Point-Point Form of a Line

Preliminaries and Objectives

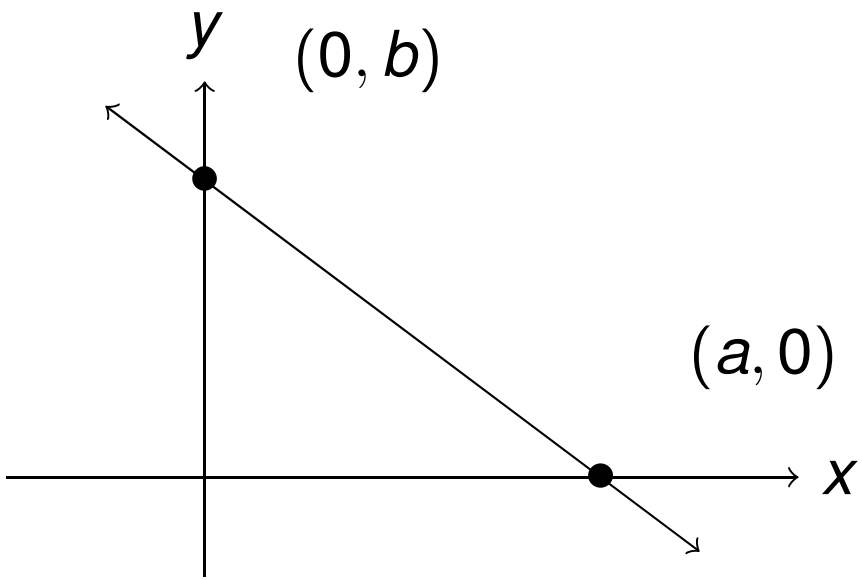
Preliminaries

- The Slope of a Line
- Point-Slope Form of a Line

Objectives

- Find the equation of a line, given two points on the line

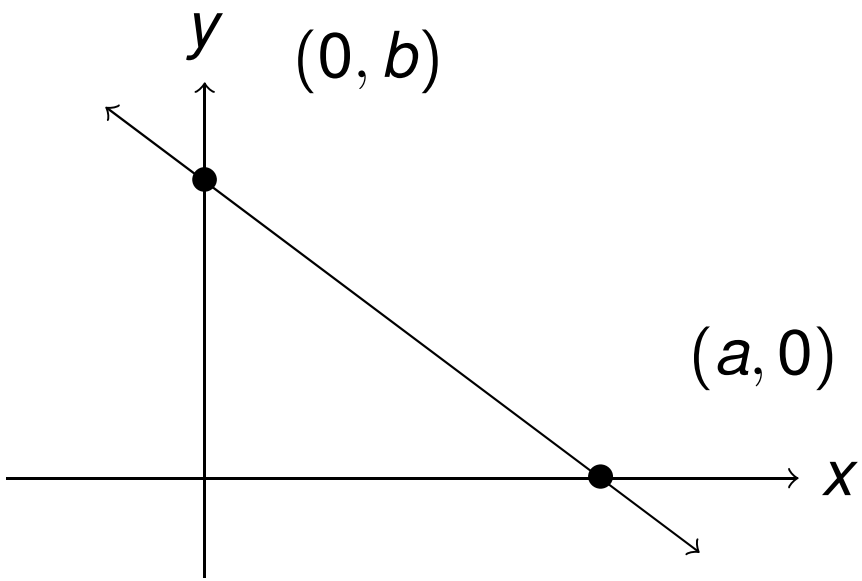
Intercept-Intercept Form



$$m = \frac{0-b}{a-0} = -\frac{b}{a}$$

$$y - b = -\frac{b}{a}(x-0)$$

Intercept-Intercept Form



$$m = \frac{0-b}{a-0} = -\frac{b}{a}$$

$$y - b = -\frac{b}{a}(x-0)$$

$$y = -\frac{b}{a}x + b$$

$$y - 0 = -\frac{b}{a}(x-a)$$

Example 1

$$
\begin{aligned}
y - 4 &= -\frac{3}{5}(x + 2) \\
y - 4 &= -\frac{3}{5}x - \frac{6}{5} \\
y &= -\frac{3}{5}x - \frac{6}{5} + 4 \\
y &= -\frac{3}{5}x - \frac{6}{5} + \frac{20}{5} \\
y &= -\frac{3}{5}x + \frac{14}{5}
\end{aligned}
\qquad
\begin{aligned}
y - 1 &= -\frac{3}{5}(x - 3) \\
y - 1 &= -\frac{3}{5}x + \frac{9}{5} \\
y &= -\frac{3}{5}x + \frac{9}{5} + 1 \\
y &= -\frac{3}{5}x + \frac{9}{5} + \frac{5}{5} \\
y &= -\frac{3}{5}x + \frac{14}{5}
\end{aligned}
$$

Recap

To find the equation of a line, given two points,

- Find the slope using the slope formula
- Find the equation using the point-slope equation of a line