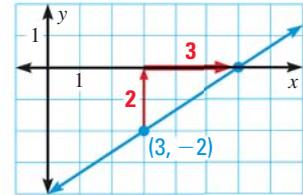EXAMPLE 2 **Graph an equation in point-slope form**

Graph the equation $y + 2 = \frac{2}{3}(x - 3)$.

Solution

Because the equation is in point-slope form, you know that the line has a slope of $\frac{2}{3}$ and passes through the point $(3, -2)$.

Plot the point $(3, -2)$. Find a second point on the line using the slope. Draw a line through both points.

✓ **GUIDED PRACTICE** for Example 2

2. Graph the equation $y - 1 = -(x - 2)$.

EXAMPLE 3 **Use point-slope form to write an equation**

Write an equation in point-slope form of the line shown.

Solution

STEP 1 **Find** the slope of the line.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 1}{-1 - 1} = \frac{2}{-2} = -1$$

STEP 2 **Write** the equation in point-slope form. You can use either given point.

Method 1 Use $(-1, 3)$.   **Method 2** Use $(1, 1)$.

$y - \mathbf{y_1} = \mathbf{m}(x - \mathbf{x_1})$ $y - \mathbf{y_1} = \mathbf{m}(x - \mathbf{x_1})$

$y - \mathbf{3} = \mathbf{-}(x + \mathbf{1})$ $y - \mathbf{1} = \mathbf{-}(x - \mathbf{1})$

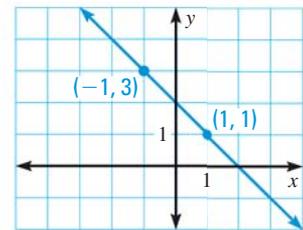**CHECK** Check that the equations are equivalent by writing them in slope-intercept form.

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

$y = -x + 2$ $y = -x + 2$

Animated Algebra activity at classzone.com

✓ **GUIDED PRACTICE** for Example 3

3. Write an equation in point-slope form of the line that passes through the points $(2, 3)$ and $(4, 4)$.