

5.7 Linear Inequalities in Two Variables

A **solution** to an linear inequality is an **ordered pair** that makes the inequality true.

Ex.1 Is the ordered pair a solution to $y > x - 3$?

a) $(1, 2)$

$$2 > 1 - 3$$

$$2 > -2$$

yes

b) $(-3, -7)$

$$-7 > -3 - 3$$

$$-7 > -6$$

no

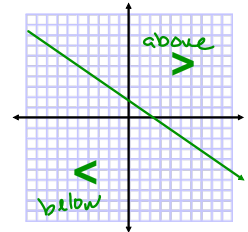
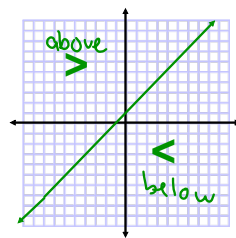
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Graphing Linear Inequalities

If the equation has $<$ or $>$ we have a **dotted line**.
If the equation has a \leq or \geq we have a **solid line**.

If $y > mx + b$, shade **above** the line.

If $y < mx + b$, shade **below** the line.



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1.

$$y \geq -3x + 2$$

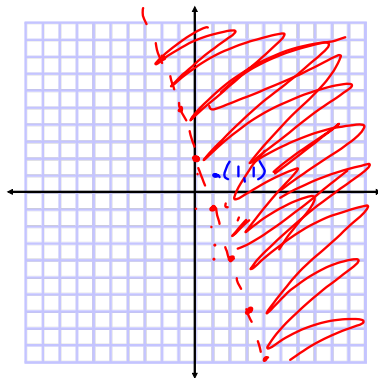
$$b = (0, 2)$$

$$m = \frac{-3}{1}$$

$$1 \geq -3(1) + 2$$

$$1 \geq -3 + 2$$

$$1 \geq -1 \quad \checkmark$$



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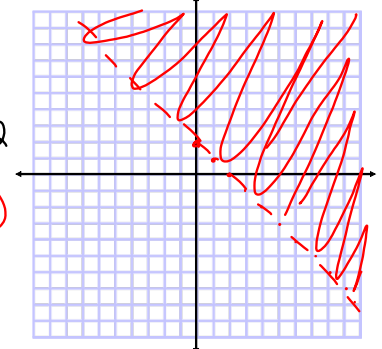
2.

$$x + y > 2$$

$$y > -x + 2$$

$$b = (0, 2)$$

$$m = \frac{-1}{1}$$



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3.

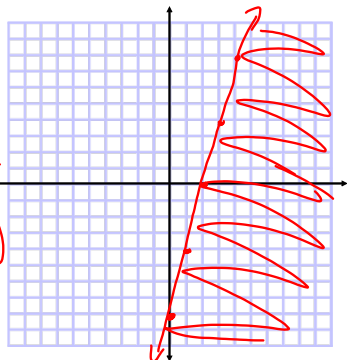
$$4x - y \geq 8$$

$$-y \geq -4x + 8$$

$$y \leq 4x - 8$$

$$b = (0, -8)$$

$$m = \frac{4}{1}$$



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4.

$$3(x - 2) \leq y - 8$$

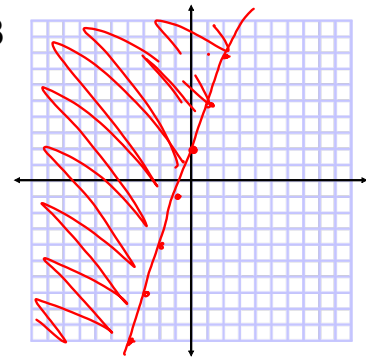
$$3x - 6 \leq y - 8$$

$$3x + 2 \leq y$$

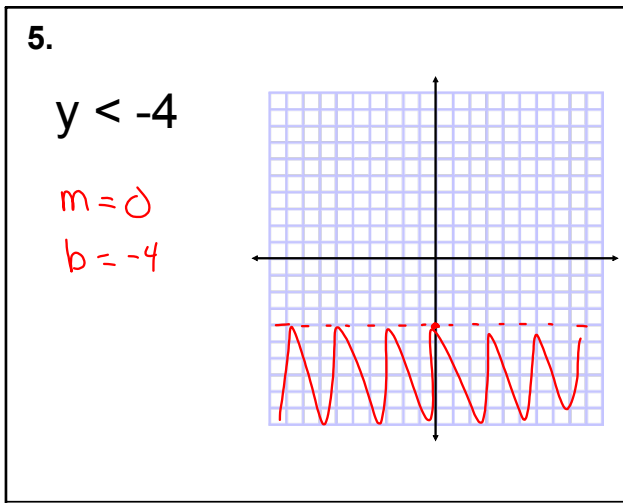
$$y \geq 3x + 2$$

$$b = (0, 2)$$

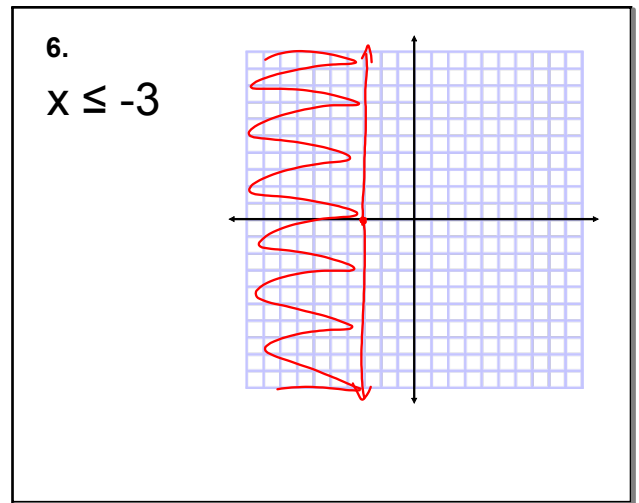
$$m = \frac{3}{1}$$



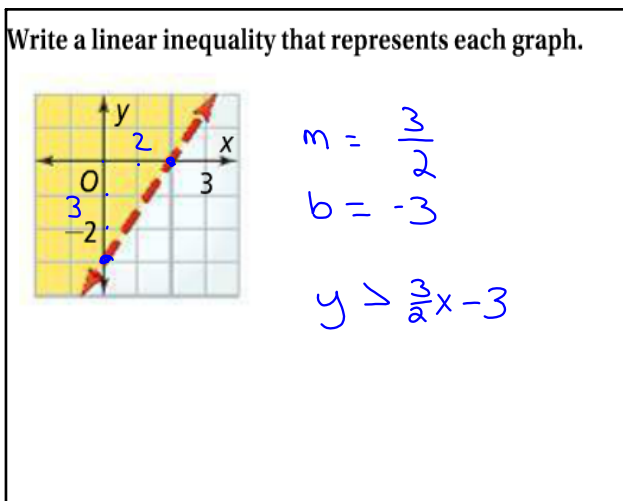
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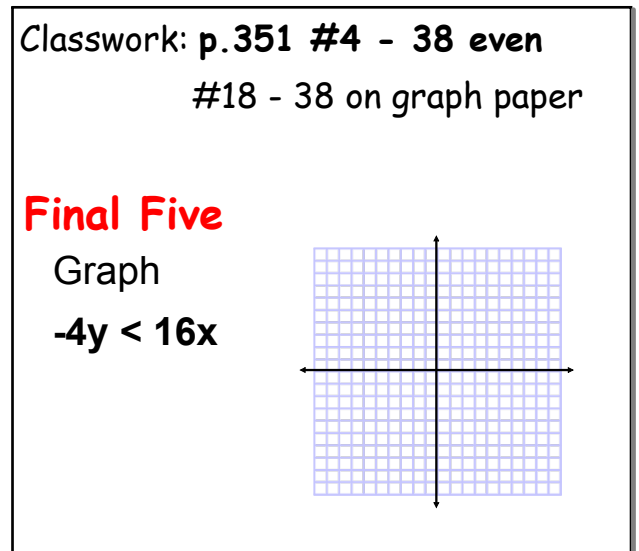
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