## TOPIC: POINT SLOPE FORM

### Point-Slope Form of a Line

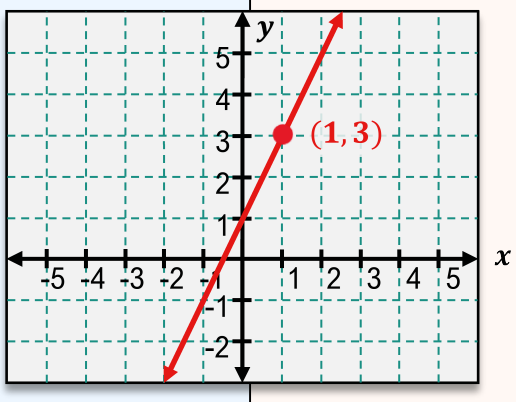
◆ If asked to write the equation of a line given _____ **point** and the **slope**, use **Point-Slope** Form.

**Recall** **Slope-Intercept Form**

$y = mx + b$

$m = 2 \quad b = 1$

$y = 2x + 1$




**New** **Point-Slope Form**

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

$(x_1, y_1) = (\_\_\_, \_\_\_) \quad m = \_\_\_$

$y - \_\_\_ = \_\_\_(x - \_\_\_)$

◆ You may need to convert from **point-slope** to **slope-intercept** form by *distributing* the _____ and solving for $y$.

**EXAMPLE**

A line with a slope of $m = 1/2$, passes through the point $(-6, -2)$. What is the equation of the line in $(A)$ Point-Slope Form and $(B)$ Slope-Intercept Form?

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**PRACTICE** Write each equation in point-slope form and convert to slope-intercept form.

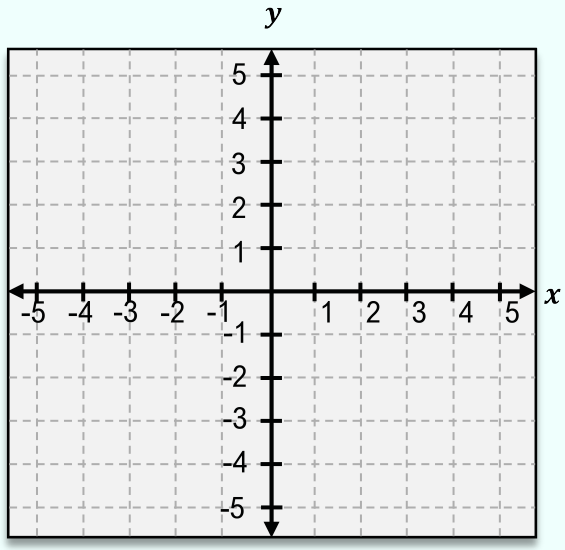
$(A)$
Slope: $m = 4$; Point: $(1, -2)$

$(B)$
Slope: $m = -\frac{3}{2}$; Point: $(0, 5)$

$(C)$
Slope: $m = \frac{1}{3}$; Point: $(-2, 4)$

**EXAMPLE** Graph each line passing through the given point with the given slope.

$(A)$ Through $(3, -1)$; slope $= 2$




$(B)$ Through $(-2, 5)$; slope $= -\frac{1}{4}$