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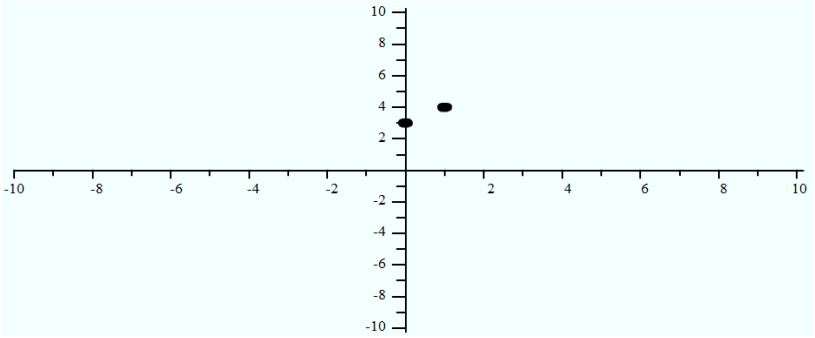
Graphing Linear Inequalities as a Half-Plane - Guided Lesson Explanation

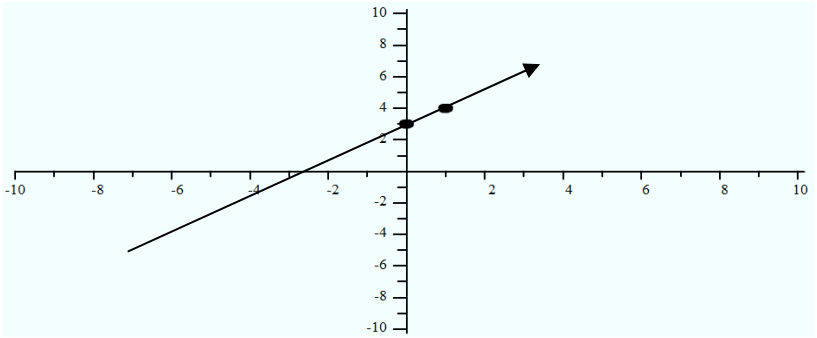
Explanation#1

The slope-intercept form of a linear is like the slope-intercept form of an equation (y = mx +b), but with an inequality symbol instead of an equals sign.

Start by graphing the boundary line, y = x + 3, using the slope (1) and the y-intercept (3). First plot the y-intercept at (0, 3). Then, since the slope is 1, move up 1 and right and plot a point at (1, 4).



Next connect the two points. The inequality uses the symbol ≥, so be sure to draw a solid line.



Finally, figure out which region to shade. You could remember that when inequalities start with y > or y ≥ , you should shade above the line. Or you could try a test point, such as (0,0):

y ≥ x + 3

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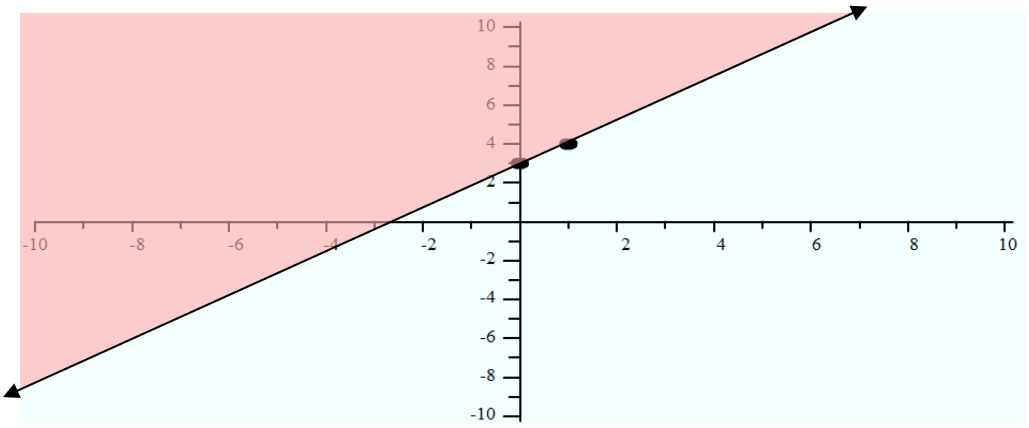
$0 \geq x + 3$ Plug in y = 0; x is not used

$0 \geq 3$

The statement is false, so you should shade the region that does not contain (0,0). Shade the region below the line.



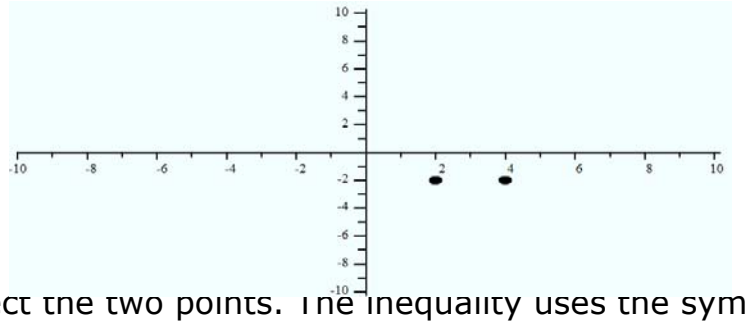
Explanation#2

Step 1) First we have to see what is being asked.

"Graph this inequality: y < -2"

Step 2) The graph of y < -2 is a horizontal line. Every y-value is -2, including the y-intercept.

Start by graphing the boundary line y = -2. First, plot with a y-value of -2, such as (2,-2) and (4, -2).



Step 3) Now connect the two points. The inequality uses the symbol <, so be sure to draw a dotted line.

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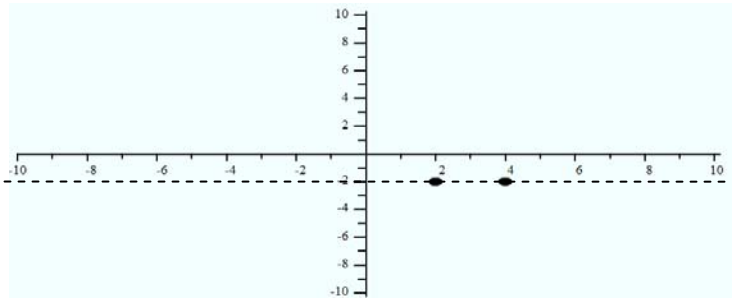
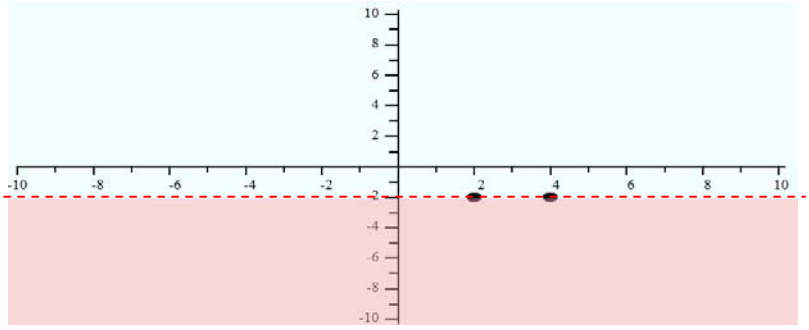


Finally. Figure out which region to shade. You could remember that when inequalities start with y < or y ≤, you should shade below the line. Or you could try a test point, such as (0,0):

$y < -2$

$0 < -2$ Plug in y = 0; x is not used

The statement is false, so you should shade the region that does not contain (0, 0). Shade the region below the line.



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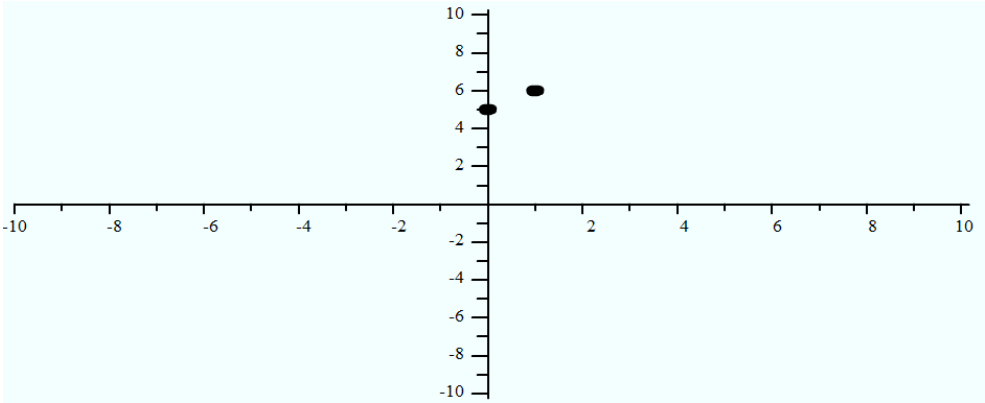
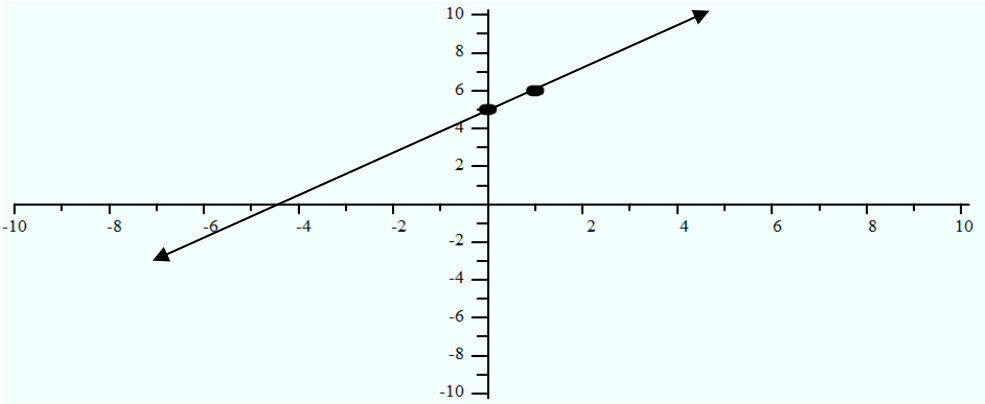
Explanation # 3

the slope-intercept form of a linear is like the slope-intercept form of an equation (y = mx +b), but with an inequality symbol instead of an equals sign.

Step 3) Start by graphing the boundary line, y = x + 5, using the slope (1) and the y-intercept (5). First plot the y-intercept at (0, 5). Then, since the slope is 1, move up 1 and right and plot a point at (1, 6).



Next connect the two points. The inequality uses the symbol ≥, so be sure to draw a solid line.



Finally, figure out which region to shade. You could remember that when inequalities start with y > or y ≥, you should shade above the line. Or you could try a test point, such as (0, 0):

y ≥ x + 5

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$0 \geq x + 5$ Plug in y = 0; x is not used

$0 \geq 5$

The statement is false, so you should shade the region that does not contain (0, 0). Shade the region below the line.