CHAPTER 6 Analyse Linear Relations
6.6 Find an Equation for a Line Given Two Points
Finding an Equation for a Line Given Two Points

Example:

a) Find an equation of the line that passes through the points (3, –3) and (–3, 5).

b) Graph the line from part a).

Solution:

a) *Step 1*: Find the slope.

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{5 - (-3)}{-3 - 3} \\ &= \frac{8}{-6} \\ &= -\frac{4}{3} \end{aligned}$$

The slope is $-\frac{4}{3}$.

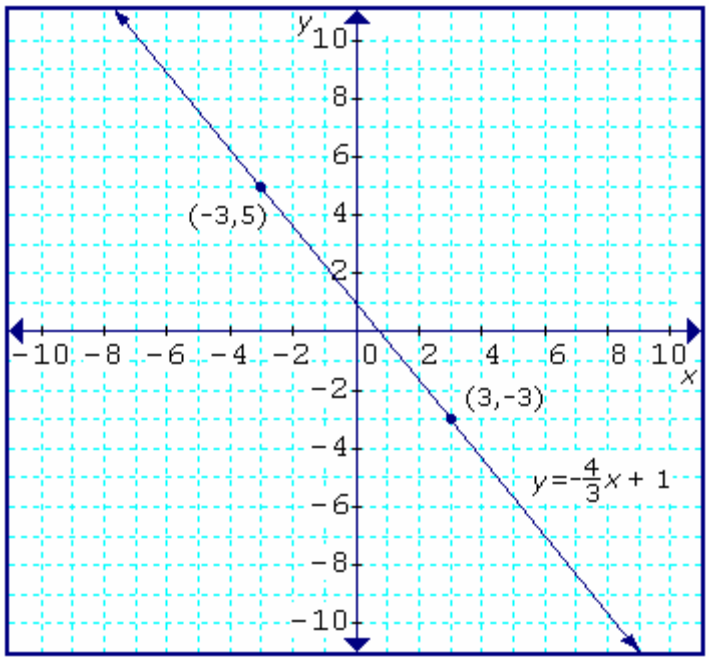
Step 2: Find the *y*-intercept. Substitute $x = 3$, $y = -3$.

$$\begin{aligned} y &= mx + b \\ -3 &= -\frac{4}{3} \times 3 + b \\ -3 &= -4 + b \\ -3 + 4 &= -4 + b + 4 \\ 1 &= b \end{aligned}$$

The *y*-intercept is 1.

The equation of the line is $y = -\frac{4}{3}x + 1$.

b) The graph is shown.



Practice:

1. a) Find an equation for the line that passes through the points (7, 2) and (–7, –6).

b) Graph the line from part a).

Answers:

1. a) $y = \frac{4}{7}x - 2$

b) The graph is shown.