

3-6**Lines in the Coordinate Plane****Warm Up**

Substitute the given values of m , x , and y into the equation $y = mx + b$ and solve for b .

1. $m = 2$, $x = 3$, and $y = 0$ $b = -6$

2. $m = -1$, $x = 5$, and $y = -4$ $b = 1$

Solve each equation for y .

3. $y - 6x = 9$ $y = 6x + 9$

4. $4x - 2y = 8$ $y = 2x - 4$

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Objectives

Write equations of lines in slope-intercept form

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Vocabulary

slope-intercept form

$$y = mx + b$$

m = slope

b = y intercept

Writing the Equation of a Line with Two Points:

1. Use slope formula to find the slope using two points
2. Plug the slope and one of the points into slope-intercept form ($y = mx + b$)
3. Solve for b
4. Rewrite the equation in $y = mx + b$ form (where m and b are now numbers)

Example 1B: Writing Equations In Lines

Write the equation of each line in the given form.

the line through $(-1, 0)$ and $(1, 2)$ in slope-intercept form

$$m = \frac{2-0}{1-(-1)} = \frac{2}{2} = 1$$

Find the slope.

$$y = mx + b$$

Slope-intercept form

$$0 = 1(-1) + b$$

Substitute 1 for m , -1 for x , and 0 for y .

$$1 = b$$

Write in slope-intercept form using $m = 1$ and $b = 1$.

$$y = x + 1$$

3-6**Lines in the Coordinate Plane****Check It Out! Example 1b**

Write the equation of each line in the given form.

the line through $(-3, 2)$ and $(1, 2)$ in slope intercept form

$$m = \frac{2 - 2}{1 - (-3)} = \frac{0}{4} = 0$$

Find the slope.

$$y - y_1 = m(x - x_1)$$

Point-slope form

$$y - 2 = 0(x - 1)$$

Substitute 0 for m , 1 for x_1 , and 2 for y_1 .

$$y - 2 = 0$$

Simplify.

Example 1A: Writing Equations In Lines

Write the equation of each line in the given form.

the line with slope 6 through $(3, -4)$ in slope