Topic: Equation of a line in slope-intercept form

Question: Find the equation, in slope-intercept form, of the line that passes through (0, -2) and has a slope of 1/2.

Answer choices:

$$\mathbf{A} \qquad y = \frac{1}{2}(x-2)$$

$$B y = \frac{1}{2}x + 2$$

$$C y = \frac{1}{2}x - 2$$

$$D \qquad y = \frac{1}{2}x - 1$$

Solution: C

Use m = 1/2 and $(x_1, y_1) = (0, -2)$ in the equation $y - y_1 = m(x - x_1)$ to get

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

$$y + 2 = \frac{1}{2}x$$

And in slope-intercept form:

$$y = \frac{1}{2}x - 2$$



Topic: Equation of a line in slope-intercept form

Question: Find the equation, in slope-intercept form, of the line that passes through (-3, -2) and (3, -4).

Answer choices:

A
$$y = -3x - 3$$

$$B \qquad y = -\frac{1}{3}x - 3$$

C
$$y = -3x - 1$$

$$D \qquad y = -\frac{1}{3}x - 1$$

Solution: B

First, find the slope.

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

$$m = \frac{-2 - (-4)}{-3 - 3} = \frac{2}{-6} = -\frac{1}{3}$$

Next, use the equation $y - y_1 = m(x - x_1)$. m will be -1/3 and either given point can be used for (x_1, y_1) . Using the point (-3, -2) we get

$$y - (-2) = -\frac{1}{3}(x - (-3))$$

$$y + 2 = -\frac{1}{3}(x+3)$$

$$y + 2 = -\frac{1}{3}x - 1$$

In slope intercept form:

$$y = -\frac{1}{3}x - 3$$

