solve $-4x - 8 < 12$ add 8 to each side

$-4x < 20$ divide by -4(remember to switch sign)

$x > -5$ $(-5, \infty)$

Solve $3x + 4 < 2x - 1$ put x 's on one side and constants on the other

$3x + 4 < 2x - 1$ subtract 4 from each side

$3x < 2x - 5$ subtract $2x$ from each side

$x < -5$ $(-\infty, -5)$