


Look at $\frac{\text{rise}}{\text{run}}$ as $\frac{\text{the change in the } y\text{'s}}{\text{the change in the } x\text{'s}}$

$$= \frac{3 - (-1)}{4 - (-2)} = \frac{4}{6} = \frac{2}{3}$$

Unit 5: Linear Equations



5.5 Slope Y-Intercept Form

Warm-Up #1 Investigating the Graphs of Linear and Non-Linear Relations

a) The equations of the graphs of some relations are given. In each case use a graphing calculator to sketch the graph of the relation and make a rough sketch of the graph on the grid provided. Do not list any x- or y-intercepts.

$y = 3x + 1$ $y = -2x + 3$ $y = -x^3 + 1$ $y = x^2 - 3$

$y = \frac{1}{x}$ $y = \frac{1}{2}x - 2$ $y = 4x$ $y = 2^x$

b) List the equations of the graphs in the appropriate row.

LINEAR:

NON-LINEAR:

c) Compare the lists. Write a rule from the equation which can be used to determine whether the graph is a straight line or not.

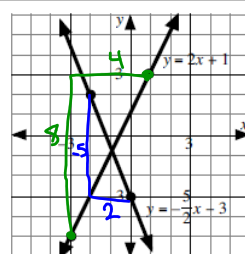
\times in numerator
 \times not in denominator, exponent
 \times exponent must be 1

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c) Jenine sketched the graphs of two more linear equations. Use the grid to determine the slope and y-intercept of each graph.

equation	slope	y-intercept
$y = 2x + 1$	2	1
$y = -\frac{5}{2}x - 3$	$-\frac{5}{2}$	-3



d) Make a conjecture about the slope and y-intercept of the graph of the linear equation $y = mx + b$.

$y = mx + b$

The equation $y = mx + b$ is known as slope y-intercept form

Where "m" represents the slope

and "b" represents the y-int

Determine the slope and y-intercept of the graph of each linear equation below:

a) $y = 3x + 2$
 $m = 3$
 $b = 2$

b) $y = 7 - 0.5x$
 $m = -0.5$
 $b = 7$

c) $y = 8x + \frac{1}{6}$
 $y = \frac{4}{3}x + \frac{1}{6}$
 $m = \frac{4}{3}$
 $b = \frac{1}{6}$

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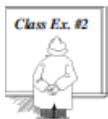
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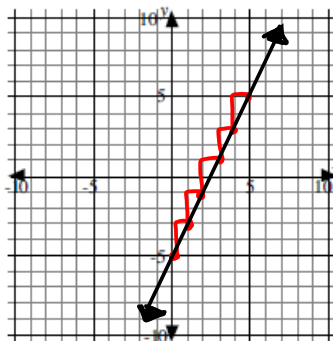
Graphing an Equation of the Form $y = mx + b$

In this section we will look at two ways of sketching the graph of a linear equation without using a graphing calculator or a table of values.



Consider the equation $y = 2x - 5$.

- a) State the slope and y-intercept.
 $m = \frac{2}{1}$ -5
- b) Mark the y-intercept on the grid.
- c) Use the y-intercept and the formula slope = $\frac{\text{rise}}{\text{run}}$ to mark three other points on the grid. Join the points together, and extend the line.
- d) Verify the graph using a graphing calculator.



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Consider the equation $y = \frac{2}{3}x - 6$.

- a) State the y-intercept.
 $(0, -6)$
- b) Determine the x-intercept algebraically.*
 $y = \frac{2}{3}x - 6$
 $0 = \frac{2}{3}x - 6$
 $6 = \frac{2}{3}x$
 $9 = x$
 $(9, 0)$
- c) Mark the x- and y-intercepts on the grid. Join the points together, and extend the line.
- d) Verify the graph and the intercepts using a graphing calculator.

