

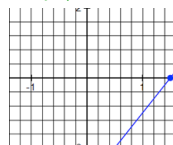
10-1 Review of Linear Equations: Graphing & Writing Equations

Objective: I can graph linear equations.

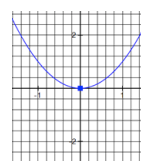
Linear equation: an equation that makes a straight line when graphed

Linear or Not Linear? Why?

Linear



QUADRATIC



Linear Equations cont.

What do Linear equations have?
slope and intercepts

What form do we write linear equations in to graph them? slope-intercept form ($y=mx+b$).

m = slope (steepness)

b = y-intercept where it crosses y-axis

How to find slope:

$$(x_1, y_1) \& (x_2, y_2) \quad \text{difference up/down}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} \quad \left(\frac{\text{rise}}{\text{run}} \right) \quad \text{left/right}$$

How to find y-intercept:

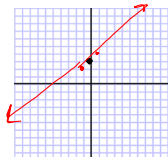
- plug 0 in for x and solve for y
Look for where it crosses

How to graph Linear Functions

$$f(x) = x + 3$$

slope: 1

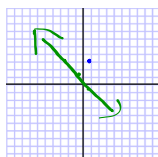
y-int: 3



$$g(x) = -2x + 1$$

slope: -2

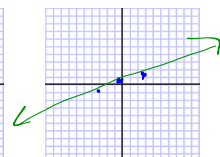
y-int: 1



$$h(x) = \frac{1}{3}x$$

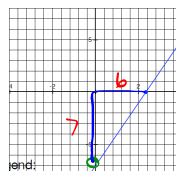
slope: 1/3

y-int: 0



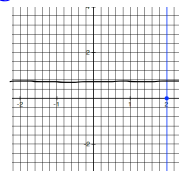
Given the graph, write the linear equation.

$$y = mx + b$$



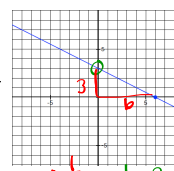
$$m = \frac{1}{6} \quad b = -7$$

$$y = \frac{1}{6}x - 7$$



$$m = \text{undefined} \quad b = 0$$

$$x = 2$$



$$m = -\frac{1}{2} \quad b = 3$$

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

What is a linear equation?

an equation of degree 1. (makes a line)
highest exponent is 1

What is a linear system?

two or more linear equations

What does it mean to solve a linear system?

Finding where the equations cross

Vocabulary: Consistent Dependent

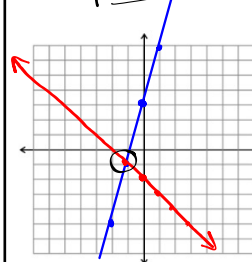
Consistent Independent

Inconsistent - systems with no solutions

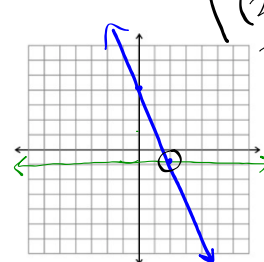
Coinciding Lines - system with the same line

Solving Linear Equations Graphically

$$\begin{cases} y = 4x + 3 \\ y = -x - 2 \end{cases}$$



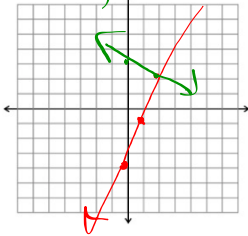
$$\begin{cases} y = -1 \\ y = -\frac{5}{2}x + 4 \end{cases}$$



You Try

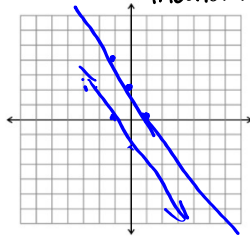
$$\begin{cases} y = 3x - 4 \\ y = -\frac{1}{2}x + 3 \end{cases}$$

$(2, 2)$



$$\begin{cases} y = -2x + 2 \\ y = -2x - 2 \end{cases}$$

no solution /
Inconsistent



$$\begin{cases} x - y = 3 \\ 7x - y = -3 \end{cases}$$

$x = 3 + y$
 $\Rightarrow y = x - 3$

$7x - y = -3$
 $7x = -3 + y$
 $7x = 3 + y$
 $\Rightarrow y = 7x + 3$