

Lesson 6-1

Example 1

Find the slope of \overline{AB} containing points $A(2, -3)$ and $B(-6, -1)$.

Solution

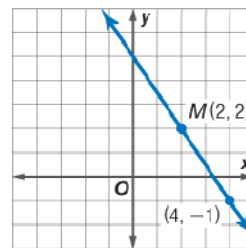
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - (-3)}{-6 - 2} = \frac{2}{-8} = -\frac{1}{4}$$

Example 2

Graph the line that passes through $M(2, 2)$ and has a slope of $-\frac{3}{2}$.

Solution

First plot the point $M(2, 2)$. The slope is $-\frac{3}{2}$, so from M go down 3 units (because the rise is -3) and right 2 units (because the run is 2). The point is $(2 + 2, 2 - 3)$ or $(4, -1)$. Draw a line through $(2, 2)$ and $(4, -1)$.



Example 3

Find the slope and y-intercept for the line with the equation $3x + 4y = 8$.

Solution

$$\begin{aligned} 3x + 4y &= 8 \\ 4y &= -3x + 8 && \text{First, write the equation in slope-intercept form.} \\ y &= \frac{-3x}{4} + 2 \\ m &= \frac{-3}{4} \text{ and } b = 2 \end{aligned}$$

The slope is $-\frac{3}{4}$, and the line crosses the y-axis at coordinates $(0, 2)$.

Example 4

MANUFACTURING Production figures for an assembly plant are represented by a line with a slope of $\frac{2}{3}$ and a y -intercept of -3 . Find the equation of the line. Then draw the graph of the line.

Solution

$$m = \frac{2}{3} \text{ and } b = -3$$

$$y = mx + b$$

$$y = \frac{2}{3}x - 3 \quad \text{slope-intercept form}$$

To draw the graph, start at point $(0, -3)$. Then using the slope of $\frac{2}{3}$, locate a point 2 unit up and 3 units to the right at $(3, -1)$. Draw a line through the points.

