Solving Inequalities

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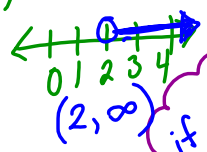
* Solve the same way as equations except there is more than 1 solution
So your answers are graphed OR Written in interval Notation

dx) $x > 2$



$(2, \infty)$

if > or < use a parenthesis

$x \geq 2$

$[2, \infty)$

if ≥ or ≤ use a bracket to show value is included

$x < 2$

$(-\infty, 2)$

$x \leq 2$

$(-\infty, 2]$

* ∞ or -∞ is ALWAYS Parenthesis

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Practice with Interval Notation:

① $x \leq 3$

$(-\infty, 3]$

② $x > 3$

$(3, \infty)$

* Smaller number always comes first *

③ $x \geq 4$

$[4, \infty)$

④ $x < -2$

$(-\infty, -2)$

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Reminder: When you Divide (or Multiply) by a negative number, the inequality sign FLIPS.

Examples

① $-11y - 13 > 42$

$+13 \quad +13$

$-11y > 55$

$\frac{-11y}{-11} > \frac{55}{-11}$

$y < -5$

$(-\infty, -5)$

② $-23 \geq 11 + 2w$

$-11 \quad -11$

$-34 \geq 2w$

$\frac{-34}{2} \geq \frac{2w}{2}$

$-17 \geq w$

$w \leq -17$

$(-\infty, -17]$

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③ $-6(w+3) - \frac{3}{2}w \leq -11 - 9w$

$-6w - 18 - 1.5w \leq -11 - 9w$

$-7.5w - 18 \leq -11 - 9w$

$+9w \qquad +9w$

$1.5w - 18 \leq -11$

$+18 \quad +18$

$\frac{1.5w}{1.5} \leq \frac{7}{1.5}$

$w \leq 4\ 2/3 \qquad (-\infty, 4\ 2/3]$

Sep 14-8:22 AM