

Chapter 6

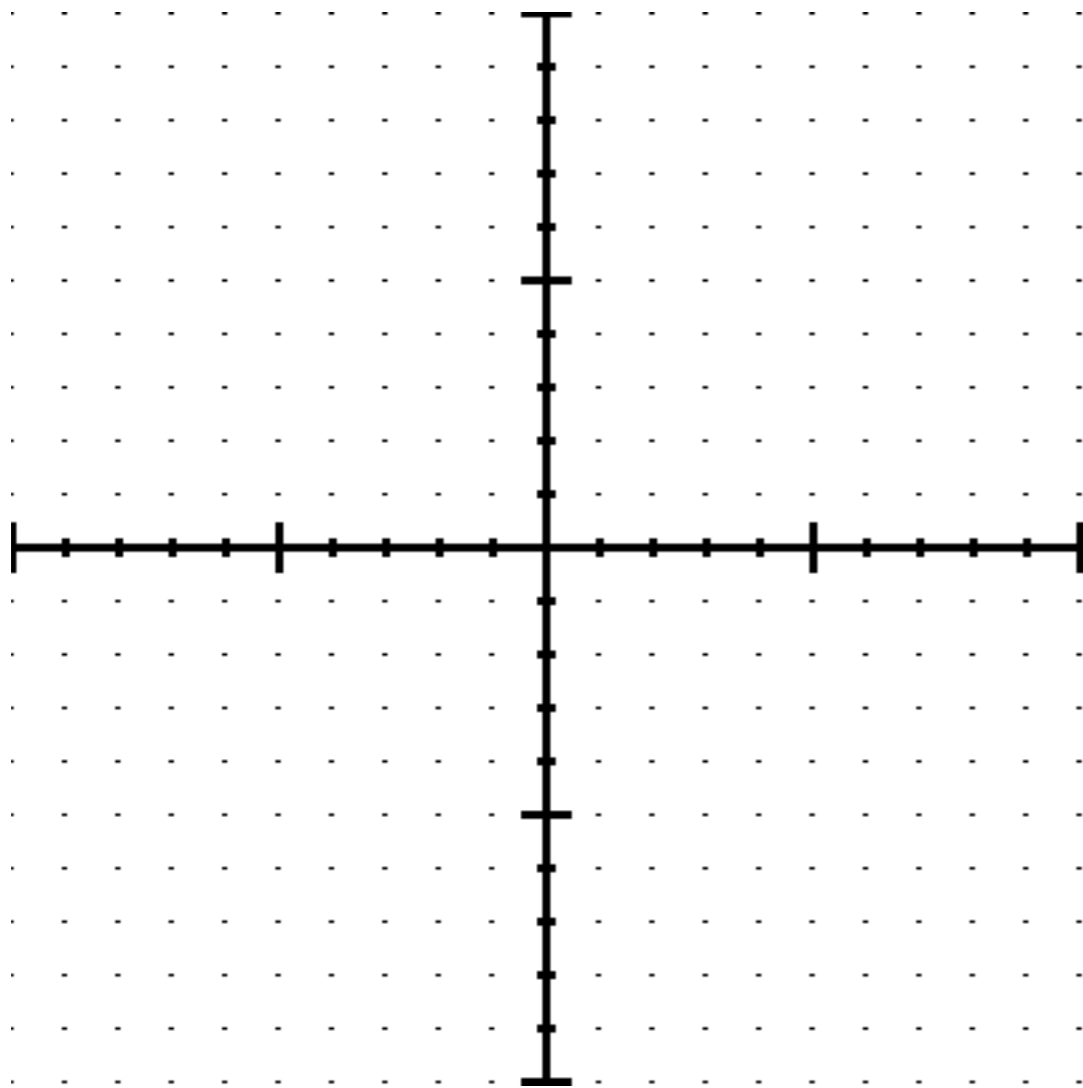
Test Topics

Basics

- Solve and Graph Inequalities
- Solve and Graph Compound Inequalities (AND/OR)
- Write Inequalities
- Beware:
 - No Solutions
 - And's with x's on two sides

Graphing Absolute Value Equations

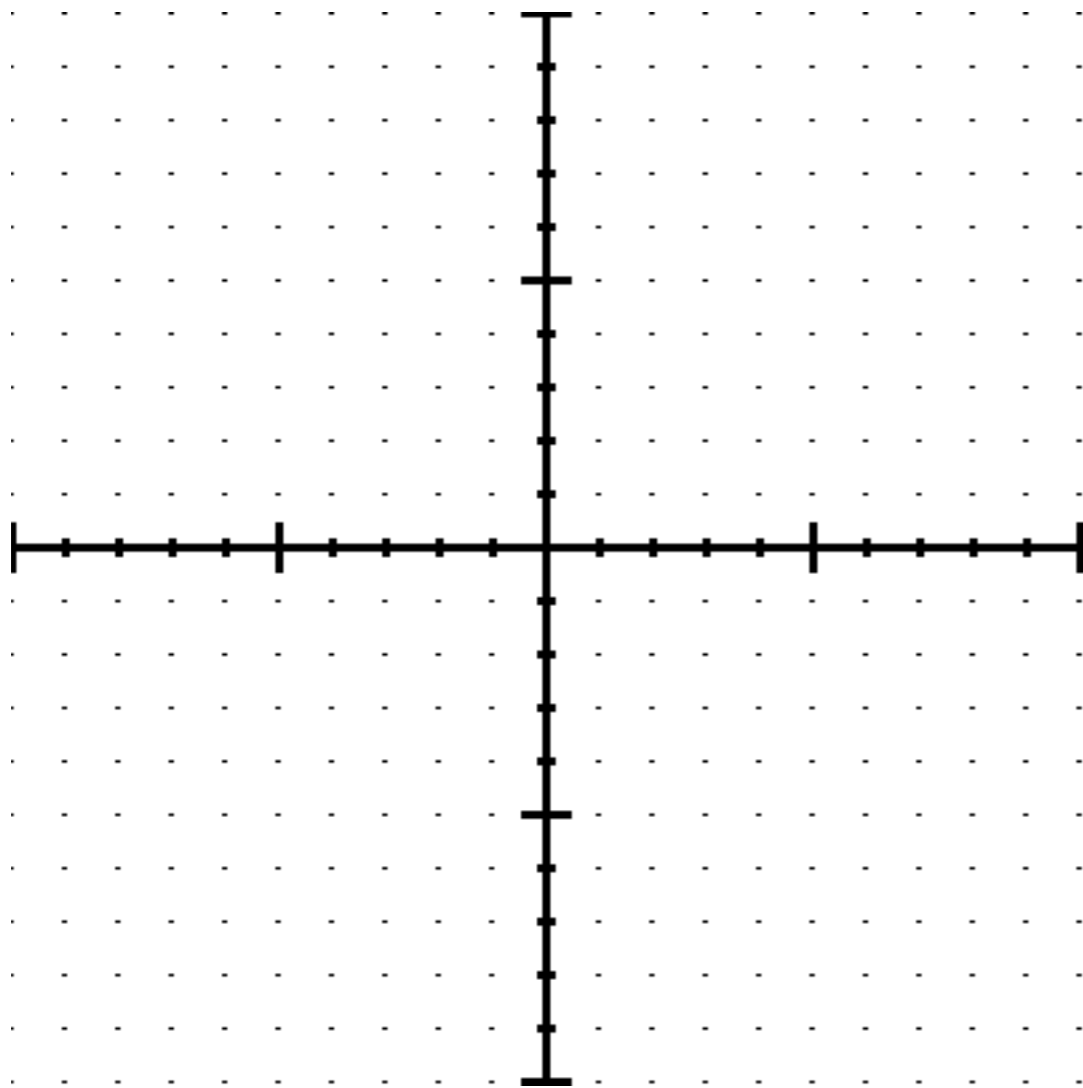
$$y = -\frac{1}{2}|x + 2| - 5$$



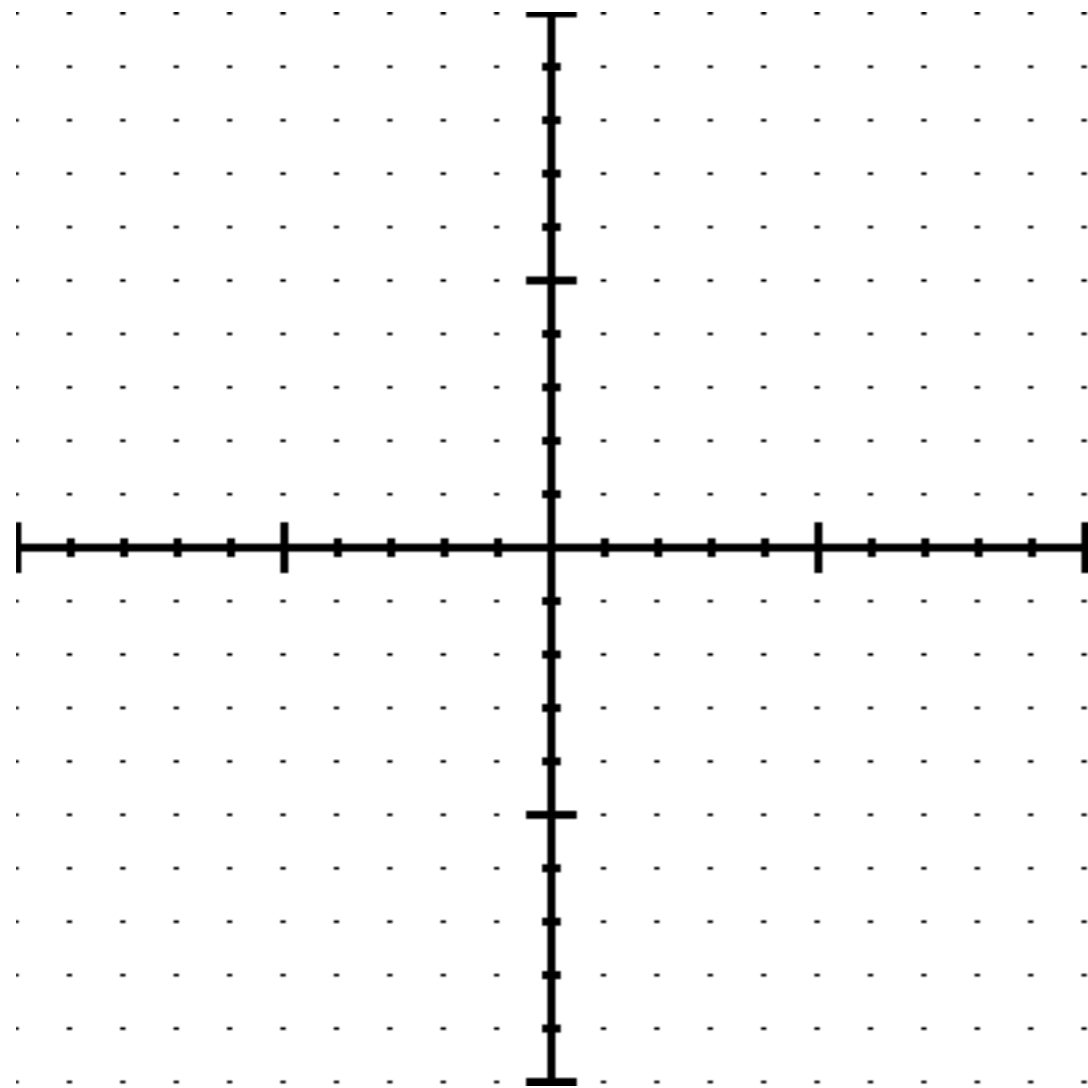
Graphing Absolute Value Equations

$$y = -\frac{1}{2}|x + 2| - 5$$

Vertex: (-2, -5)



Graphing Absolute Value Equations



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Vertex: (-2, -5)

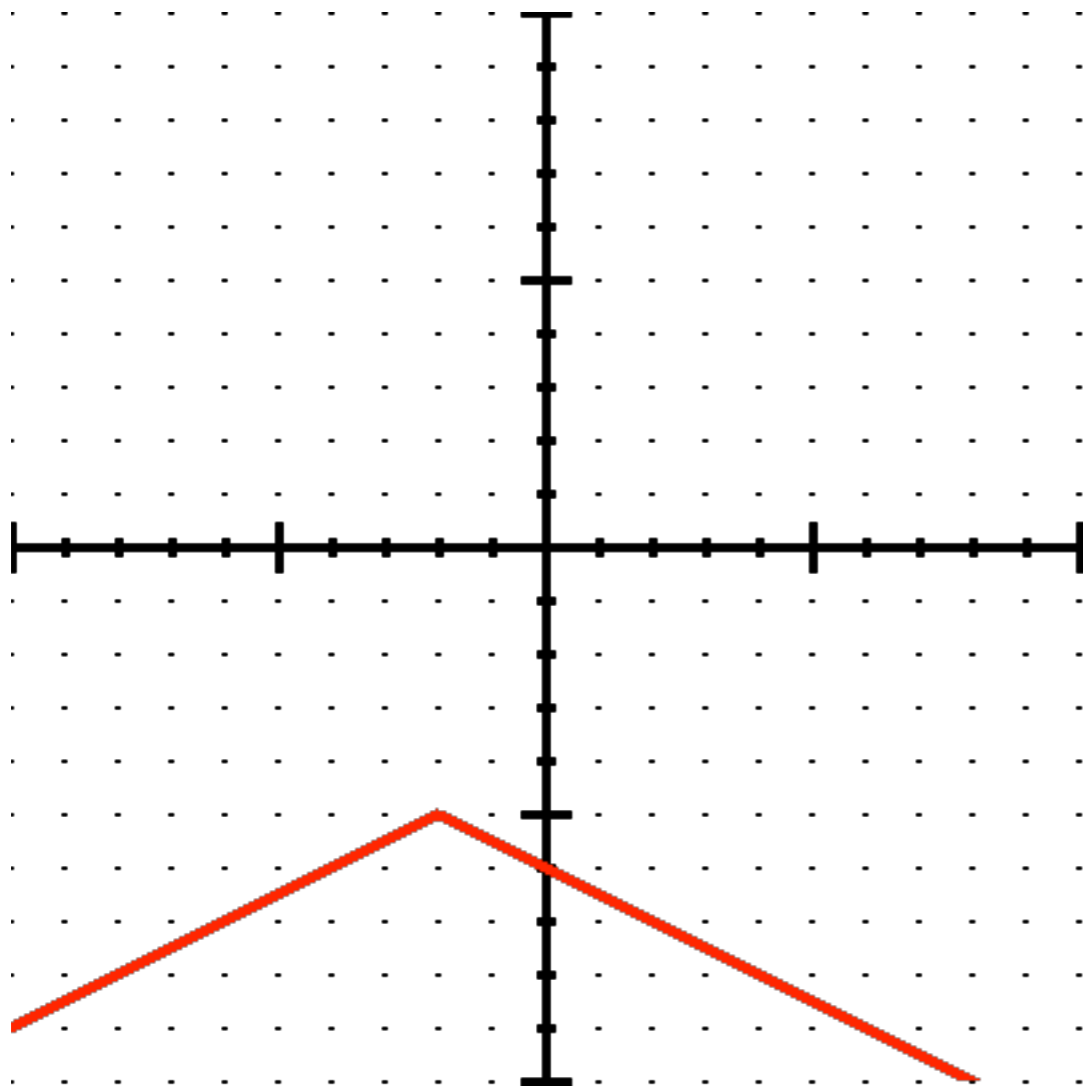
"Slope": -1/2

Graphing Absolute Value Equations

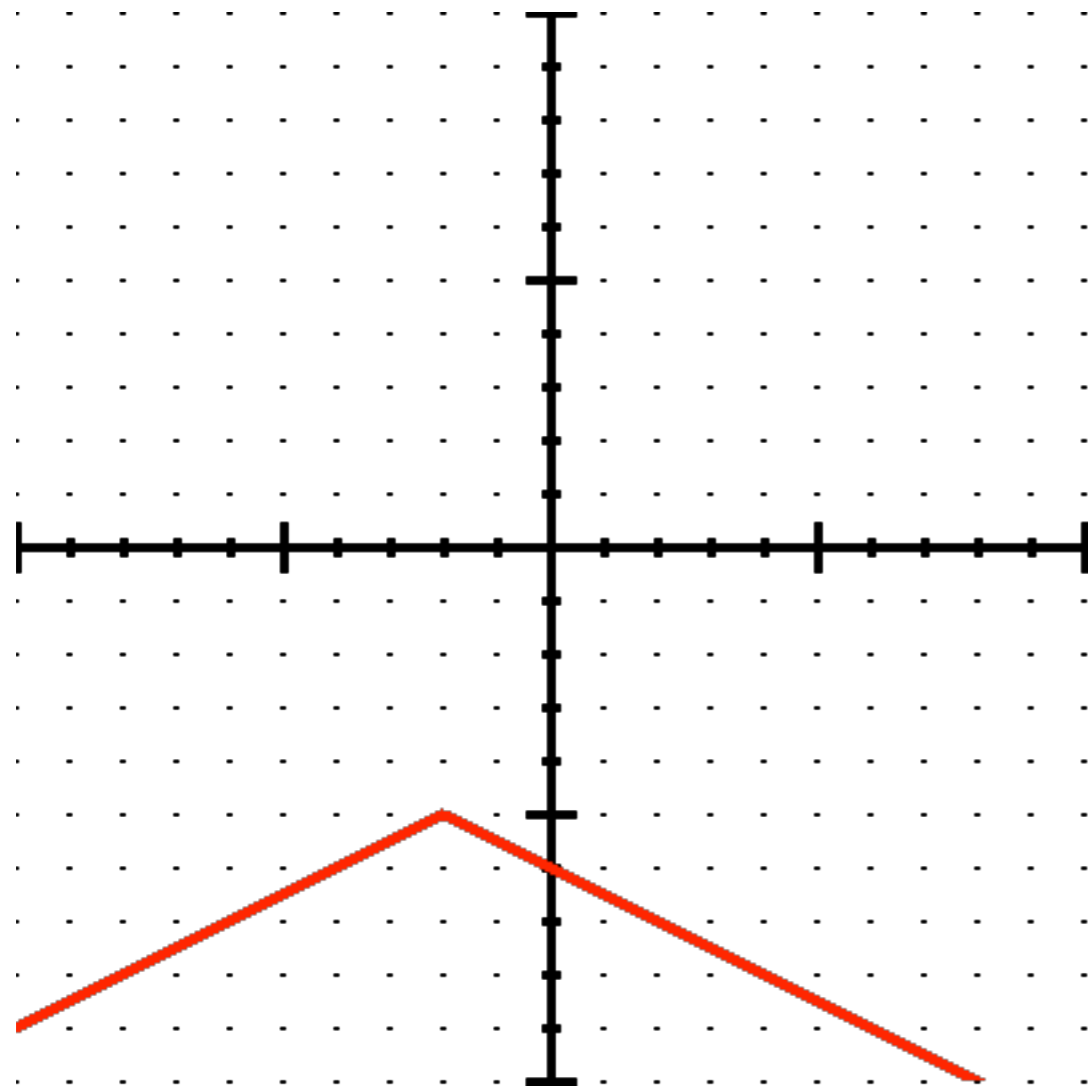
$$y = -\frac{1}{2}|x + 2| - 5$$

Vertex: (-2, -5)

"Slope": -1/2



Graphing Absolute Value Equations



$$y = -\frac{1}{2}|x + 2| - 5$$

Vertex: $(-2, -5)$

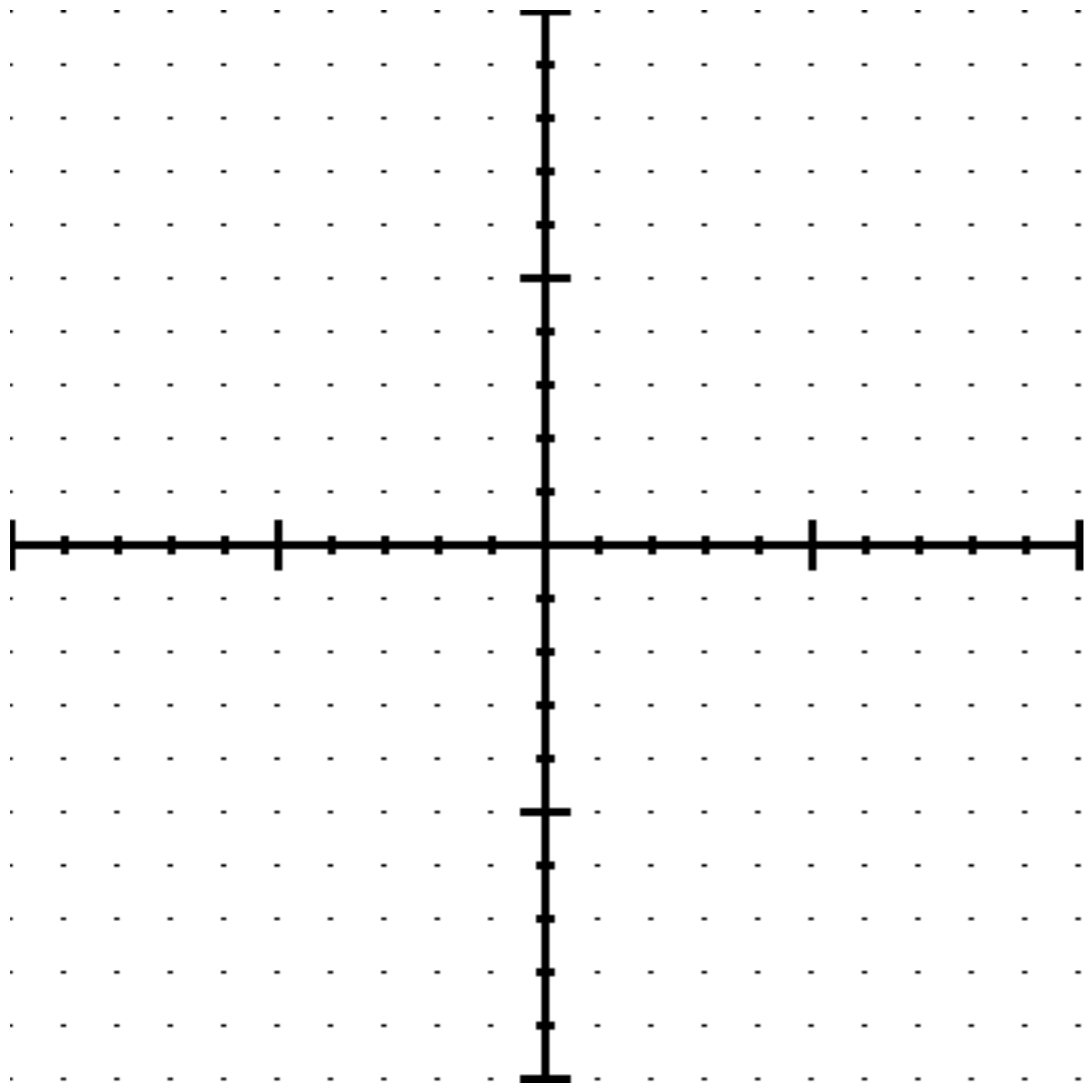
"Slope": $-1/2$

Related:

write equation from graph

Solving Absolute Value Equations Graphically

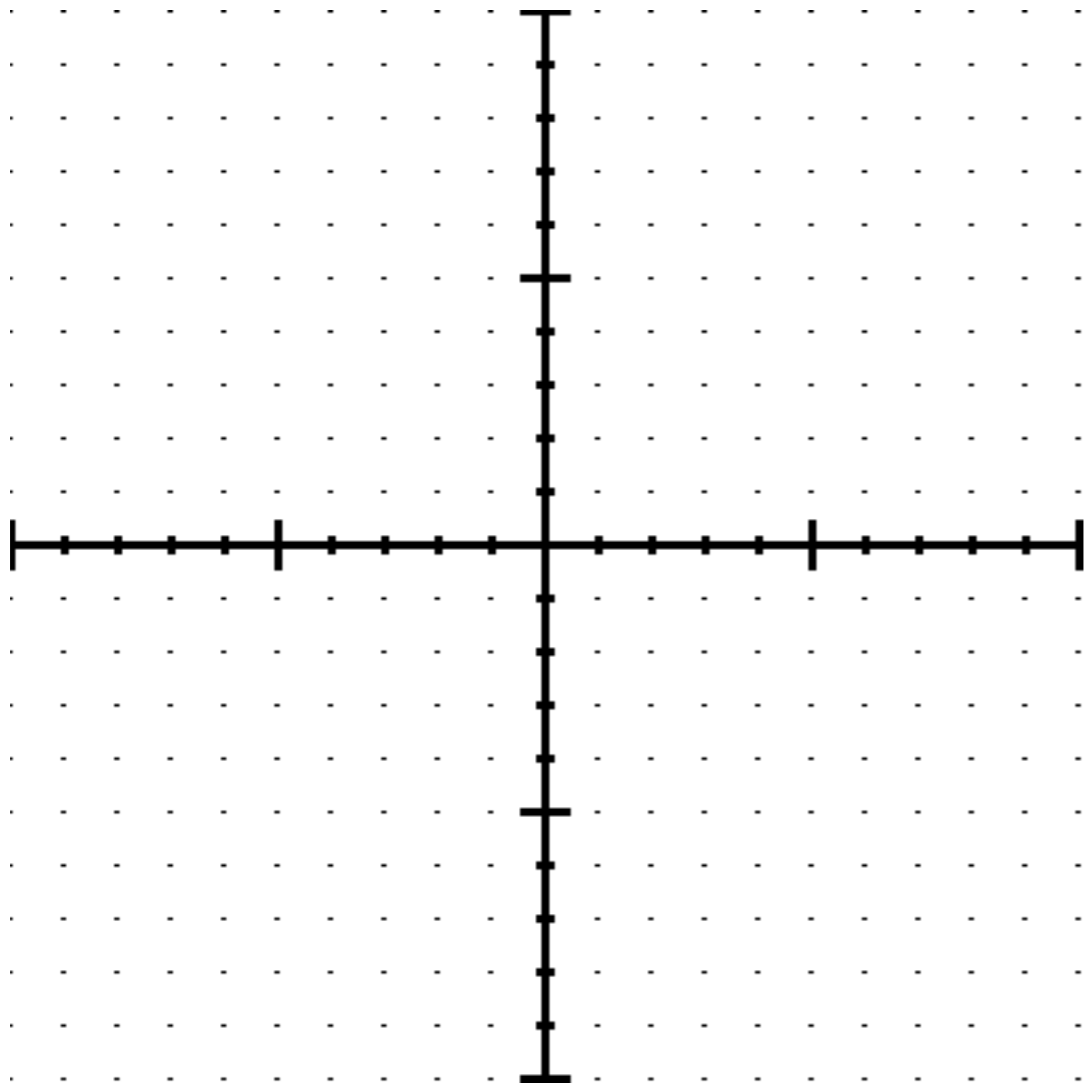
$$3 = 2|x - 1| - 1$$



Solving Absolute Value Equations Graphically

$$3 = 2|x - 1| - 1$$

$$y = 3$$

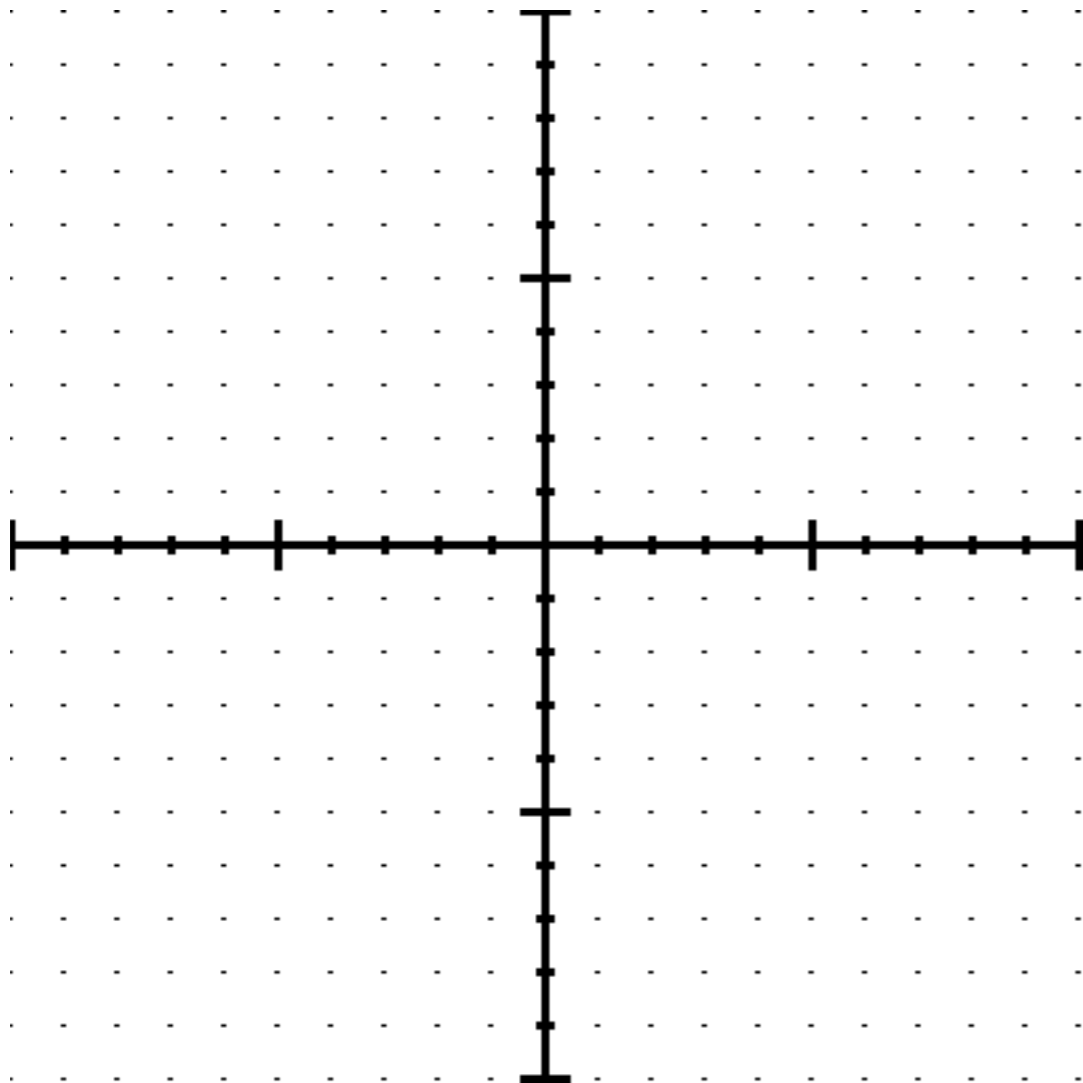


Solving Absolute Value Equations Graphically

$$3 = 2|x - 1| - 1$$

$$y = 3$$

$$y = 2|x - 1| - 1$$

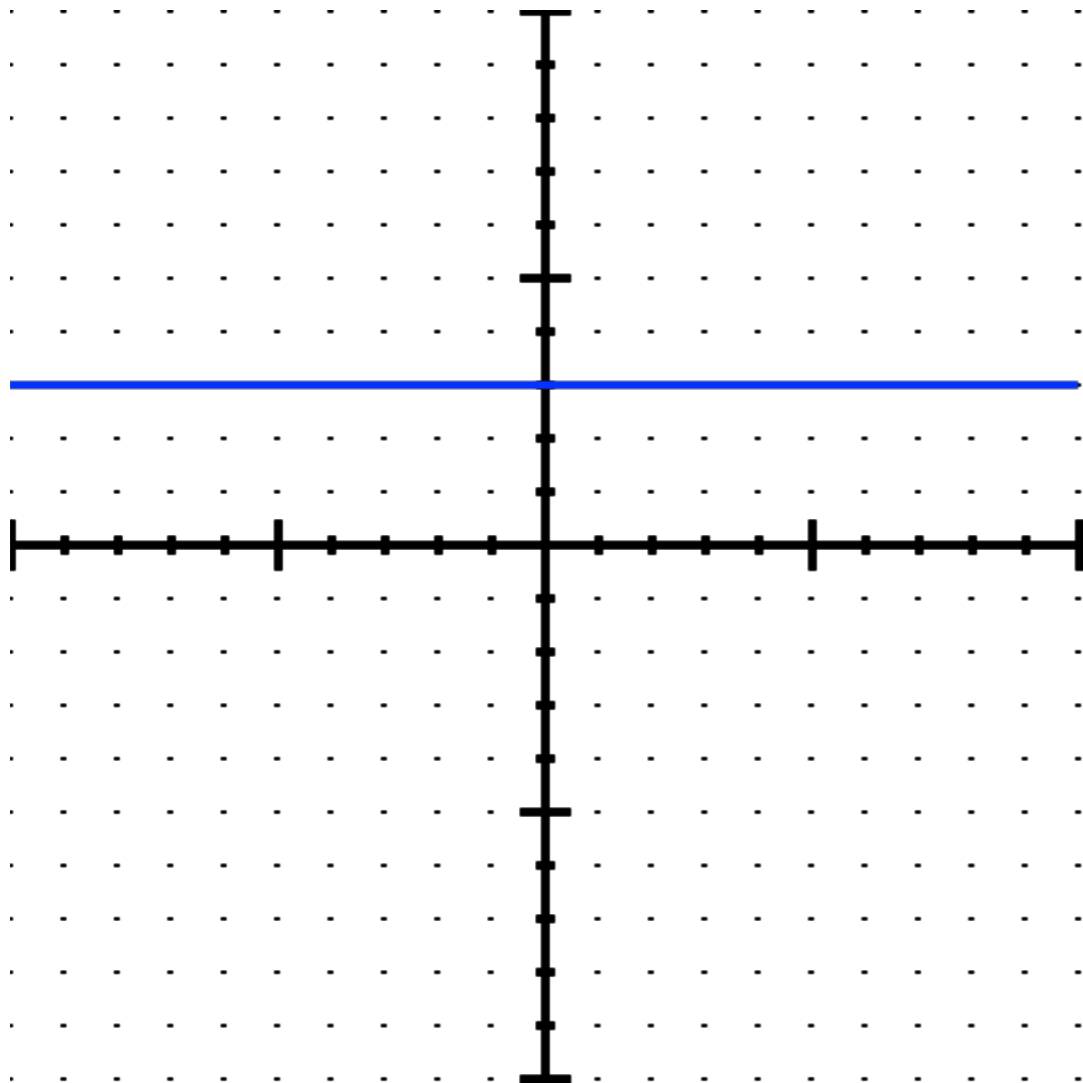


Solving Absolute Value Equations Graphically

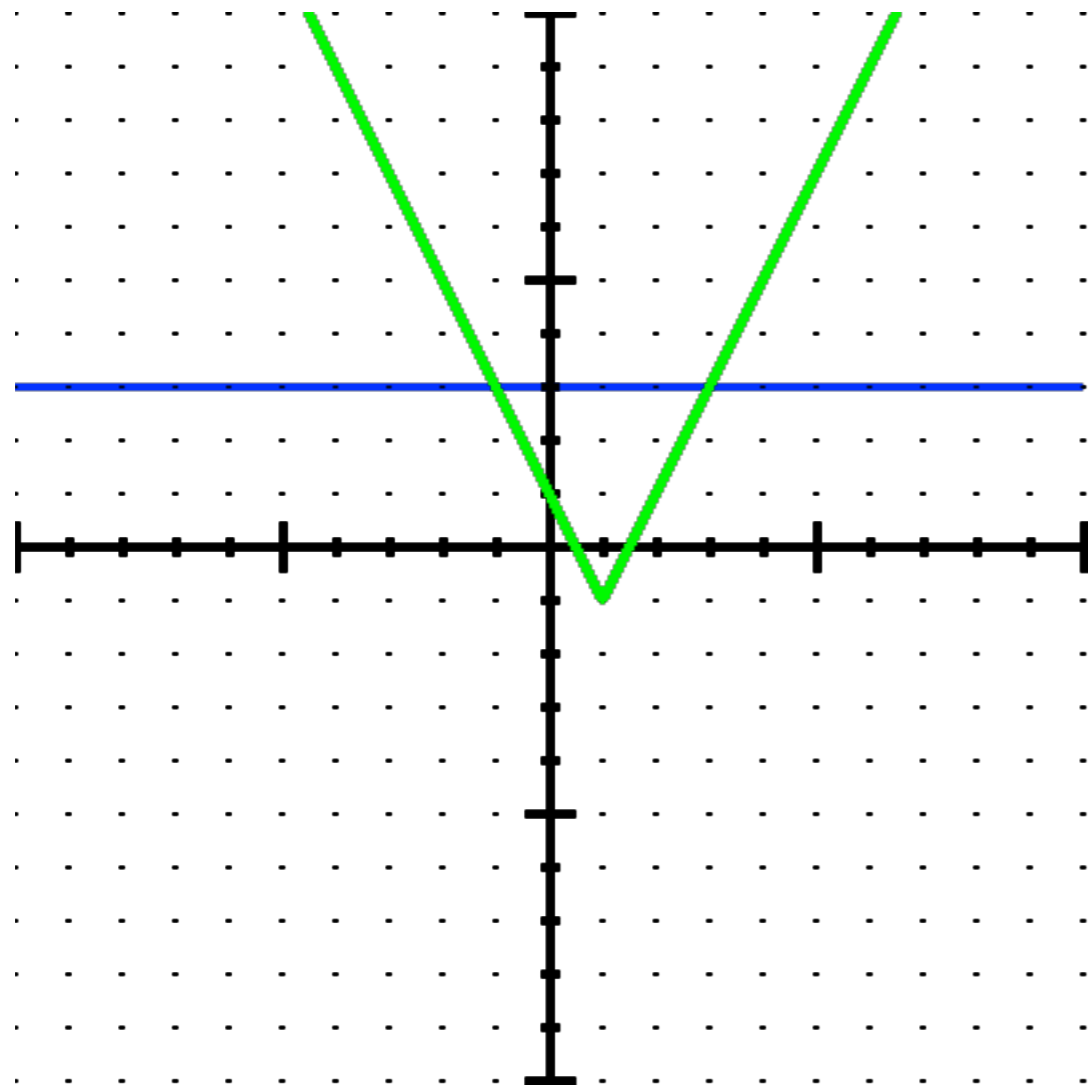
$$3 = 2|x - 1| - 1$$

$$y = 3$$

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Solving Absolute Value Equations Graphically

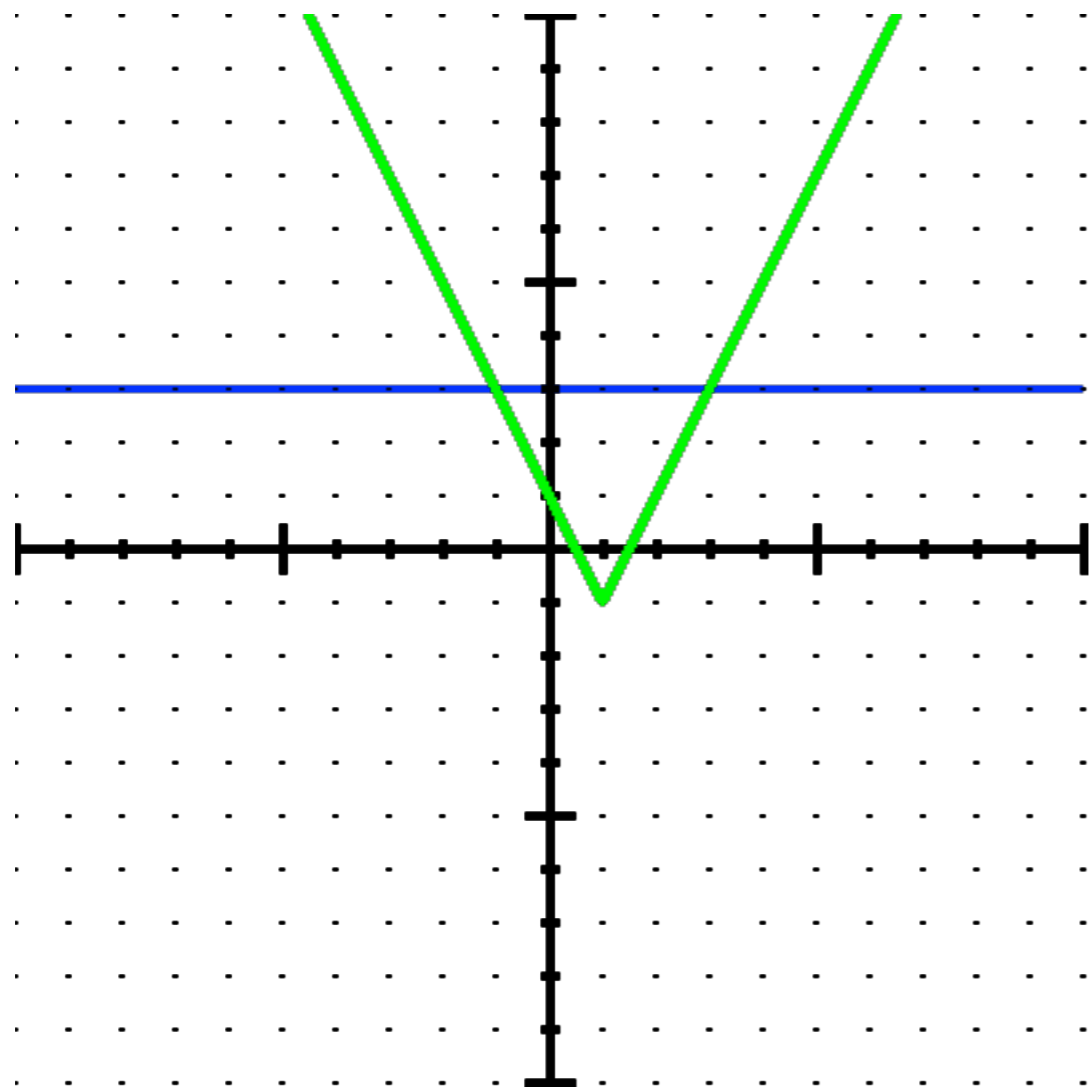


$$3 = 2|x - 1| - 1$$

$$y = 3$$

$$y = 2|x - 1| - 1$$

Solving Absolute Value Equations Graphically



$$3 = 2|x - 1| - 1$$

$$y = 3 \quad y = 2|x - 1| - 1$$

$$x = -1, 3$$

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

Undo things outside absolute value

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

$$4 = 2|x - 1|$$

Undo things outside absolute value

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

$$4 = 2|x - 1|$$

$$2 = |x - 1|$$

Undo things outside absolute value

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

$$4 = 2|x - 1|$$

$$2 = |x - 1|$$

Undo things outside absolute value

Split - second equation has the negative of the other side.

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

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$$2 = |x - 1|$$

Undo things outside absolute value

$$2 = x - 1$$

Split - second equation has the negative of the other side.

Solving Absolute Value Equations Algebraically

$$3 = 2|x - 1| - 1$$

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Undo things outside absolute value

$$2 = x - 1$$

$$-2 = x - 1$$

Split - second equation has the negative of the other side.

Solving Absolute Value Equations Algebraically

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Undo things outside absolute value

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$$-2 = x - 1$$

$$3 = x$$

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Solving Absolute Value Equations Algebraically

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Undo things outside absolute value

$$2 = x - 1$$

$$3 = x$$

$$-2 = x - 1$$

$$-1 = x$$

Split - second equation has the negative of the other side.

Beware: $|x| = -5$ has no solutions!

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

Undo things outside absolute value

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

$$9 > |x + 1|$$

Undo things outside absolute value

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

$$9 > |x + 1|$$

Undo things outside absolute value

Split - second equation has the negative of the other side AND the inequality flips.

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

$$9 > |x + 1|$$

$$9 > x + 1$$

Undo things outside absolute value

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Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

$$9 > |x + 1|$$

$$9 > x + 1 \quad -9 < x + 1$$

Split - second equation has the negative of the other side AND the inequality flips.

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

$$9 > |x + 1|$$

$$9 > x + 1 \quad -9 < x + 1$$

$$8 > x$$

Split - second equation has the negative of the other side AND the inequality flips.

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

$$9 > |x + 1|$$

$$9 > x + 1 \quad -9 < x + 1$$

$$8 > x \quad -10 < x$$

Split - second equation has the negative of the other side AND the inequality flips.

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

$$9 > |x + 1|$$

$$9 > x + 1 \quad -9 < x + 1$$

$$8 > x \quad -10 < x$$

Split - second equation has the negative of the other side AND the inequality flips.

$$-10 < x < 8$$

Solving Absolute Value Inequalities (Algebra)

$$-4 < -\frac{2}{3}|x + 1| + 2$$

$$-6 < -\frac{2}{3}|x + 1|$$

Undo things outside absolute value

$$9 > |x + 1|$$

$$9 > x + 1 \quad -9 < x + 1$$

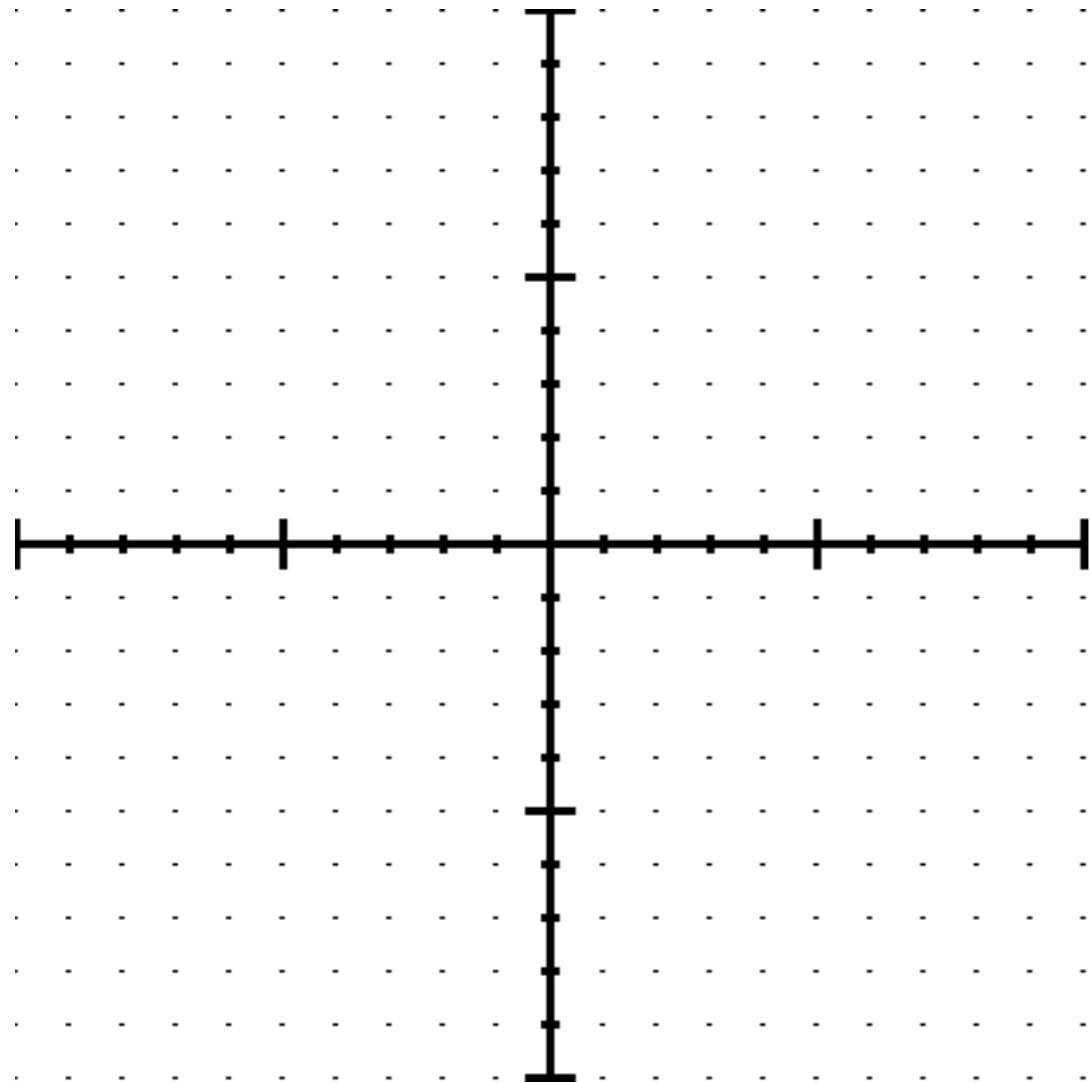
$$8 > x \quad -10 < x$$

$$-10 < x < 8$$

Split - second equation has the negative of the other side AND the inequality flips.

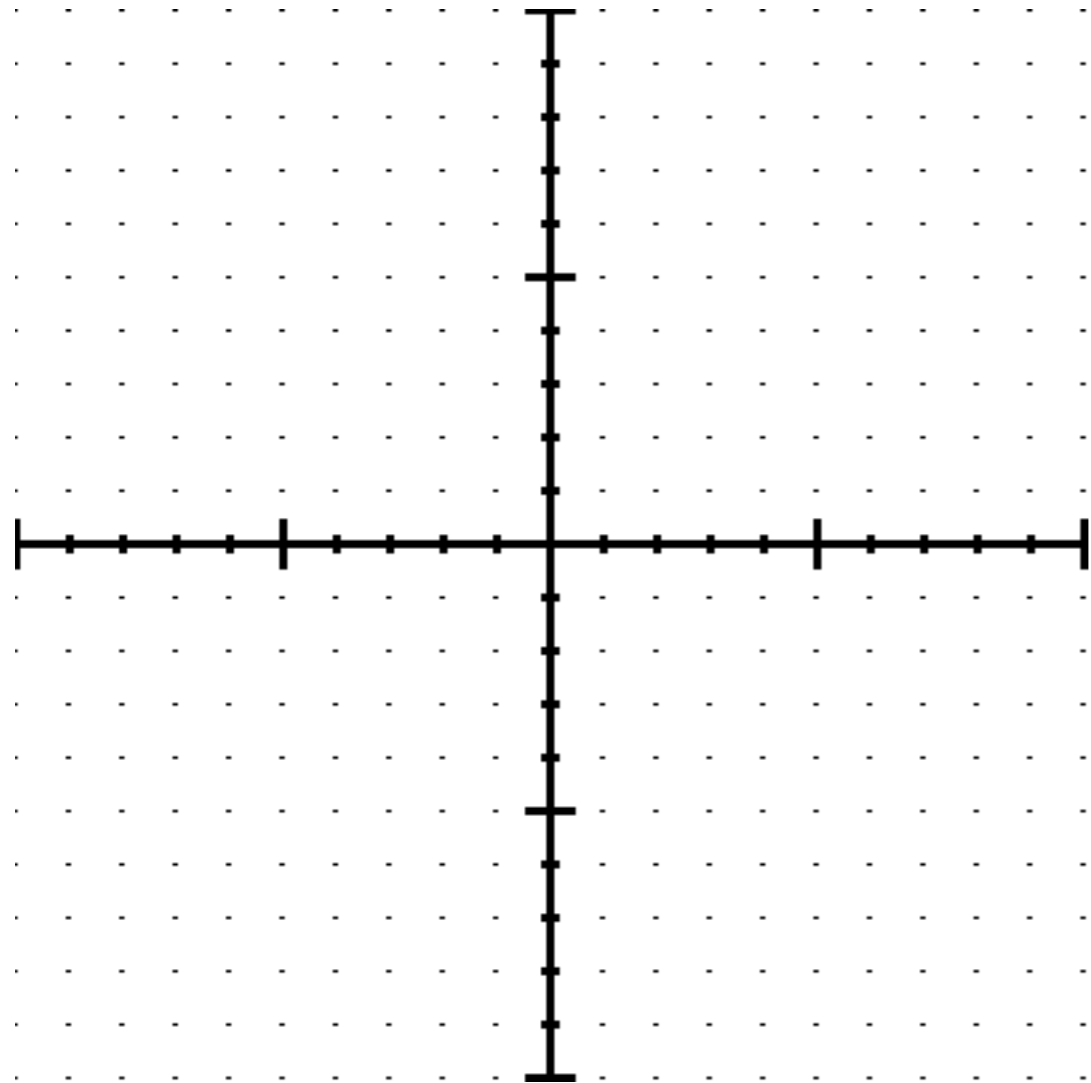
Graph it => And

Graphing Inequalities in two variables



$$2x - 3y < 6$$

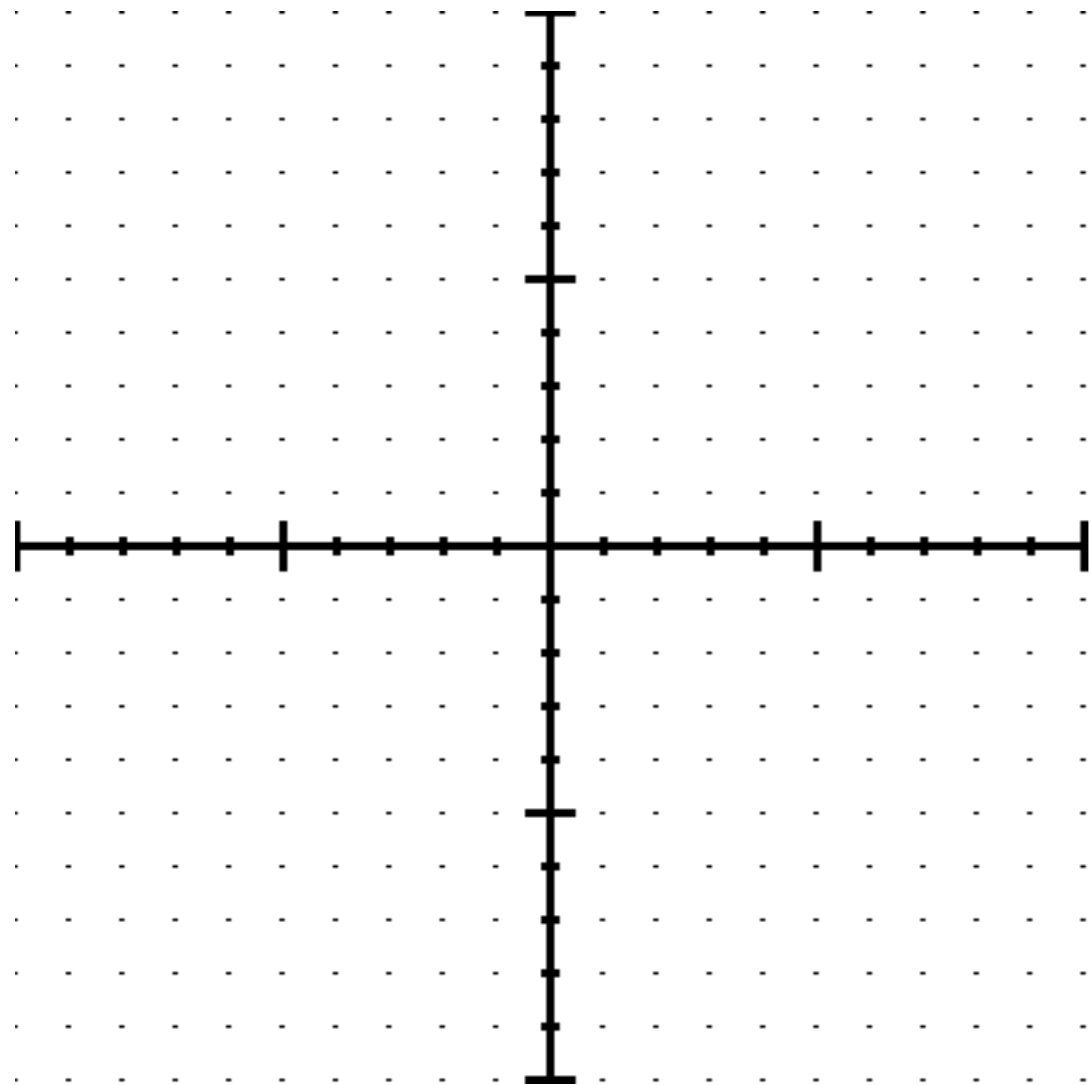
Graphing Inequalities in two variables



$$2x - 3y < 6$$

Solve for y

Graphing Inequalities in two variables

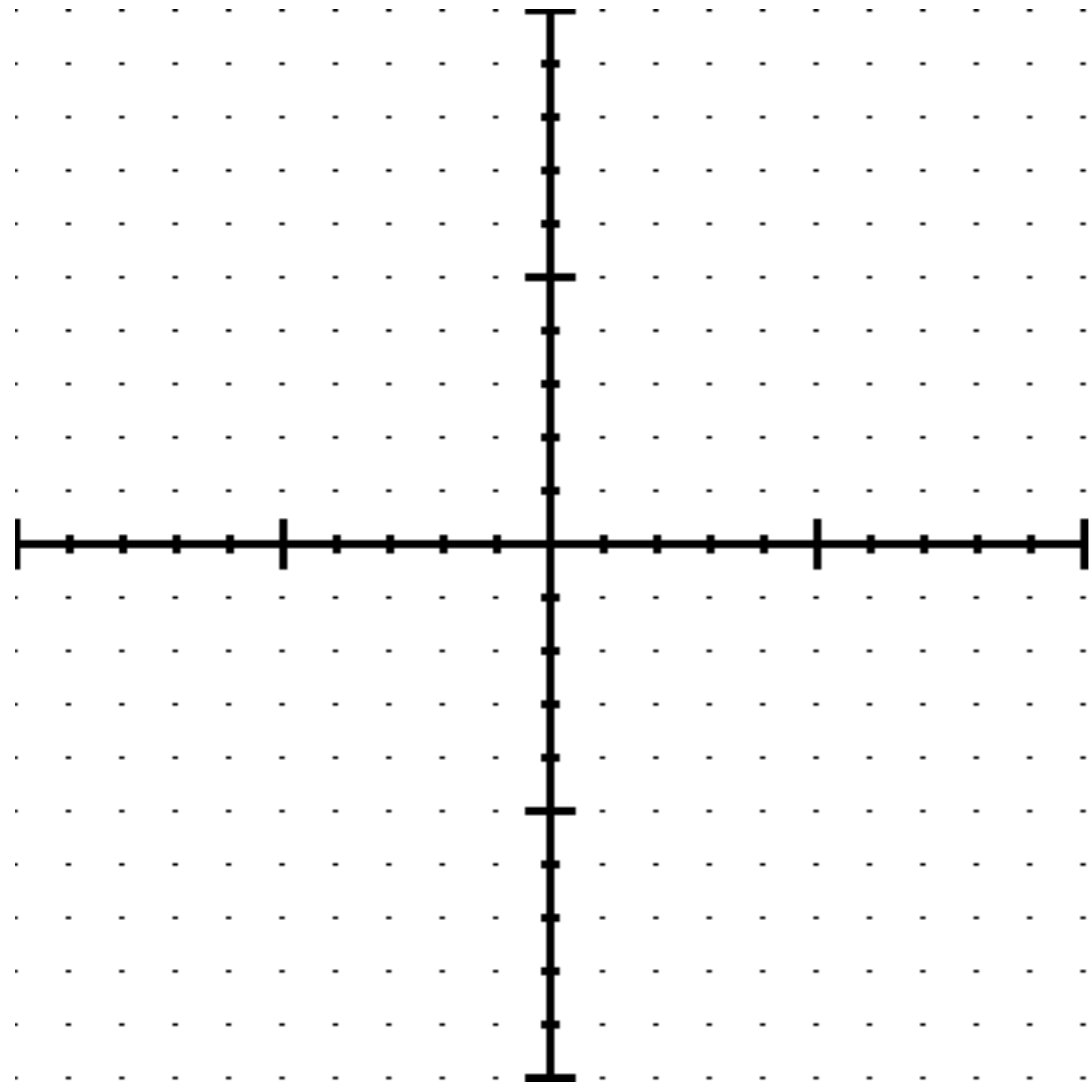


$$2x - 3y < 6$$

$$-3y < -2x + 6$$

Solve for y

Graphing Inequalities in two variables



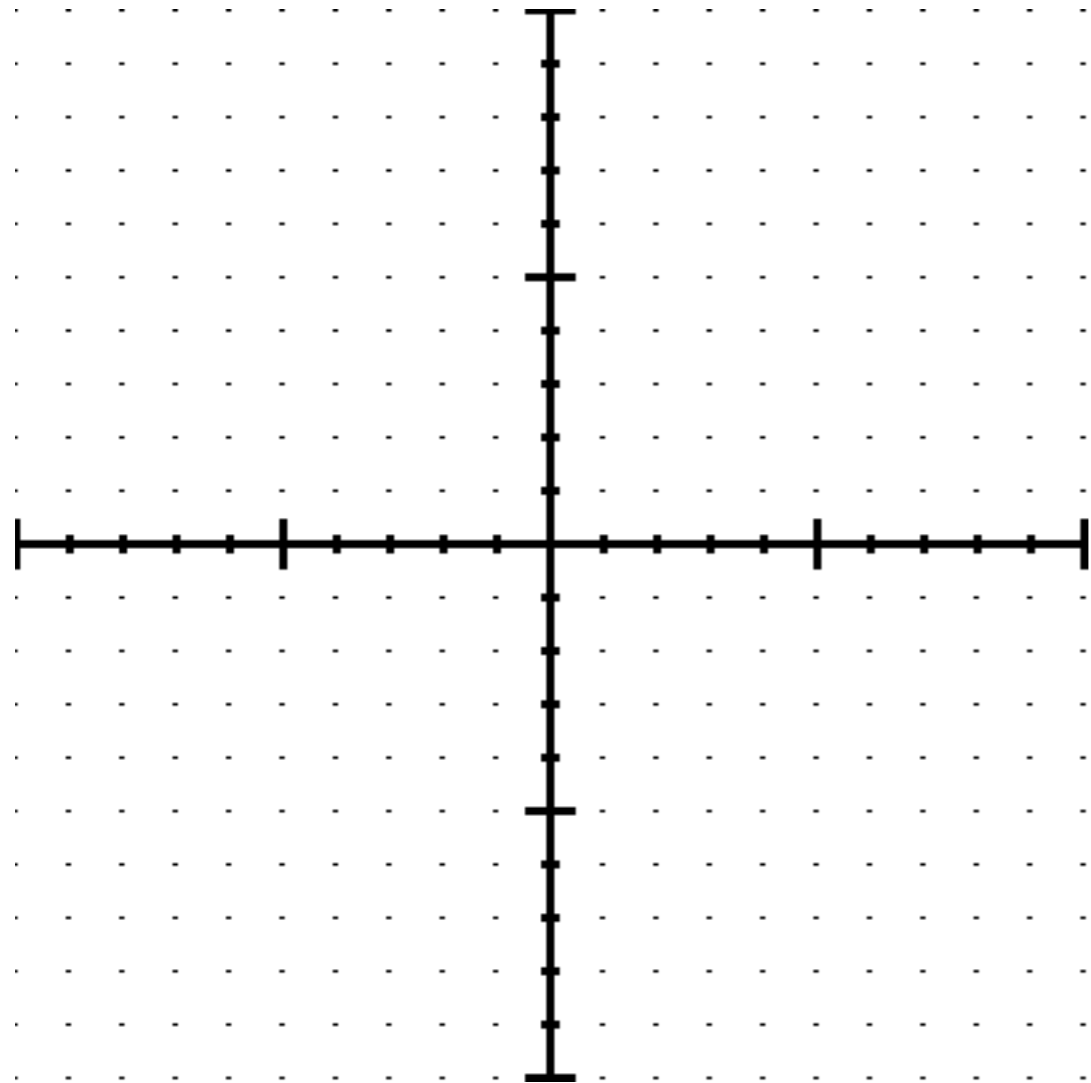
$$2x - 3y < 6$$

$$-3y < -2x + 6$$

$$y > \frac{2}{3}x - 2$$

Solve for y

Graphing Inequalities in two variables



$$2x - 3y < 6$$

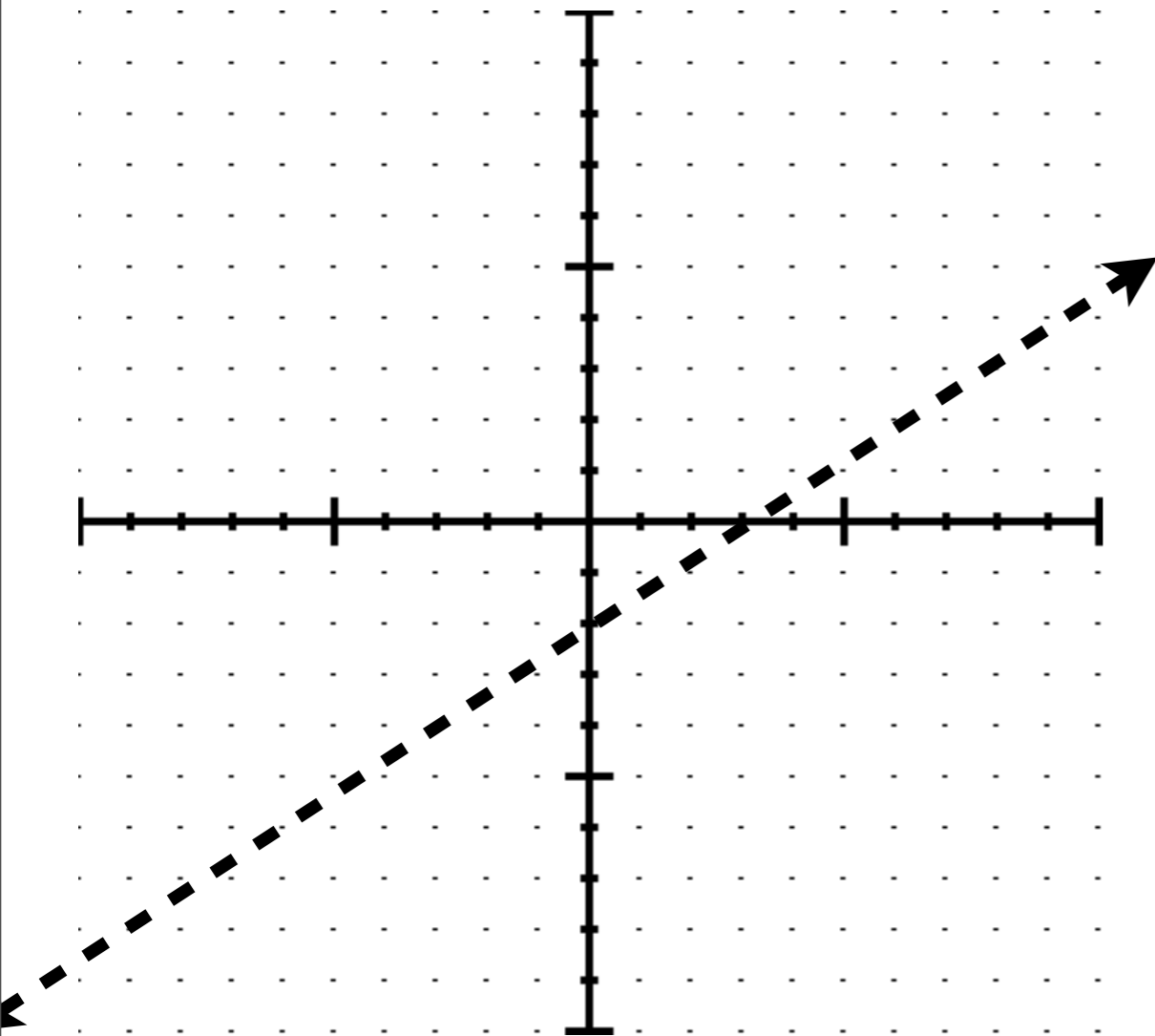
$$-3y < -2x + 6$$

$$y > \frac{2}{3}x - 2$$

Solve for y

Dashed or not?

Graphing Inequalities in two variables



$$2x - 3y < 6$$

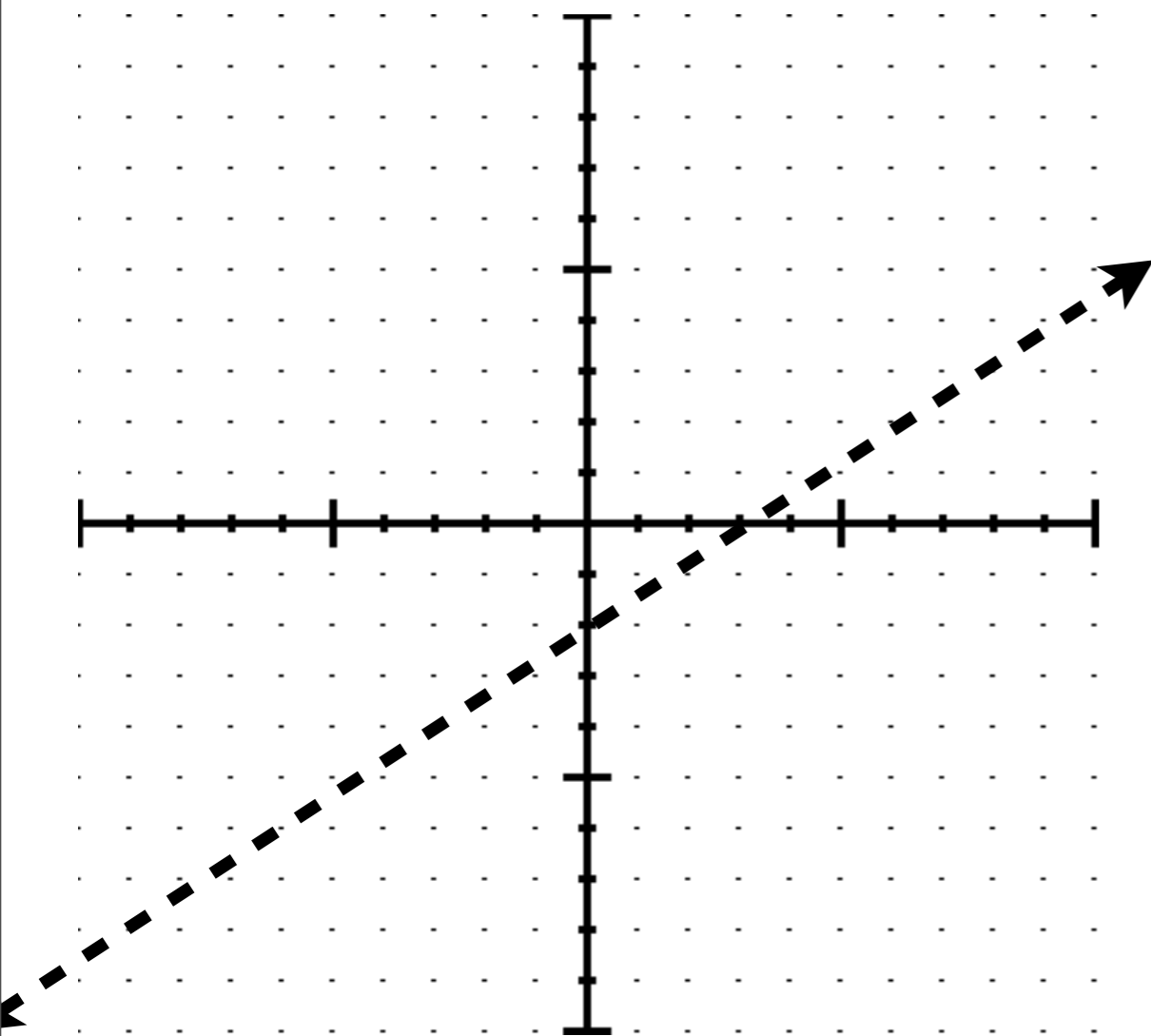
$$-3y < -2x + 6$$

$$y > \frac{2}{3}x - 2$$

Solve for y

Dashed or not?

Graphing Inequalities in two variables



$$2x - 3y < 6$$

$$-3y < -2x + 6$$

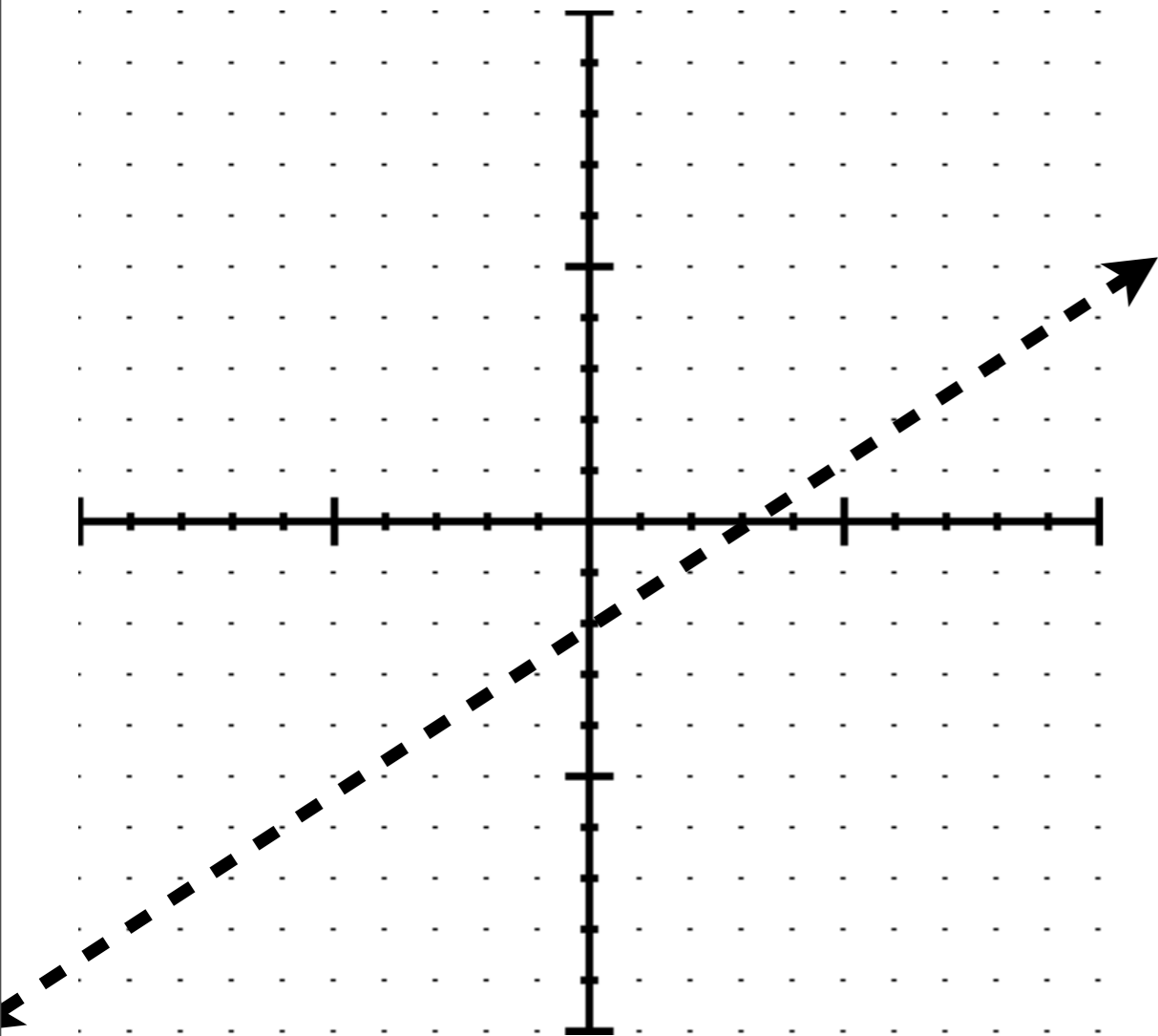
$$y > \frac{2}{3}x - 2$$

Solve for y

Dashed or not?

Test a point

Graphing Inequalities in two variables



$$2x - 3y < 6$$

$$-3y < -2x + 6$$

Solve for y

$$y > \frac{2}{3}x - 2$$

Dashed or not?

$$(0,0) \Rightarrow$$

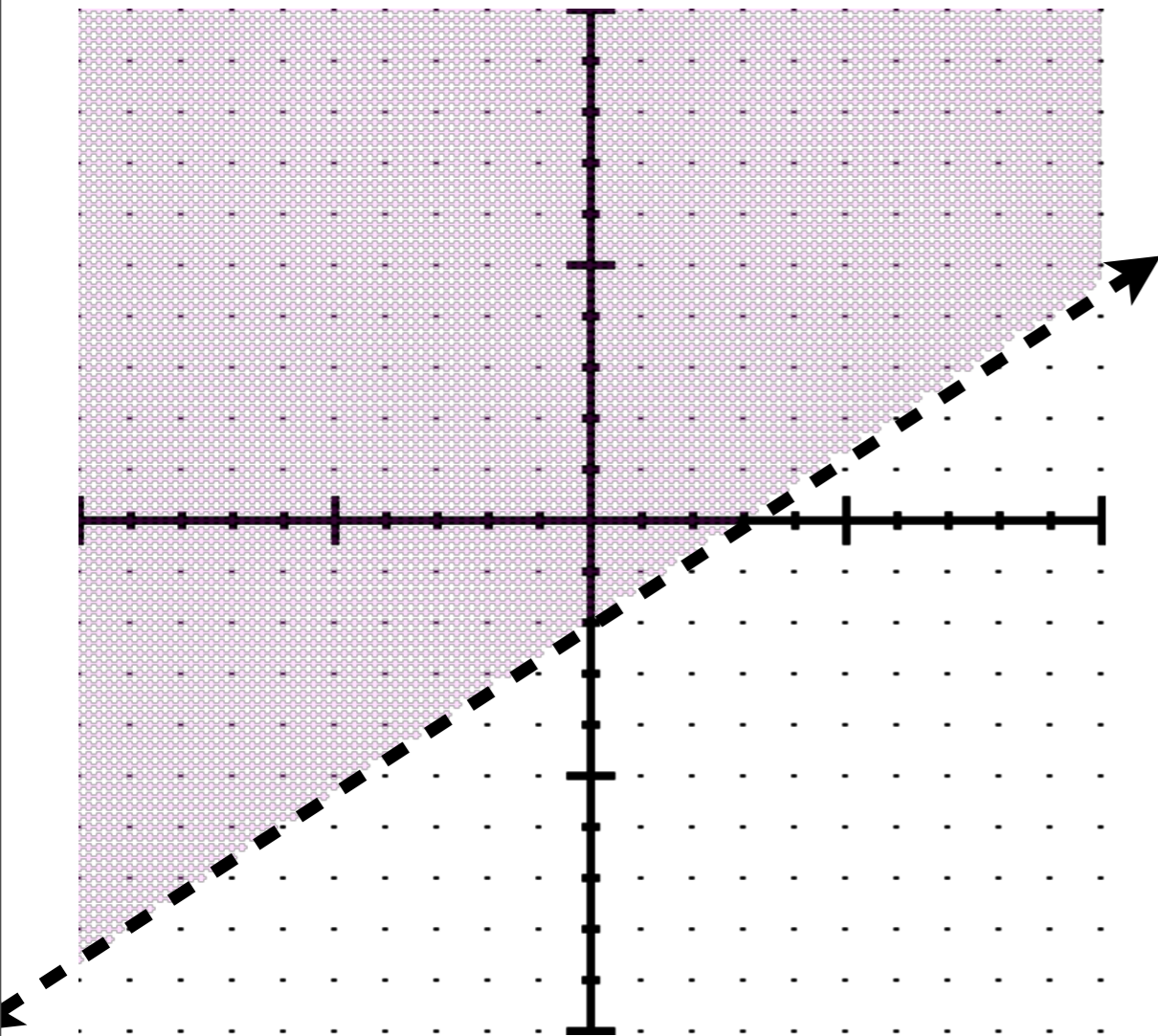
$$0 > \frac{2}{3}(0) - 2$$

$$0 > -2$$

True!

Test a point

Graphing Inequalities in two variables



$$2x - 3y < 6$$

$$-3y < -2x + 6$$

Solve for y

$$y > \frac{2}{3}x - 2$$

Dashed or not?

$$(0,0) \Rightarrow$$

$$0 > \frac{2}{3}(0) - 2$$

$$0 > -2$$

True!

Test a point