Homework Review - 4.1

Equations in Two Variables

one variable for each axis (x, y)

$2x - 6 = y^2 - x$

You are checking if a particular value of x & y make both sides of the equation true

$(5, 4)$ not a solution

$y = 2x - 3$

$4 = 2(5) - 3$

$4 = 10 - 3$

$4 = 7$

$(4, 5)$ is a solution

$5 = 2(4) - 3$

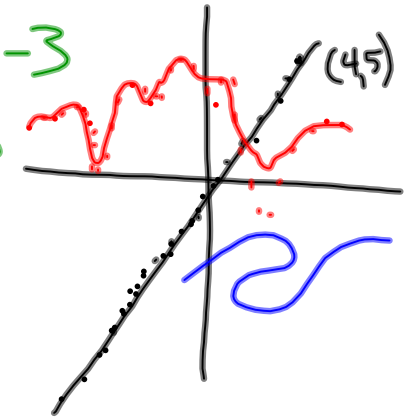
$5 = 8 - 3$

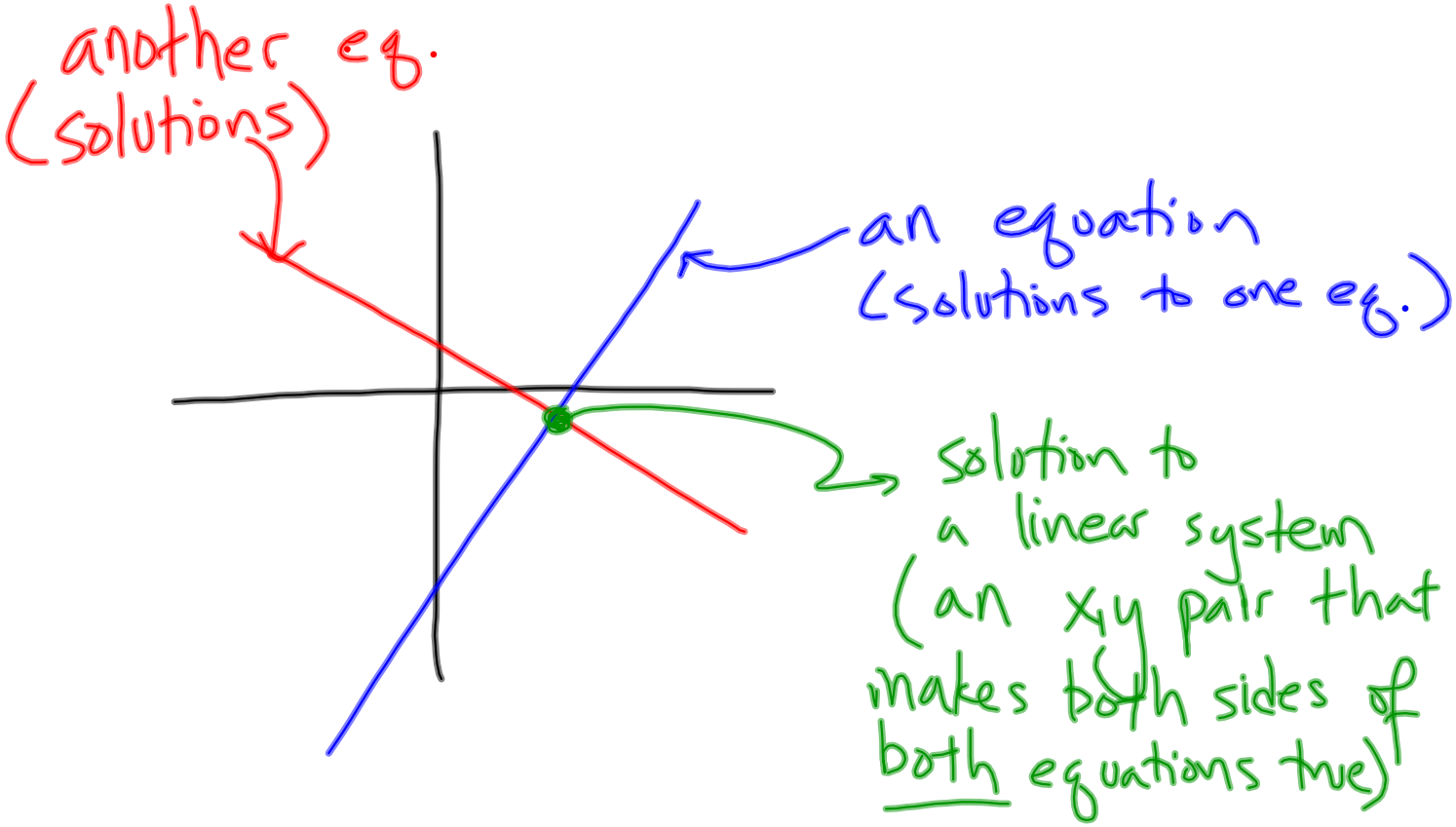
$5 = 5$

Have two variables

Check for solutions (ordered pairs)

Can be graphed (lots of possibilities)




another eq.
(solutions)
an equation
(solutions to one eq.)
solution to
a linear system
(an xy pair that
makes both sides of
both equations true)

Linear Equations

Standard form $-2x+3y=5$

Slope-intercept form

$-2x+3y=5$

$+2x \quad +2x$

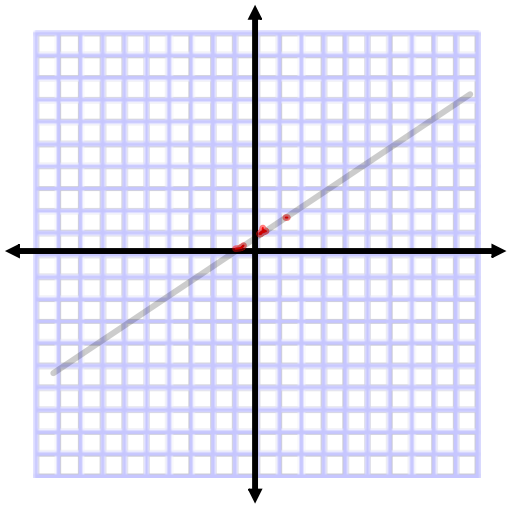
$\frac{3y}{3} = \frac{2x}{3} + \frac{5}{3}$

$y = \frac{2}{3}x + \frac{5}{3}$

Graphs make a line

$Ax + By = C$ (standard)

$y = mx + b$



Make a table and plot

$y = \frac{2}{3}(-1) + \frac{5}{3} = -\frac{2}{3} + \frac{5}{3} = \frac{3}{3} = 1$

$y = \frac{2}{3}(0) + \frac{5}{3} = \frac{5}{3}$

$y = \frac{2}{3}(1) + \frac{5}{3} = \frac{2}{3} + \frac{5}{3} = \frac{7}{3}$

x	y
-1	1
0	$\frac{5}{3}$
1	$\frac{7}{3}$

$1\frac{2}{3}$

$2\frac{1}{3}$

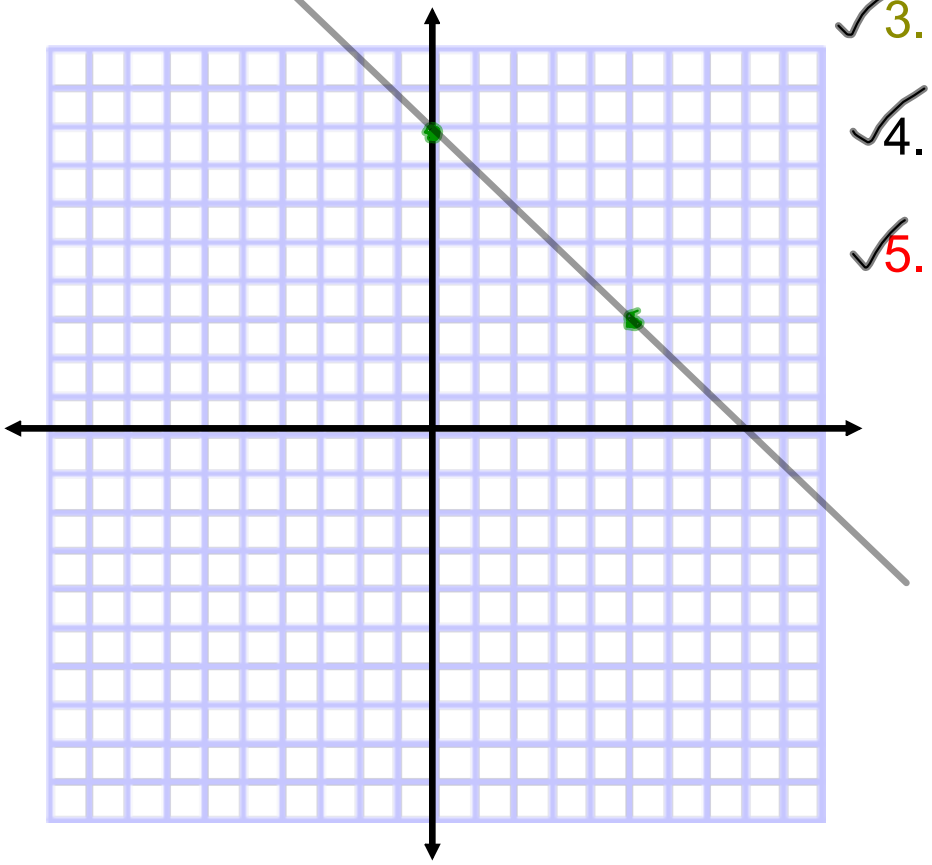
Steps for Graphing:

$y = 8 - x$

$y = 8 - (-5)$
$= 8 + 5$
$= 13$

$y = 8 - 0$
$= 8$

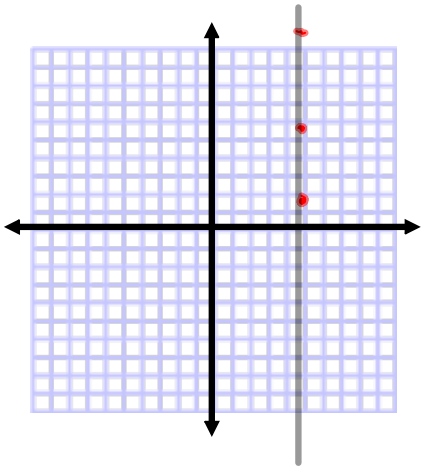
$y = 8 - 5$
$= 3$



1. Solve the equation for y
2. Make a table of x and y values
3. Pick two random x values and solve for y
4. Graph the coordinates on a plane
5. Connect the points with a line

x	y
−5	13
0	8
5	3

Horizontal and Vertical Lines



x	y
5	2
5	11
5	7

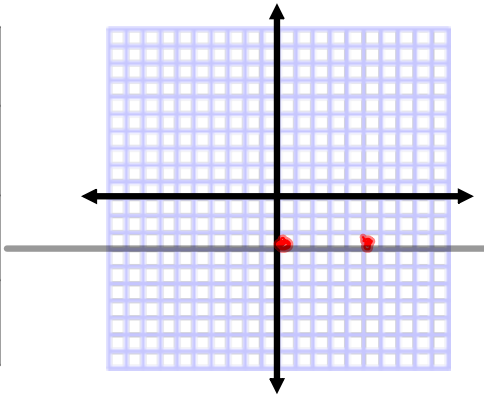
$x = 5$
(vertical)

$x = a$

(horizontal)

$y = b$

x	y
5	-2
0	-2
1,000,000	-2



$y = -2$

$6x - 3y = 9$; domain: $x < 1$

$-6x \qquad -6x$

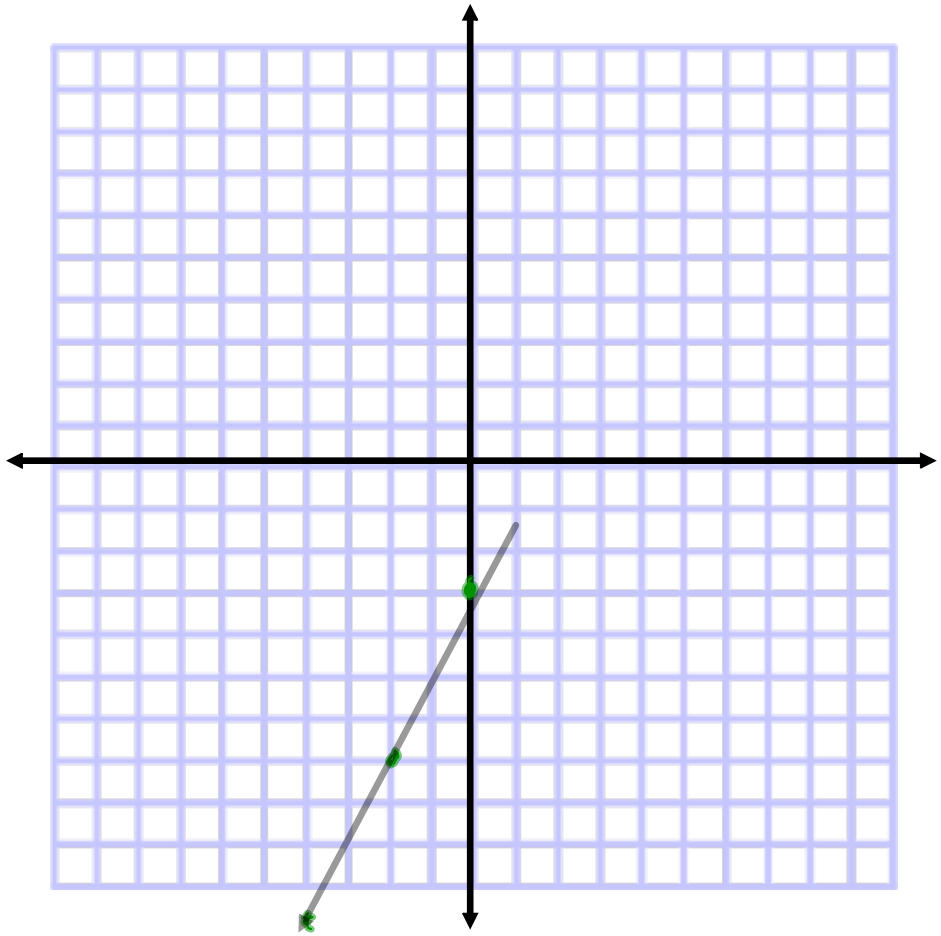
$\frac{-3y}{-3} = \frac{-6x}{-3} + \frac{9}{-3}$

$y = 2x - 3$

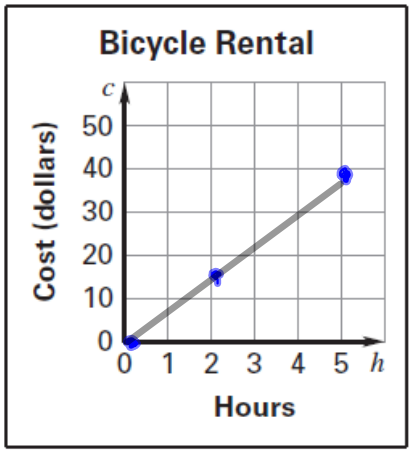
x	y
0	-3
-2	-7
-4	-11

not a solution!

$3 \qquad 3$



Bicycle Rental A bicycle rental shop rents bicycles for $8 per hour. The total cost c (in dollars) for renting a bicycle h hours is given by the function $c = 8h$. Once you get to the rental shop, you figure you can rent a bicycle for at most 5 hours. Graph the function and identify its domain and range. What is the most that you will pay for renting the bicycle?



$8 per hour

c = total cost

h = # of hour

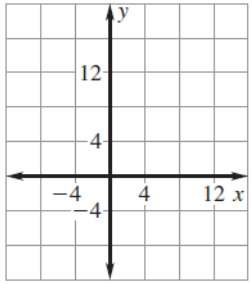
c = 8h

(no h < 0)

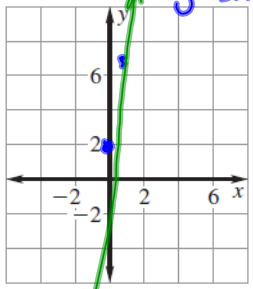
(no h > 5)

h	C
0	0
5	40
2	16

10. $y + x = 14$

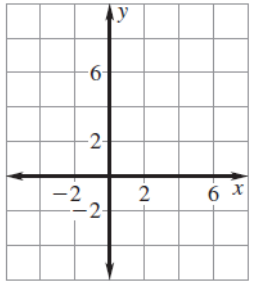


11. $y - 5x = 2$ $+5x$ $+5x$ $y = 5x + 2$

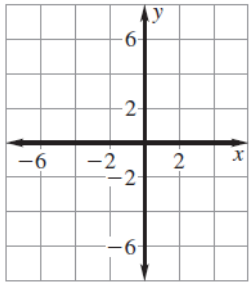


x	y
1	7
2	12
0	2

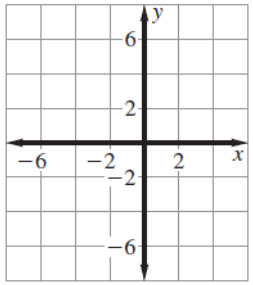
12. $2y - 4x = 10$



13. $x = -6$



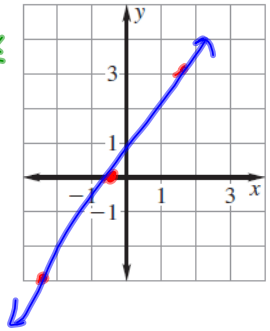
14. $y = 4$



15. $3x - 2y = 0$ $-3x$ $-3x$

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

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



x	y
−2	−3
0	0
2	3

Homework:

p. 219; 4-16 by 4, 26, 36, 38