

Algebra 1

5.6

Graph linear inequalities on the coordinate plane

Solve inequalities by graphing

linear

boundary

half-plane

open

closed

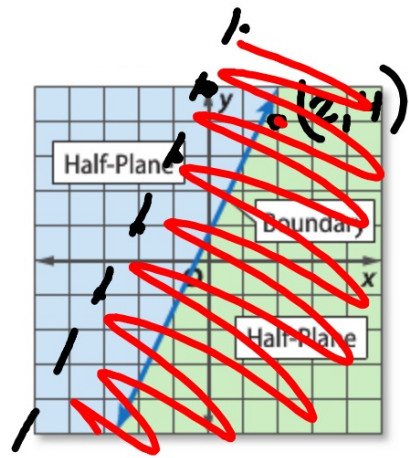
test point

whiteboards

$$\begin{aligned} 4 &< 2 \cdot 2 + 5 \\ 4 &< 4 + 5 \\ 4 &< 9 \end{aligned}$$

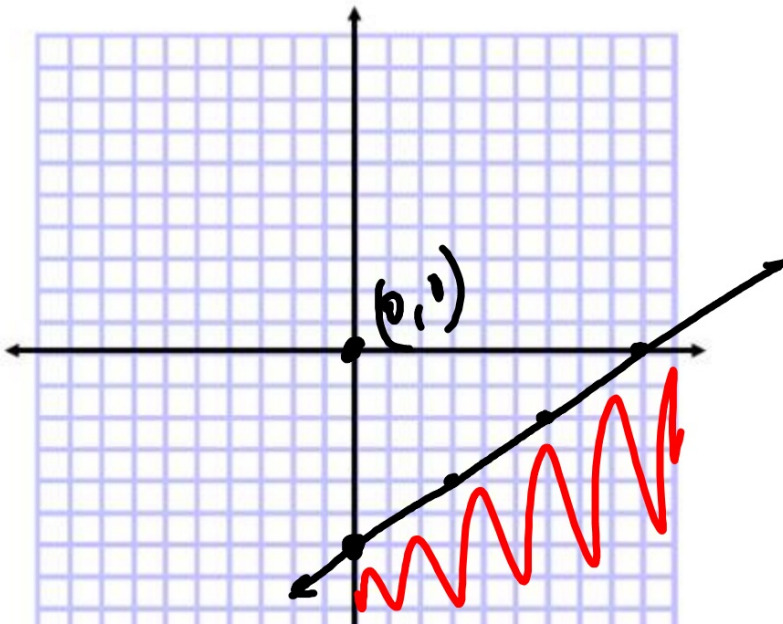
$$y < 2x + 5$$

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



$$2x - 3y \geq 18$$
$$2 \cdot 0 - 3 \cdot 0 \geq 18$$
$$0 - 0 \geq 18$$
$$2x - 18 = 18$$

$$y = mx + B$$
$$y = \frac{2}{3}x - 6$$



Example 3 Solve Inequalities From Graphs

Use a graph to solve $3x + 5 < 2$

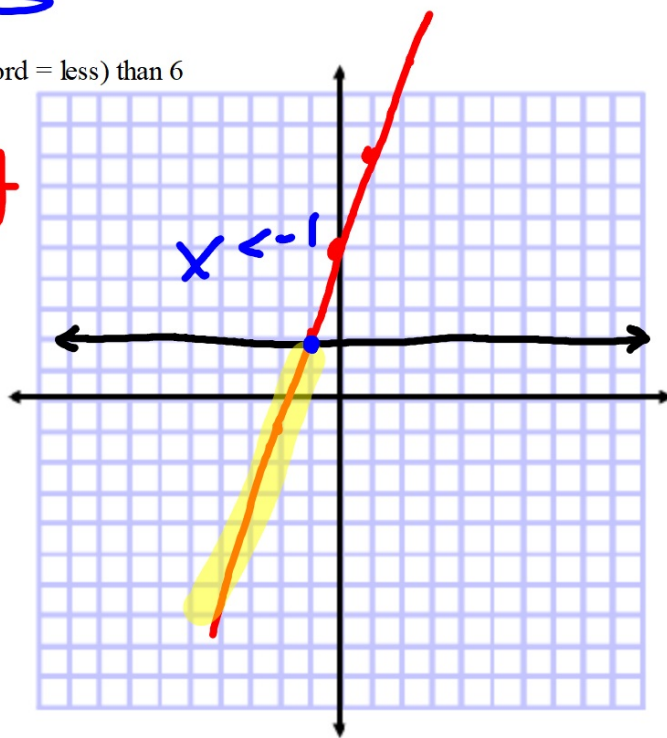
Graph $y = 3x + 5$

Graph $y = 6$

Where is $3x + 5$ lower on the graph (smaller y-coord = less) than 6

$$y = 3x + 5 \quad y = 2 \quad y$$

$$\begin{array}{r} 3x + 5 < 2 \\ -5 \quad -5 \\ \hline 3x < -3 \quad x < -1 \end{array}$$



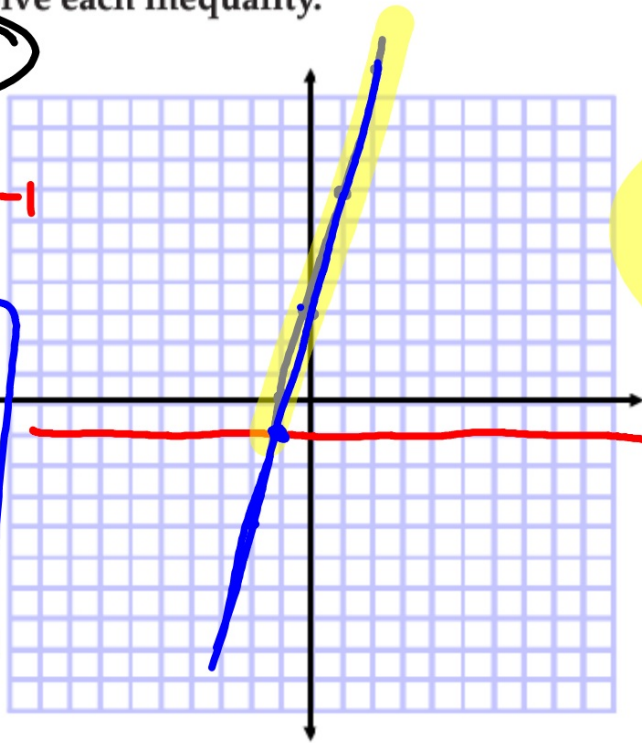
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Use a graph to solve each inequality.

3A. $4x + 3 \geq -1$

$y = 4x + 3$, $y = -1$

$$\begin{array}{l} 4x + 3 \geq -1 \\ \quad -3 \quad -3 \\ \hline 4x \geq -4 \\ \quad 4 \quad 4 \\ x \geq -1 \end{array}$$



$x \geq -1$

$$\frac{1}{2}x - 3 \geq 2$$

