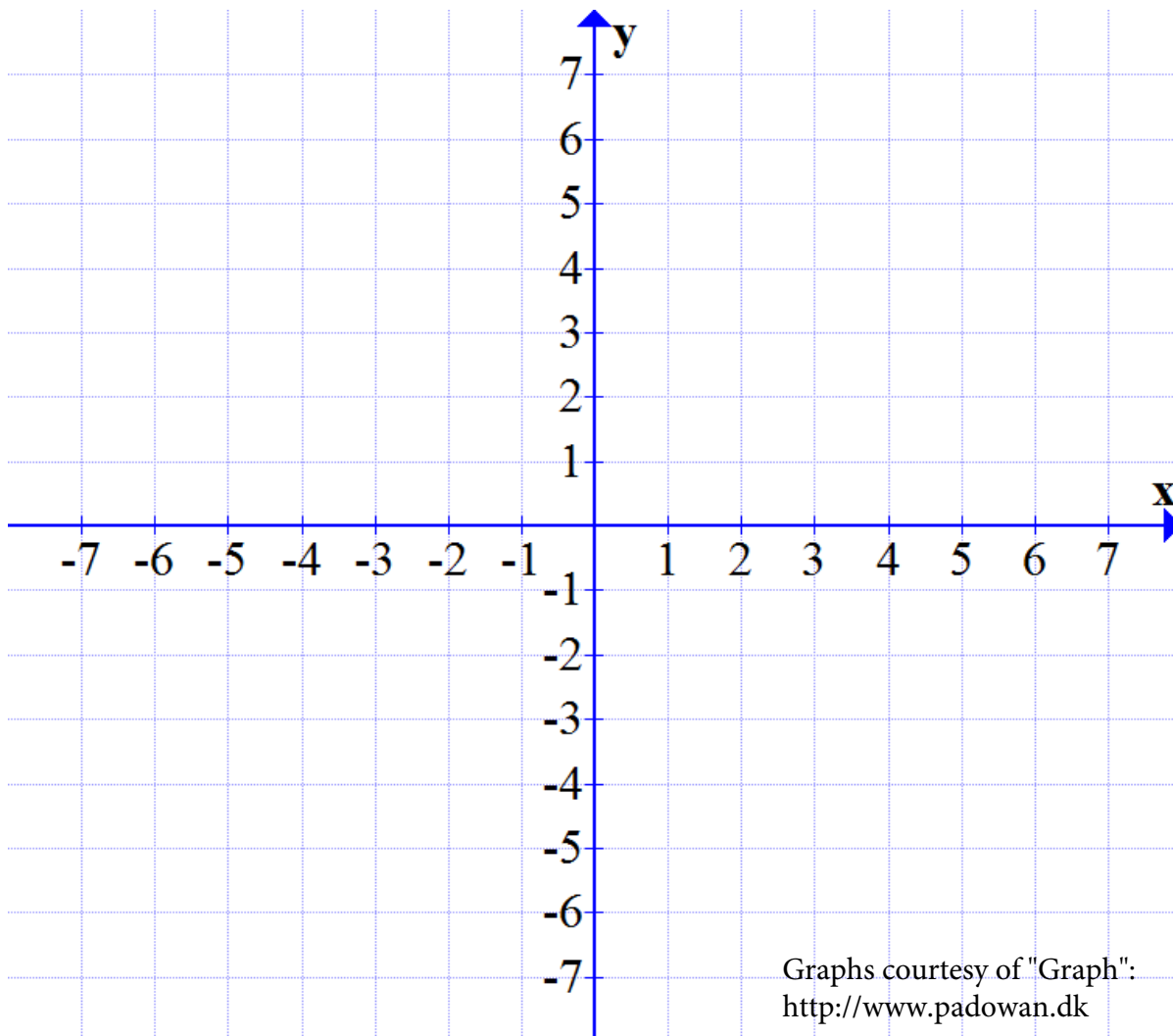


Create an “ $x, y$  table” of solutions, including  $x$  and  $y$  intercepts, and graph the equation:

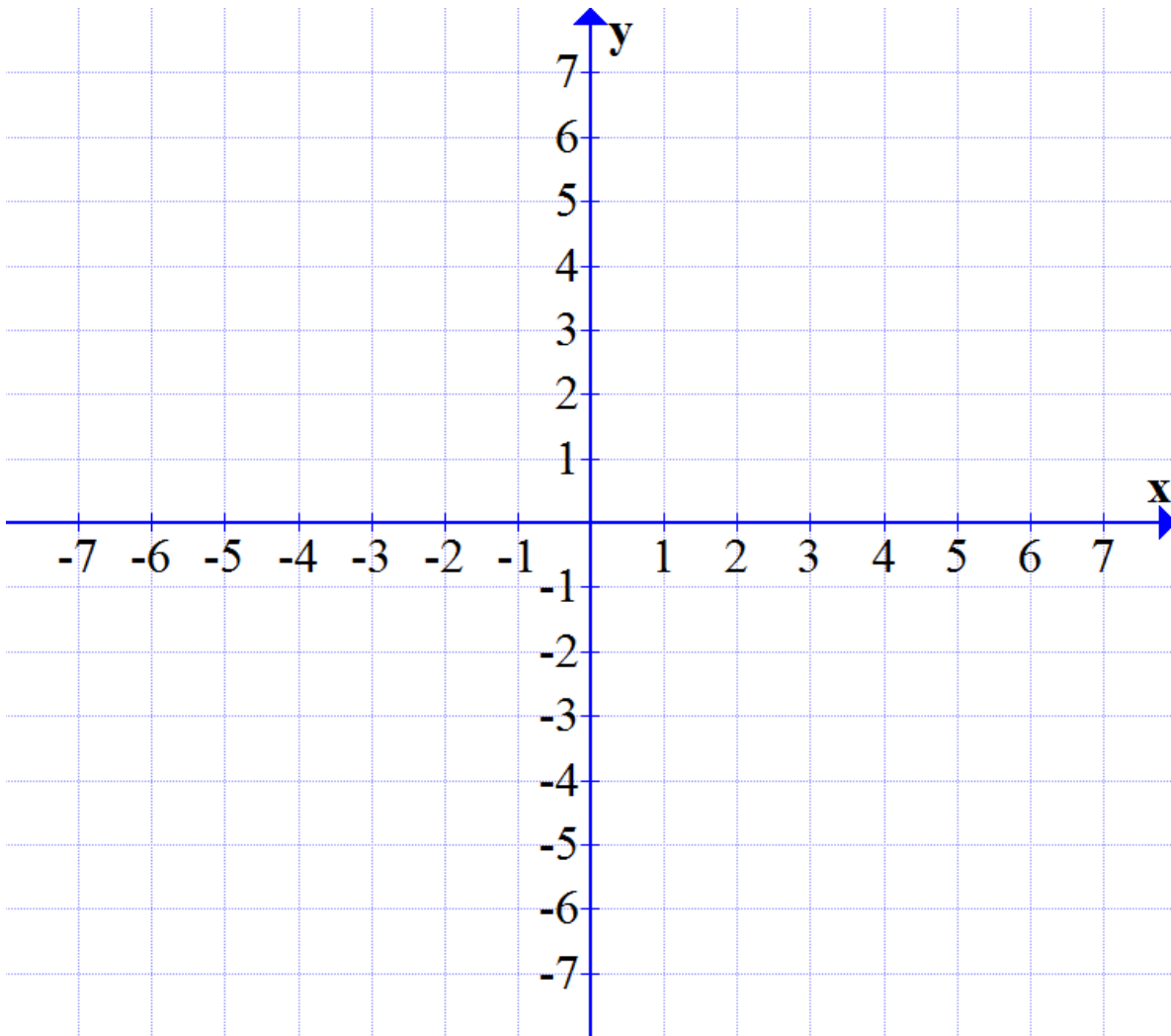
$$y = \frac{2}{3}x + 1$$



Graphs courtesy of "Graph":  
<http://www.padowan.dk>

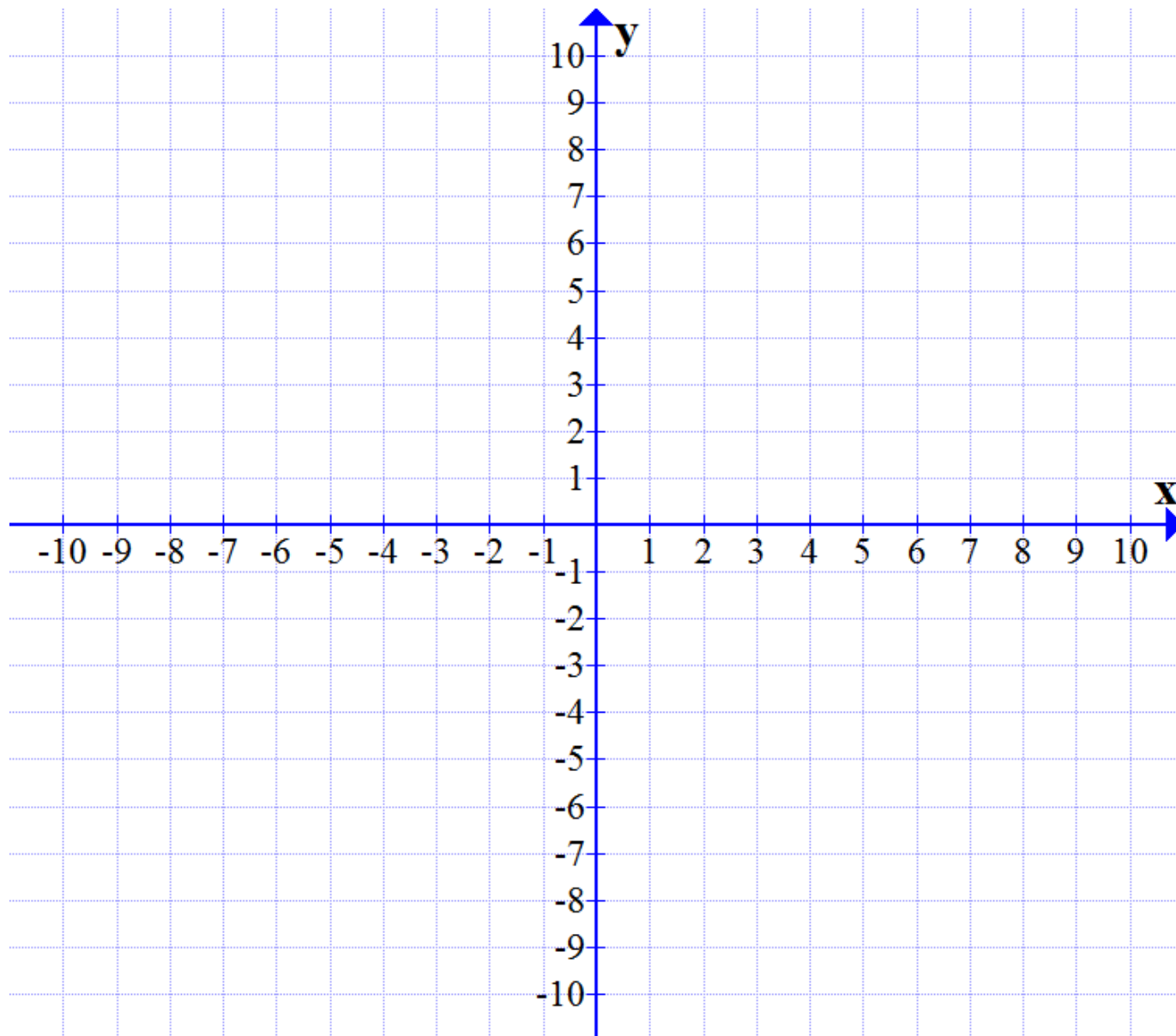
This equation is in slope-intercept form, so named because this is the slope, and this is the y-intercept (when x is 0).

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



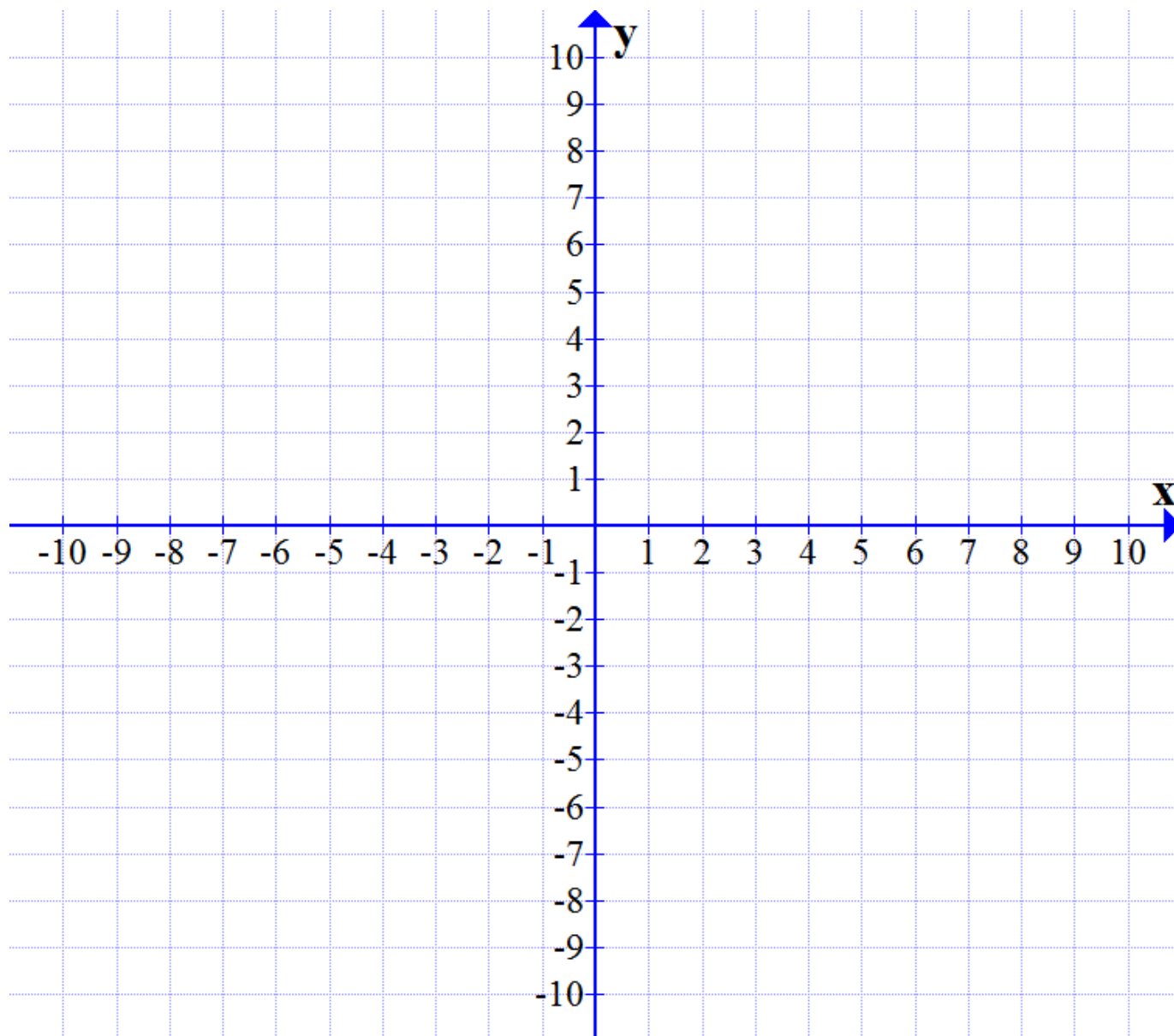
Graph the equation, which is written in slope-intercept form.

$$y = \frac{3}{5}x - 2$$



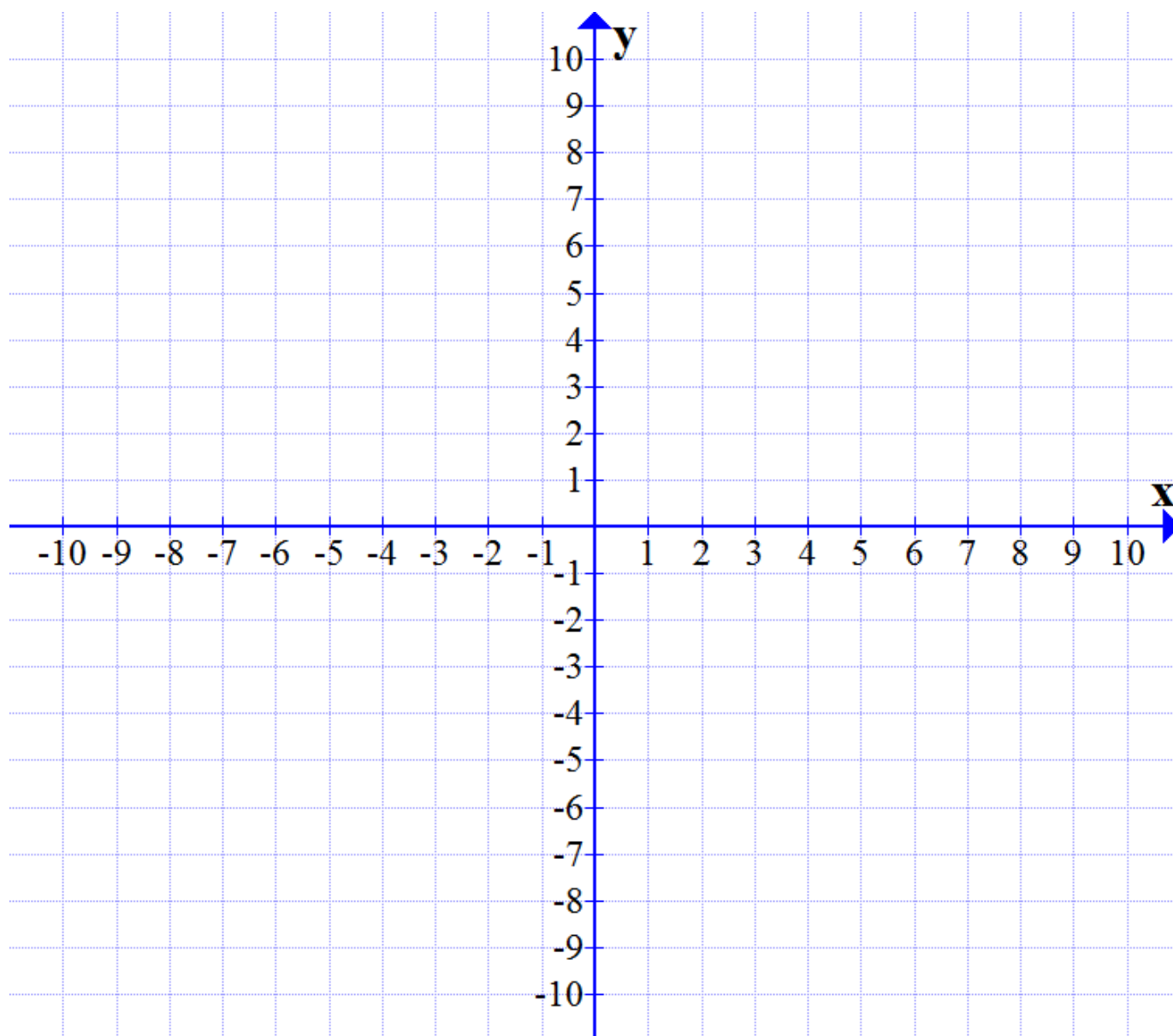
Graph the equation, which is written in slope-intercept form.

$$y = 6x + 4$$



Graph the equation, which is written in slope-intercept form.

$$y = \frac{4}{7}x$$



Slope-intercept form:  $y = mx + b$

Examples:  $y = \frac{2}{7}x - 3$ ,  $y = -9x + 4$ ,  $y = \frac{2}{5}x$

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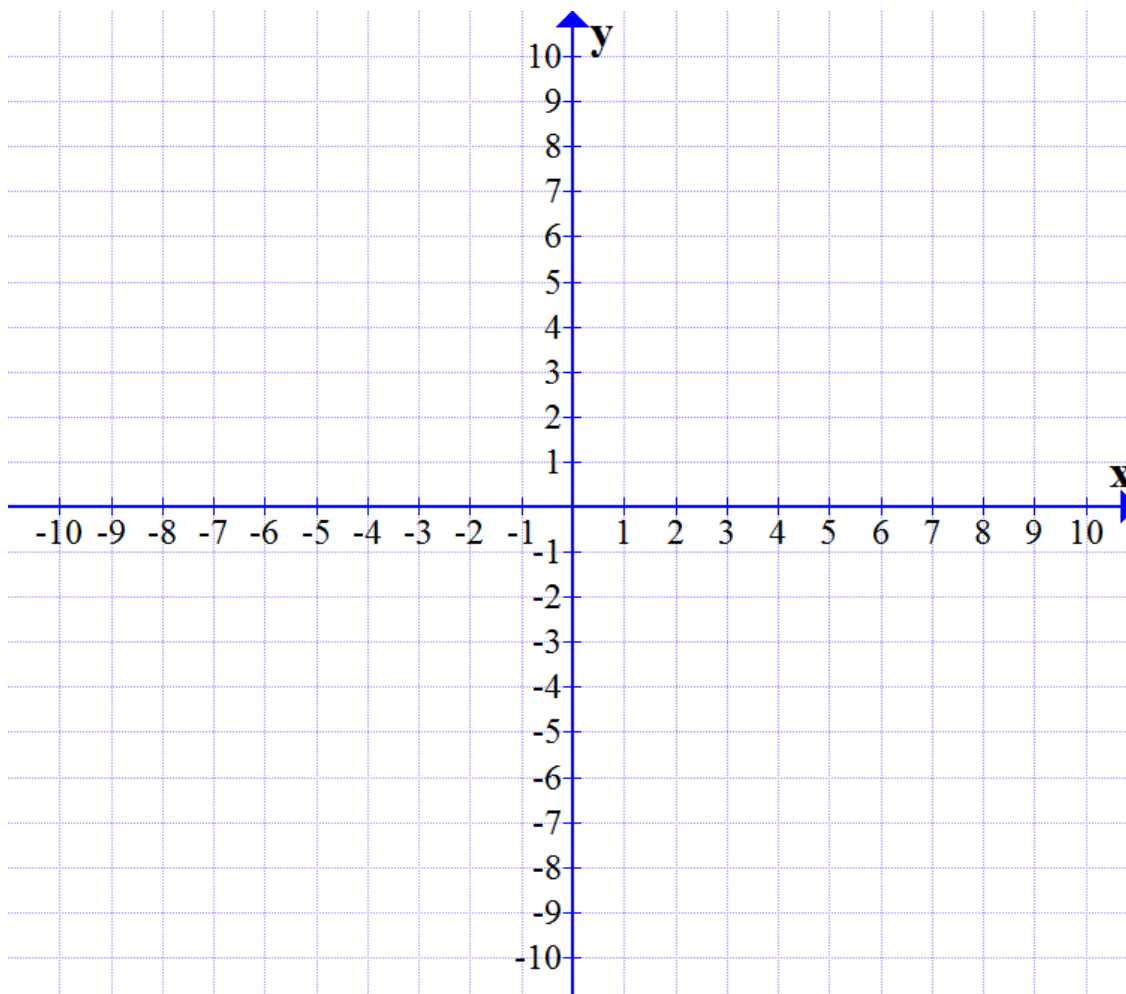
Standard form:  $Ax + By = C$

Examples:  $2x + 6y = 18$      $5x - 3y = 7$      $8x + y = -10$

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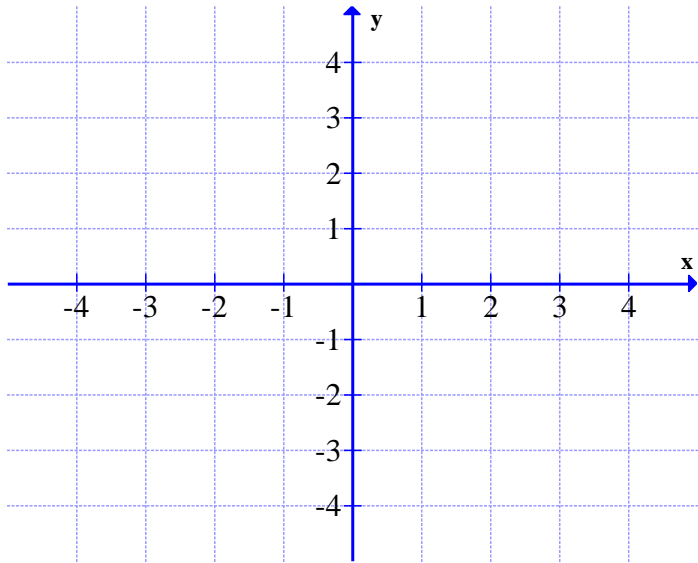
Write the equation in slope-intercept form and graph it.

$$2x + 6y = 18$$

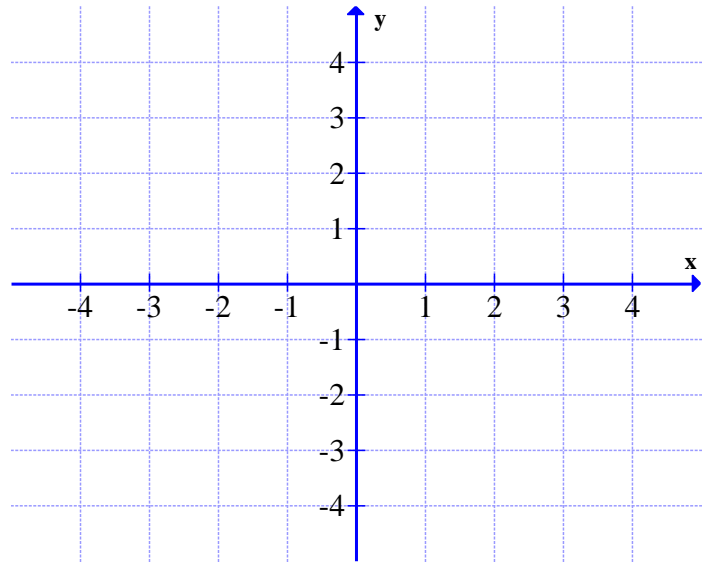


Positive Slope

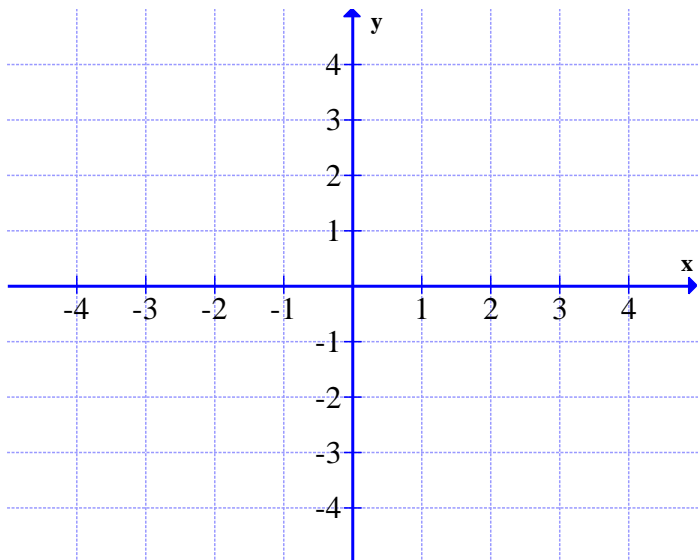
$$m = \frac{\text{rise}}{\text{run}}$$

Negative Slope

$$m = \frac{\text{rise}}{\text{run}}$$

Slope is zero.

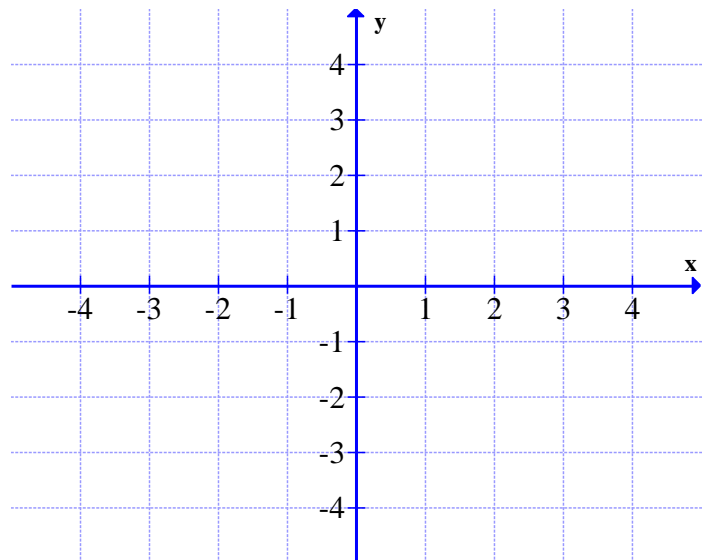
$$m = \frac{\text{rise}}{\text{run}}$$



horizontal line

Slope is undefined.(also termed no slope)

$$m = \frac{\text{rise}}{\text{run}}$$

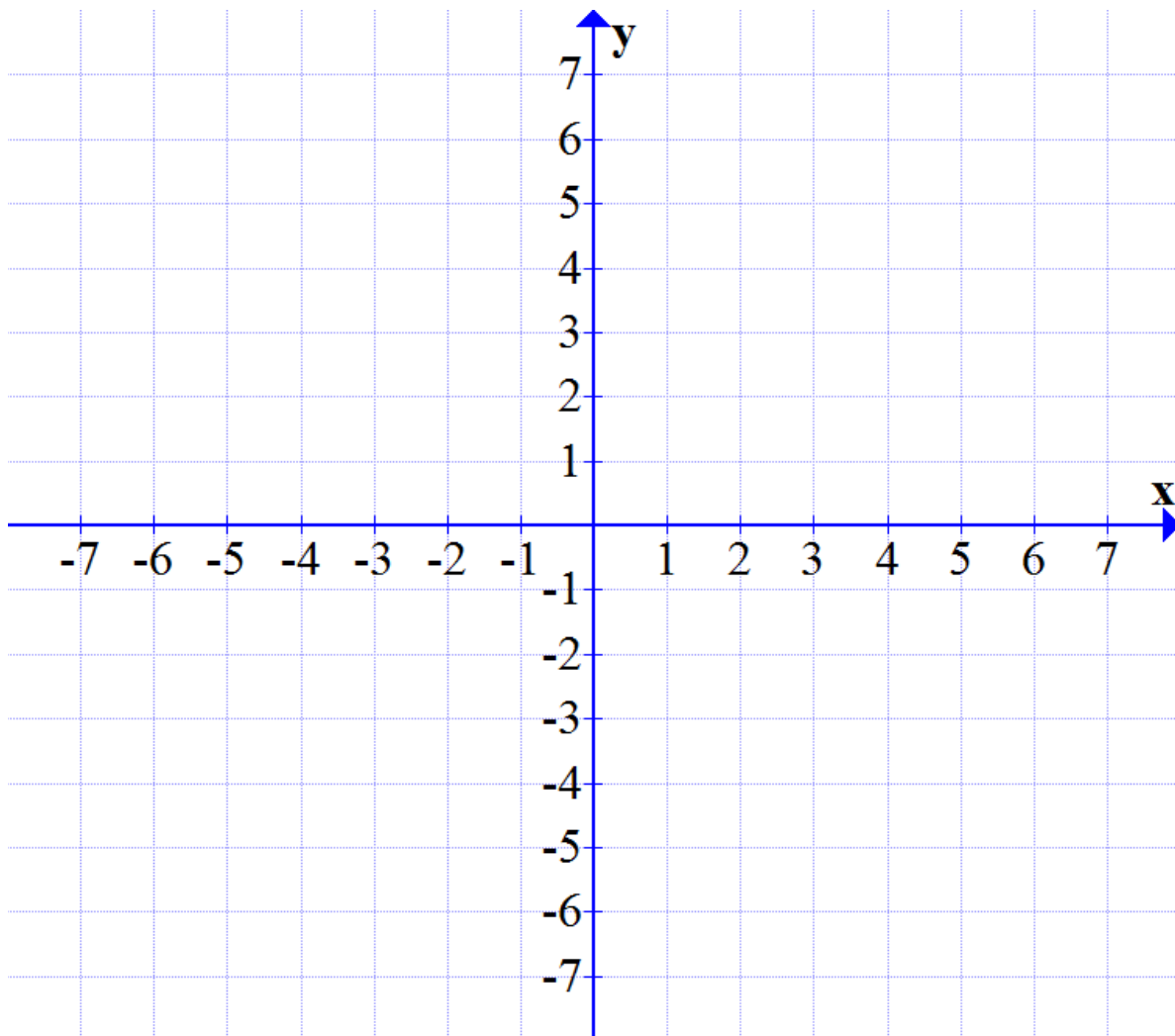


vertical line

Given two points, find the slope.  $(-4, 1), (2, 3)$

Use the slope formula:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

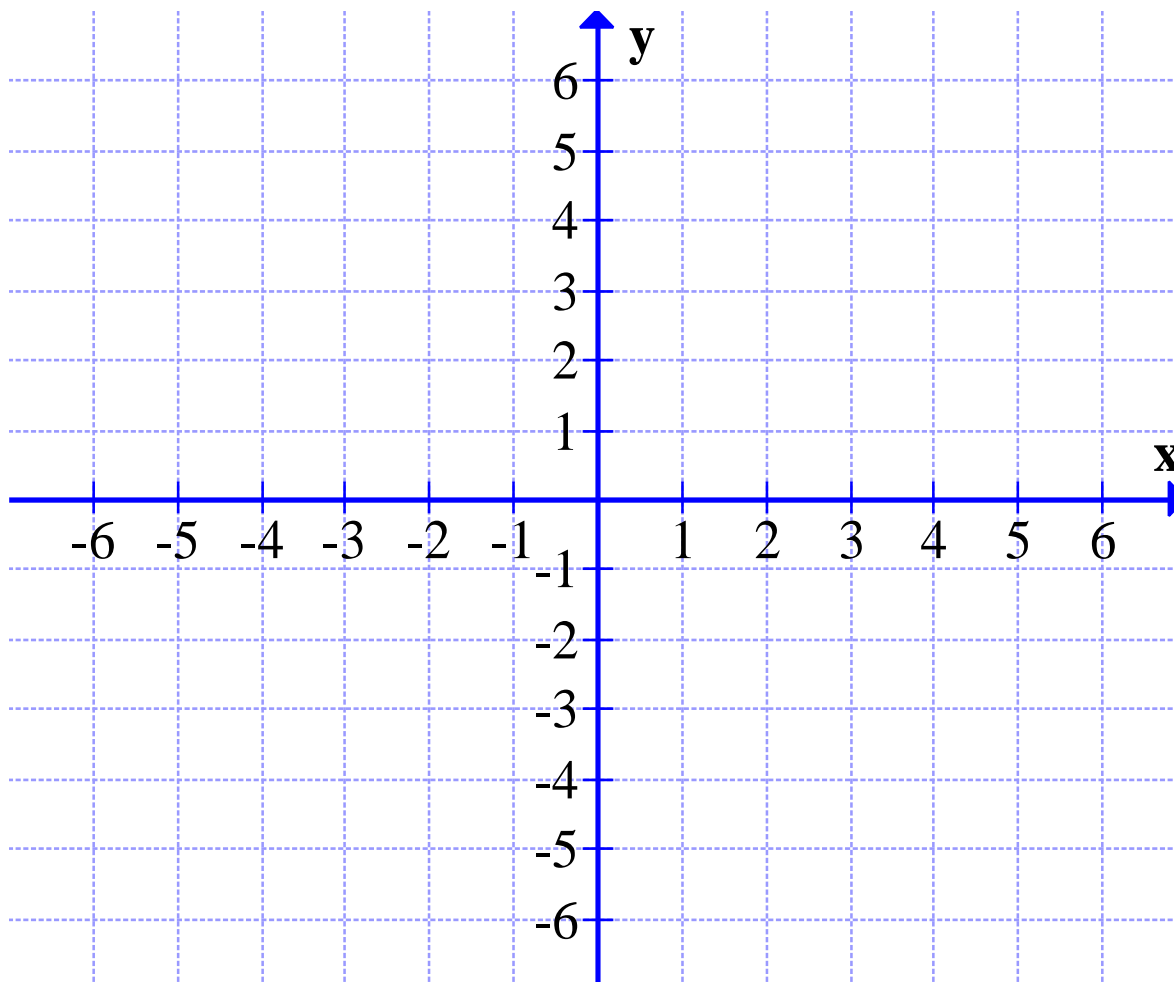
$$m = \frac{\text{rise}}{\text{run}}$$





Given a point and a slope, you can graph the line.

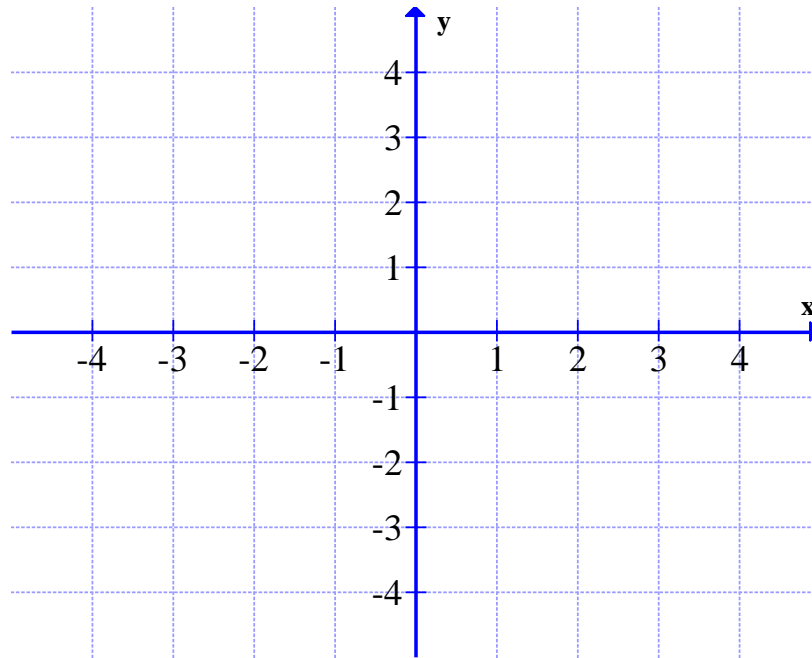
$$(-4, 1) \quad m = \frac{2}{5}$$



parallel lines — slope is same

$$y = \frac{3}{2}x - 4$$

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



perpendicular lines — slope is negative reciprocal

$$y = \frac{1}{4}x + 2$$

$$y = -\frac{4}{1}x + 3$$

