Algebra 1 3.2

Solve linear equations by graphing

Estimate solutions to a linear equation by graphing

linear function

parent function

family of graphs

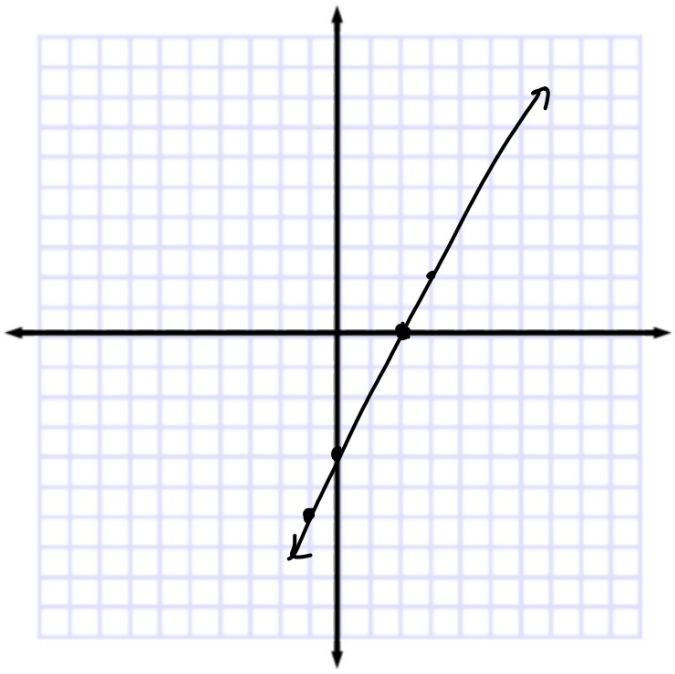
x-intercept

Graphing practice

$y = 2x - 4$

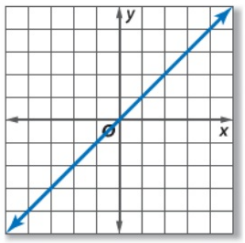
x	$2x-4$	
-1	$2 \cdot -1 + -4$	-6
3	$2 \cdot 3 + -4$	2
0	$2 \cdot 0 - 4$	-4
2	$2 \cdot 2 - 4$	0

$x = 2$



KeyConcept Linear Function

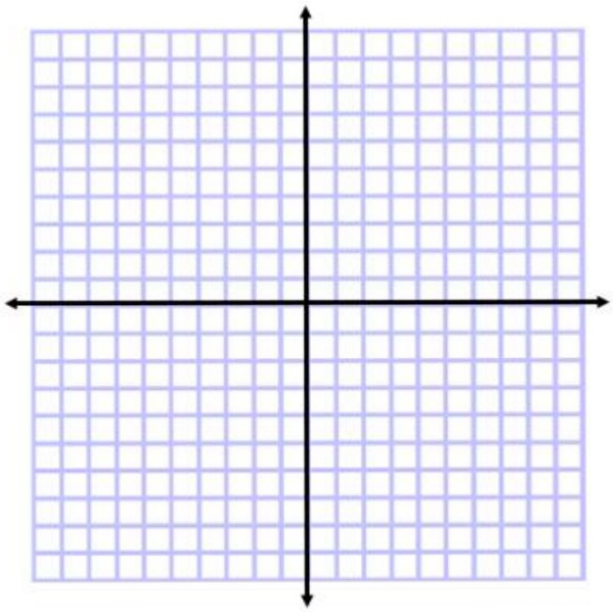
Parent function:	$f(x) = x$
Type of graph:	line
Domain:	all real numbers
Range:	all real numbers

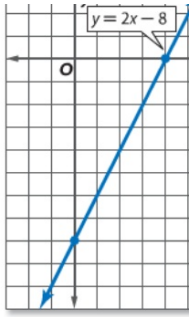


$f(x) = x$

$y = x$

Linear Equation	Related Function





1. graph related function
(may need to rearrange first)
2. solution is x-intercept
...OR...
3. Solve the equation using algebra
(depends on directions)

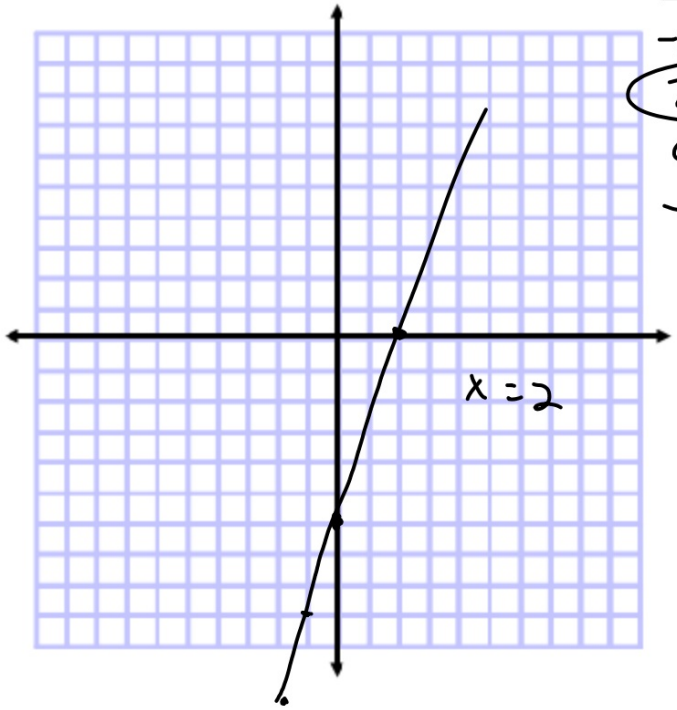
b. $3x + 1 = -2$

Method 2 Solve by graphing.

Solve by graphing:
1. graph related function
2. solution is x-intercept

0 = 3x - 6

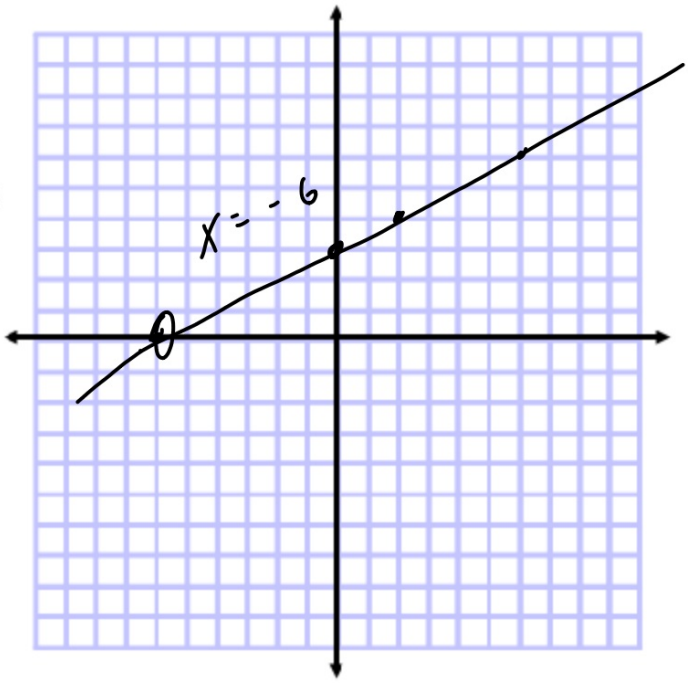
$y = 3x - 6$



x		
-2	$3 \cdot -2 - 6$	-12
2	$3 \cdot 2 - 6$	0
0	$3 \cdot 0 - 6$	-6
-1	$3 \cdot -1 - 6$	-9

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

0	$\frac{1}{2} \cdot 0 + 3$	3
-6	$\frac{1}{2} \cdot -6 + 3$ $-3 + 3$	0
2	$\frac{1}{2} \cdot 2 + 3$ $1 + 3$	4
6	$\frac{1}{2} \cdot 6 + 3$	6



Example 2 Solve an Equation with No Solution

Solve each equation.

a. $3x + 7 = 3x + 1$

$3x + 7 = 3x + 1$

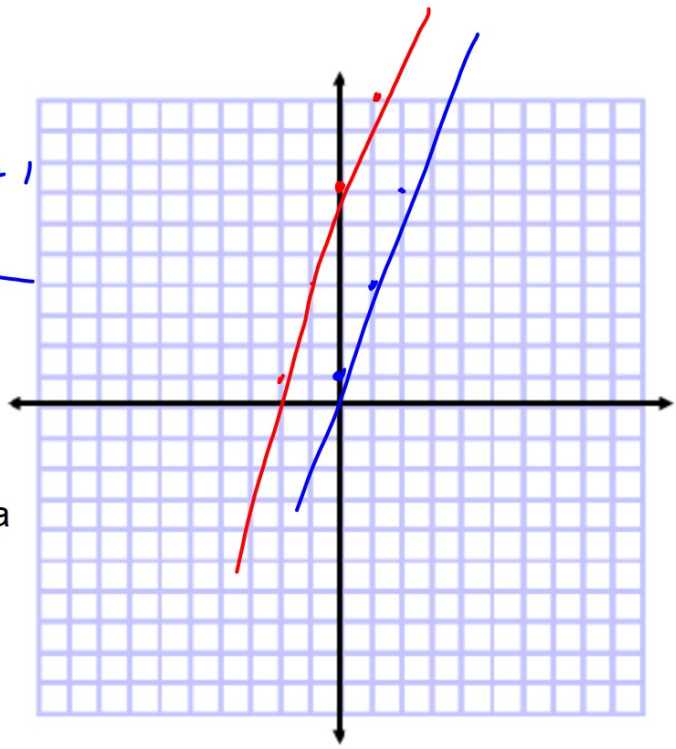
$-3x \quad -3x$

$7 = 1$

no solution

$y = 3x + 7$

$y = 3x + 1$



Solve using algebra
Solve by graphing

Same answer!

$3x-3=0$

① $y=3x-3$

② $y=-2x+1$

$y=5-2x$

$y = mx + b$

b. $2x - 4 = 2x - 6$

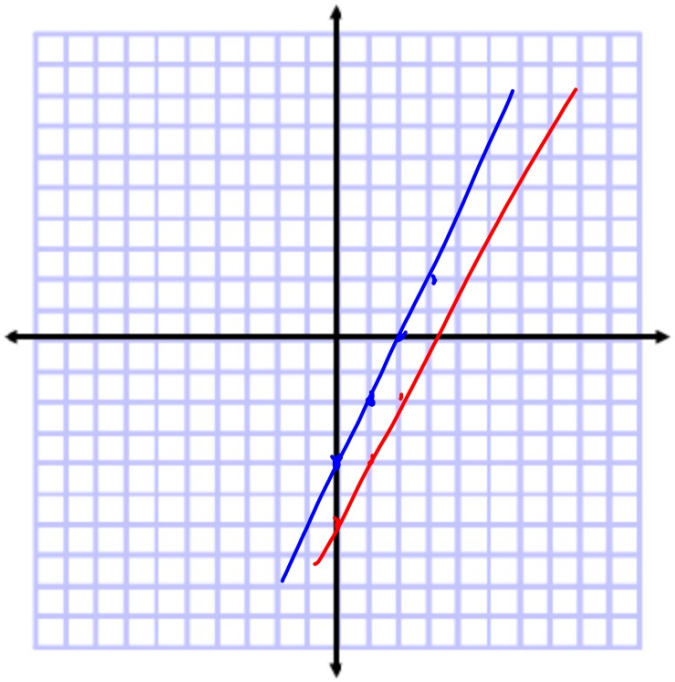
Method 2 Solve by graphing.

$y = 2x - 4$

$y = 2x - 6$

no sol.

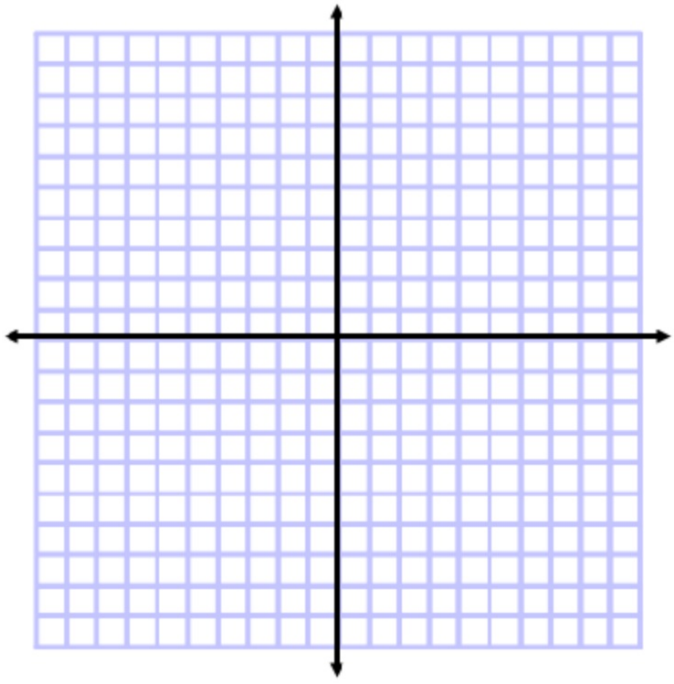
$$\begin{array}{rr} 2x - 4 = & 2x - 6 \\ -2x \quad & -2x \\ \hline -4 = & -6 \end{array}$$



GuidedPractice

2A. $4x + 3 = 4x - 5$

2B. $2 - 3x = 6 - 3x$

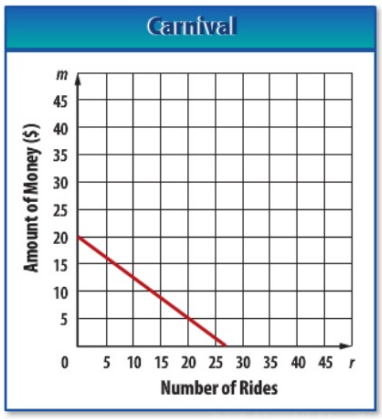


Why don't these systems have a solution?

Find the zero= what is the x-intercept? (where y = 0)

Real-World Example 3 Estimate by Graphing

CARNIVAL RIDES Emily is going to a local carnival. The function $m = 20 - 0.75r$ represents the amount of money m she has left after r rides. Find the zero of this function. Describe what this value means in this context.



GuidedPractice

3. FINANCIAL LITERACY Antoine's class is selling candy to raise money for a class trip. They paid $45 for the candy, and they are selling each candy bar for $1.50. The function $y = 1.50x - 45$ represents their profit y when they sell x candy bars. Find the zero and describe what it means in the context of this situation.