

## Linear Equations

Finding the Equation of a Line – Given the Slope and a point

Write the Linear Equation containing the following in Slope-Intercept Form:

<p>1. <math>(4, -3)</math> &amp; <math>m = -1</math></p> $y = -1x + b$ $-3 = -1(4) + b$ $-3 = -4 + b$ $\begin{array}{r} +4 \quad +4 \\ \hline 1 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = -1x + 1</math></div>	<p>2. <math>(-5, -6)</math> &amp; <math>m = 2</math></p> $y = 2x + b$ $-6 = 2(-5) + b$ $-6 = -10 + b$ $\begin{array}{r} +10 \quad +10 \\ \hline 4 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = 2x + 4</math></div>
<p>3. <math>(-7, 2)</math> &amp; <math>m = 3</math></p> $y = 3x + b$ $2 = 3(-7) + b$ $2 = -21 + b$ $\begin{array}{r} +21 \quad +21 \\ \hline 23 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = 3x + 23</math></div>	<p>4. <math>(3, 5)</math> &amp; <math>m = -2</math></p> $y = -2x + b$ $5 = -2(3) + b$ $5 = -6 + b$ $\begin{array}{r} +6 \quad +6 \\ \hline 11 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = -2x + 11</math></div>
<p>5. <math>(6, -2)</math> &amp; <math>m = -3</math></p> $y = -3x + b$ $-2 = -3(6) + b$ $-2 = -18 + b$ $\begin{array}{r} +18 \quad +18 \\ \hline 16 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = -3x + 16</math></div>	<p>6. <math>(5, -2)</math> &amp; <math>m = 2</math></p> $y = 2x + b$ $-2 = 2(5) + b$ $-2 = 10 + b$ $\begin{array}{r} -10 \quad -10 \\ \hline -12 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = 2x - 12</math></div>
<p>7. <math>(7, 0)</math> &amp; <math>m = 4</math></p> $y = 4x + b$ $0 = 4(7) + b$ $0 = 28 + b$ $\begin{array}{r} -28 \quad -28 \\ \hline -28 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = 4x - 28</math></div>	<p>8. <math>(0, 9)</math> &amp; <math>m = -2</math></p> $y = -2x + b$ $9 = -2(0) + b$ $9 = 0 + b$ $9 = b$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = -2x + 9</math></div>
<p>9. <math>(5, -1)</math> &amp; <math>m = \frac{1}{5}</math></p> $y = \frac{1}{5}x + b$ $-1 = \frac{1}{5}(5) + b$ $-1 = 1 + b$ $\begin{array}{r} -1 \quad -1 \\ \hline -2 = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = \frac{1}{5}x - 2</math></div>	<p>10. <math>(-3, -2)</math> &amp; <math>m = \frac{1}{4}</math></p> $y = \frac{1}{4}x + b$ $-2 = \frac{1}{4}(-3) + b$ $-2 = -\frac{3}{4} + b$ $\begin{array}{r} +\frac{3}{4} \quad +\frac{3}{4} \\ \hline -\frac{5}{4} = b \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block; margin-top: 10px;"><math>y = \frac{1}{4}x - \frac{5}{4}</math></div>

11.  $(-5, -2) & m = \frac{7}{5}$

$$y = \frac{7}{5}x + b$$

$$-2 = \frac{7}{5}(-5) + b$$

$$-2 = -7 + b$$

$$\begin{array}{r} +7 \quad +7 \\ \hline 5 = b \end{array}$$

$$y = \frac{7}{5}x + 5$$

12.  $(-4, -2) & m = 1$

$$y = 1x + b$$

$$-2 = 1(-4) + b$$

$$-2 = -4 + b$$

$$\begin{array}{r} +4 \quad +4 \\ \hline 2 = b \end{array}$$

$$y = 1x + 2$$

13.  $(5, 1) & m = \frac{1}{5}$

$$y = \frac{1}{5}x + b$$

$$1 = \frac{1}{5}(5) + b$$

$$1 = 1 + b$$

$$\begin{array}{r} -1 \quad -1 \\ \hline 0 = b \end{array}$$

$$y = \frac{1}{5}x$$

14.  $(5, 1) & m = \frac{4}{5}$

$$y = \frac{4}{5}x + b$$

$$1 = \frac{4}{5}(5) + b$$

$$1 = 4 + b$$

$$\begin{array}{r} -4 \quad -4 \\ \hline -3 = b \end{array}$$

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

15.  $(4, 0) & m = \frac{3}{5}$

$$y = \frac{3}{5}x + b$$

$$0 = \frac{3}{5}(4) + b$$

$$0 = \frac{12}{5} + b$$

$$\begin{array}{r} -\frac{12}{5} \quad -\frac{12}{5} \\ \hline -\frac{12}{5} = b \end{array}$$

$$y = \frac{3}{5}x - \frac{12}{5}$$

16.  $(0, 1) & m = -\frac{1}{3}$

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

$$1 = -\frac{1}{3}(0) + b$$

$$1 = 0 + b$$

$$1 = b$$

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

17.  $(-3, 8) & m = -3$

$$y = -3x + b$$

$$8 = -3(-3) + b$$

$$8 = 9 + b$$

$$\begin{array}{r} -9 \quad -9 \\ \hline -1 = b \end{array}$$

$$y = -3x - 1$$

18.  $(11, -3) & m = 5$

$$y = 5x + b$$

$$-3 = 5(11) + b$$

$$-3 = 55 + b$$

$$\begin{array}{r} -55 \quad -55 \\ \hline -58 = b \end{array}$$

$$y = 5x - 58$$

19.  $(4, -1) & m = -\frac{3}{4}$

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

$$-1 = -\frac{3}{4}(4) + b$$

$$-1 = -3 + b$$

$$\begin{array}{r} +3 \quad +3 \\ \hline 2 = b \end{array}$$

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

20.  $(10, -15) & m = -2$

$$y = -2x + b$$

$$-15 = -2(10) + b$$

$$-15 = -20 + b$$

$$\begin{array}{r} +20 \quad +20 \\ \hline 5 = b \end{array}$$

$$y = -2x + 5$$