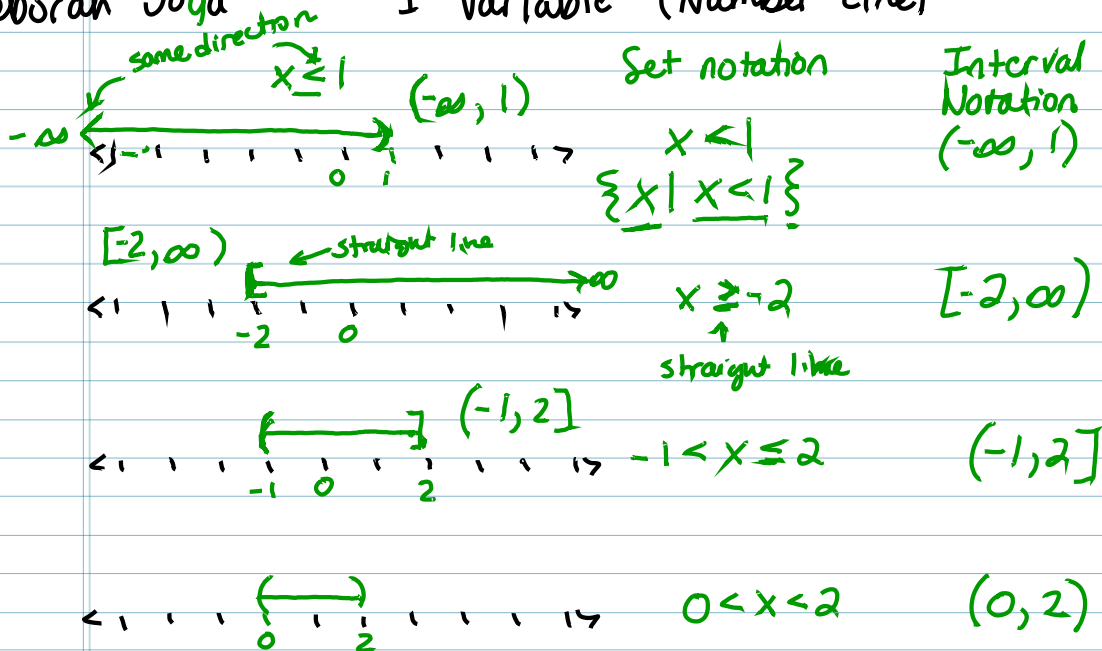


Algebra with
Deborah Joya

Linear Inequalities 1 Variable (Number Line)



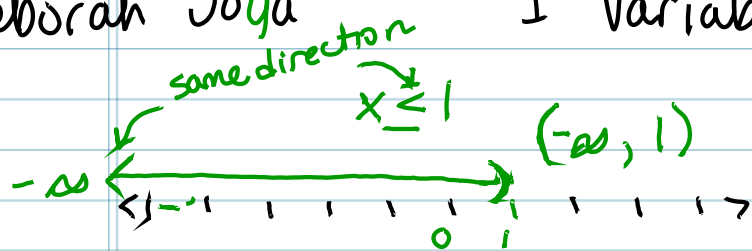
* Solve Inequalities like Equations EXCEPT
FLIP the inequality if dividing or multiplying
by a NEGATIVE.

→ Solve and graph

$$\begin{aligned} \rightarrow -15 - (2x+1) &\geq 4(x-1) - 3x \\ -15 - 2x - 1 &\geq 4x - 4 - 3x \\ -2x - 16 &\geq x - 4 \\ -x &\geq 12 \\ \frac{-x}{-3} &\geq \frac{12}{-3} \\ x &\leq -4 \end{aligned}$$

$(-\infty, -4]$

* Recommend plotting on the number line first then express in interval notation.

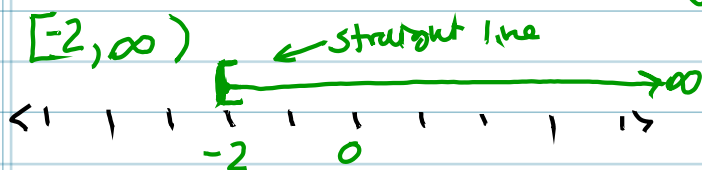


Set notation

Interval
Notation
 $(-\infty, 1)$

$$x < 1$$

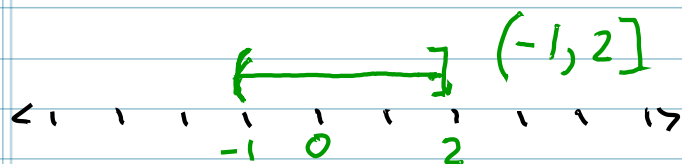
$$\{x \mid x < 1\}$$



$$x \geq -2$$

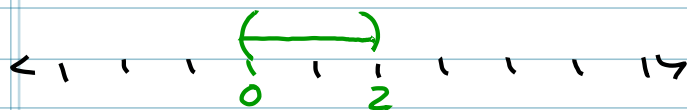
$[-2, \infty)$

straight line



$$-1 < x \leq 2$$

$(-1, 2]$



$$0 < x < 2$$

$(0, 2)$

* Solve Inequalities like Equations EXCEPT
FLIP the inequality if dividing or multiplying
by a NEGATIVE.

→ Solve and graph

$$\rightarrow -15 - (2x+1) \geq 4(x-1) - 3x$$

$$\underline{-15} - \underline{2x} - \underline{1} \geq \underline{4x} - 4 - \underline{3x}$$

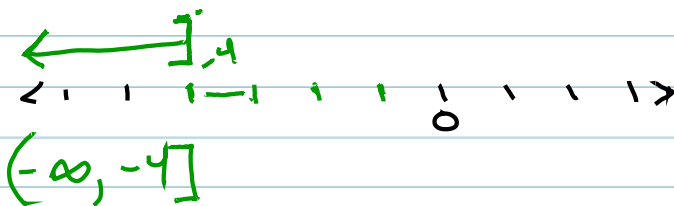
$$\underline{-2x} - \underline{16} \geq \underline{x} - 4$$

$$\underline{-x} + \underline{16} \quad \underline{-x} + \underline{16}$$

$$\underline{-3x} \geq \underline{12}$$

$$\underline{-3} \quad \downarrow \quad \underline{-3}$$

$$x \leq -4$$



* Recommend plotting on
the number line first +
then express in
interval notation.