Point-Point Form of a Line
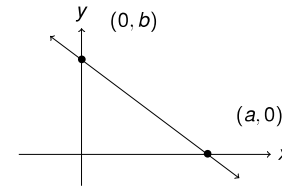
UNIVERSITY OF MINNESOTA

Preliminaries

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

Objectives

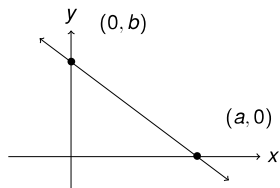- Find the equation of a line, given two points on the line

Intercept-Intercept Form

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

y $(0,b)$

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

$(a,0)$

x

Intercept-Intercept Form

y $(0,b)$

$(a,0)$

x

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

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

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

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

Example 1

$$y - 4 = -\frac{3}{5}(x+2)$$

$$y - 4 = -\frac{3}{5}x - \frac{6}{5}$$

$$y = -\frac{3}{5}x - \frac{6}{5} + 4$$

$$y = -\frac{3}{5}x - \frac{6}{5} + \frac{20}{5}$$

$$y = -\frac{3}{5}x + \frac{14}{5}$$

$$y - 1 = -\frac{3}{5}(x-3)$$

$$y - 1 = -\frac{3}{5}x + \frac{9}{5}$$

$$y = -\frac{3}{5}x + \frac{9}{5} + 1$$

$$y = -\frac{3}{5}x + \frac{9}{5} + \frac{5}{5}$$

$$y = -\frac{3}{5}x + \frac{14}{5}$$

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