Math-2A

Lesson 4-4

Equations of Lines

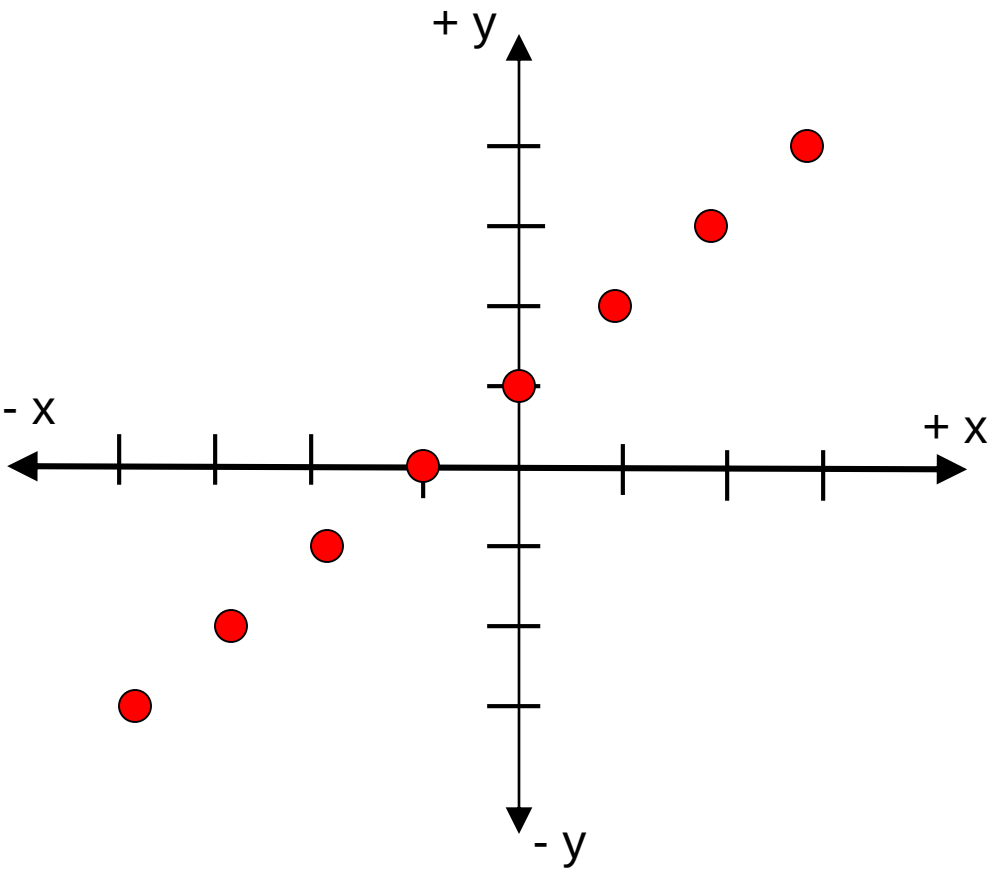
How can an equation “make” a line?

$y = x + 1$

Fill in the rest of the table

x	rule x + 1	f(x)
-4	-4 + 1	-3
-3	-3 + 1	-2
-2	-2 + 1	-1
-1	-1 + 1	0
0	0 + 1	1
1	1 + 1	2
2	2 + 1	3
3	3 + 1	4

Graph the x-y pairs



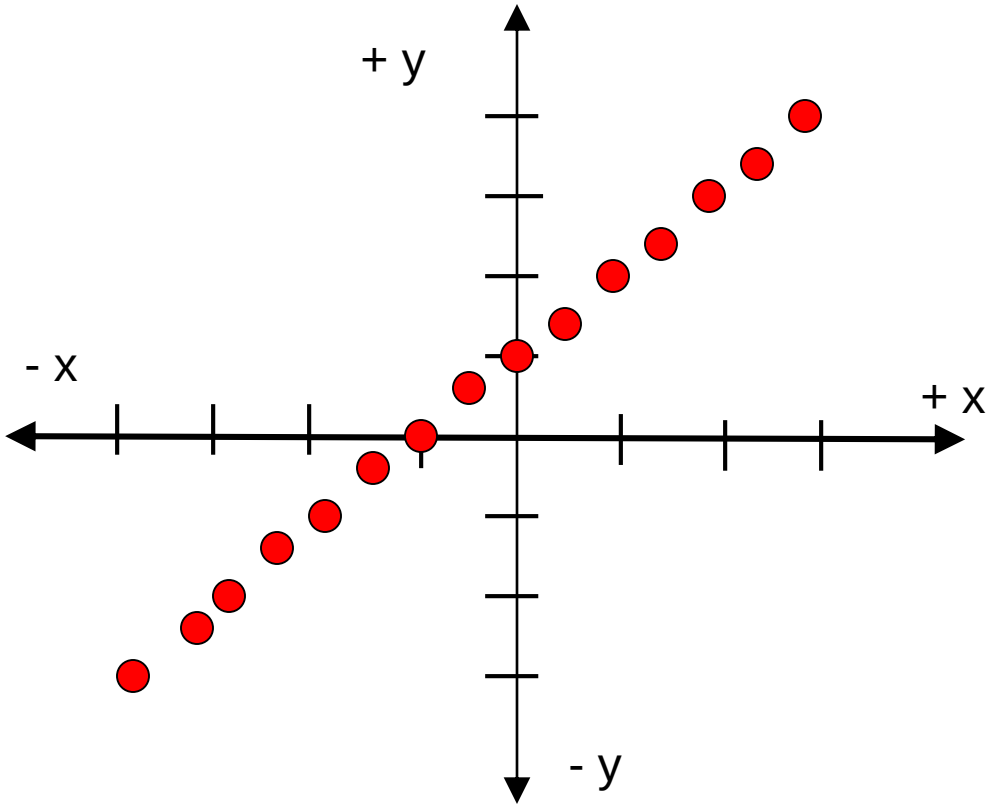
$y = x + 1$

So far we've picked on "integer" values for 'x'. We can also pick rational numbers between the integers.

Fill in the rest of the table

x	y
-2.5	-1.5
-1.5	-0.5
-0.5	0.5
0.5	1.5
1.5	2.5
2.5	3.5

Graph the new x-y pairs on the same graph.

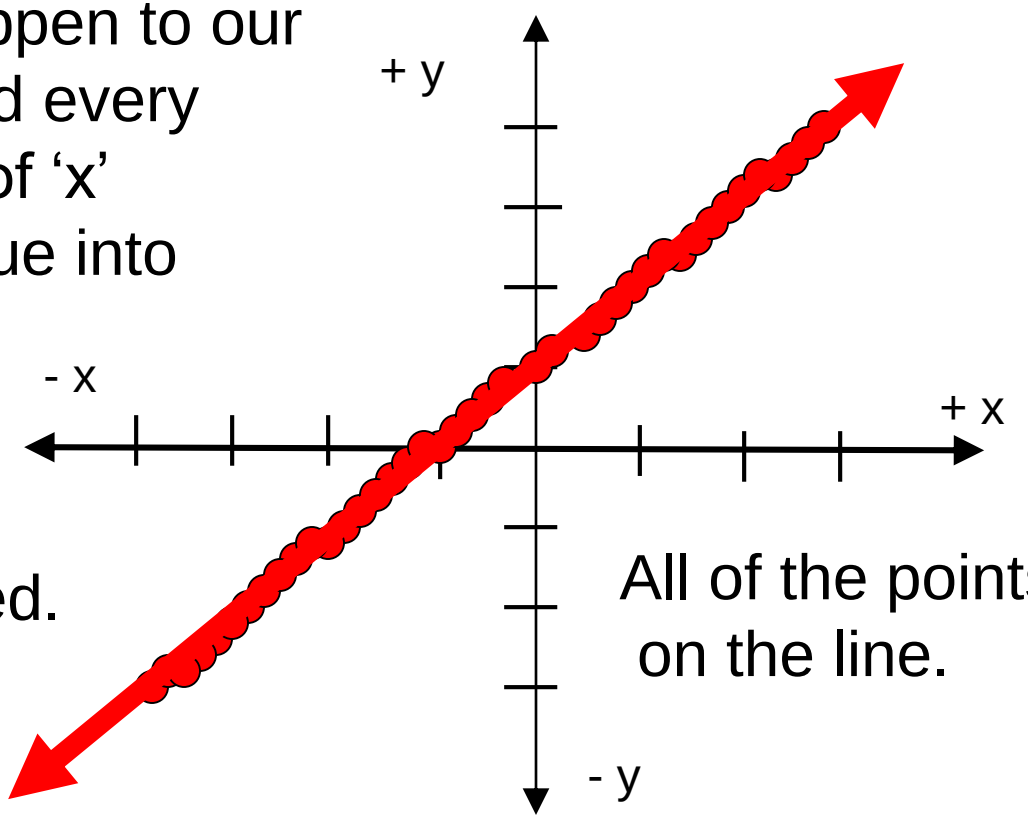


$y = x + 1$

So far, we've used integers and #'s halfway in between.

How many numbers are there between any 2 integers?.

What would happen to our graph if we used every possible value of 'x' as an input value into the function?



More and more points are plotted.

All of the points fall on the line.

Slope Intercept Form: An equation of the form $y = mx + b$. Where m = slope and b = y intercept.

Y-intercept: The y-coordinate of a point where the graph intersects the y-axis. The x-coordinate of the y-intercept will always equal zero. (0, y)

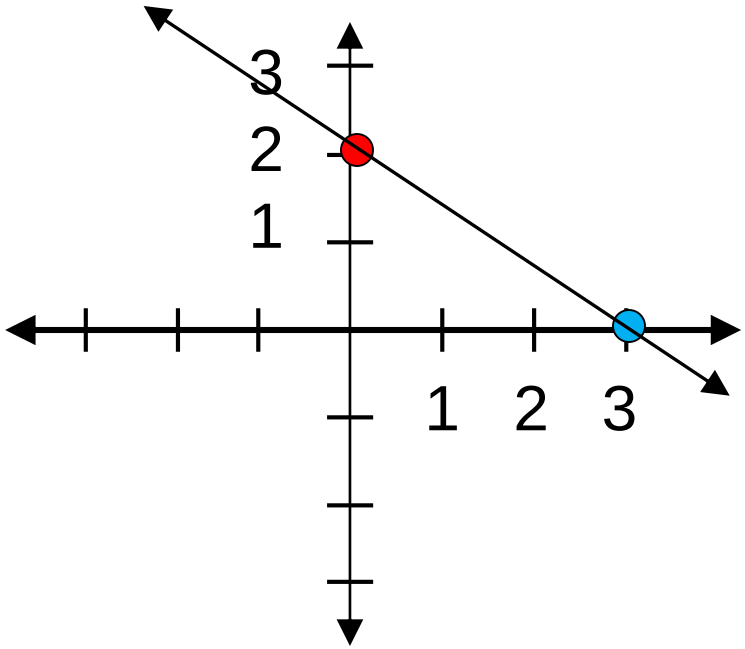
x-intercept: The x-coordinate of a point where the graph intersects the x-axis. The y-coordinate of the x-intercept will always equal zero. (x, 0)

1. What are the coordinates [(x, y) pair] of the x-intercept?

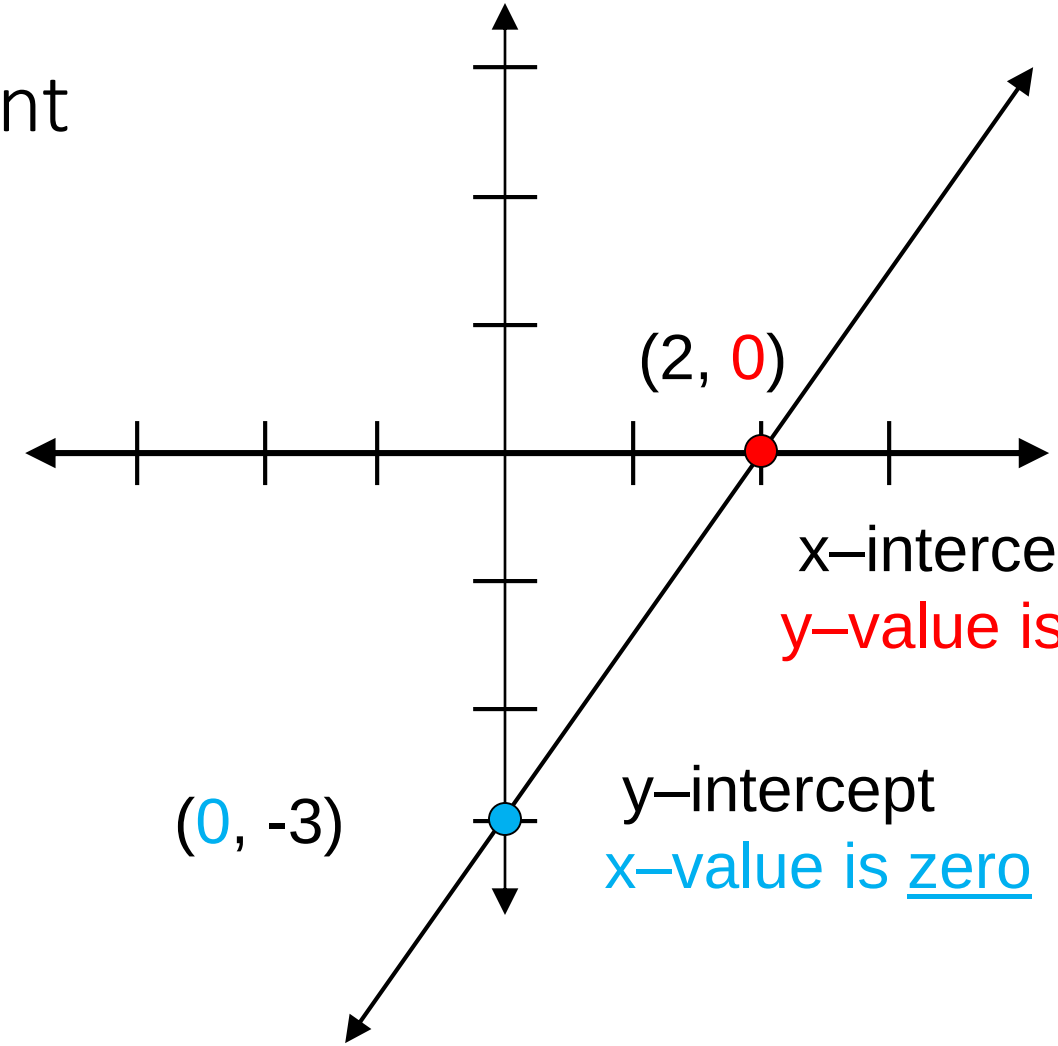
2. What are the coordinates [(x, y) pair] of the y-intercept?

3. What is the y-coordinate of the x-intercept?

4. What is the x-coordinate of the y-intercept?



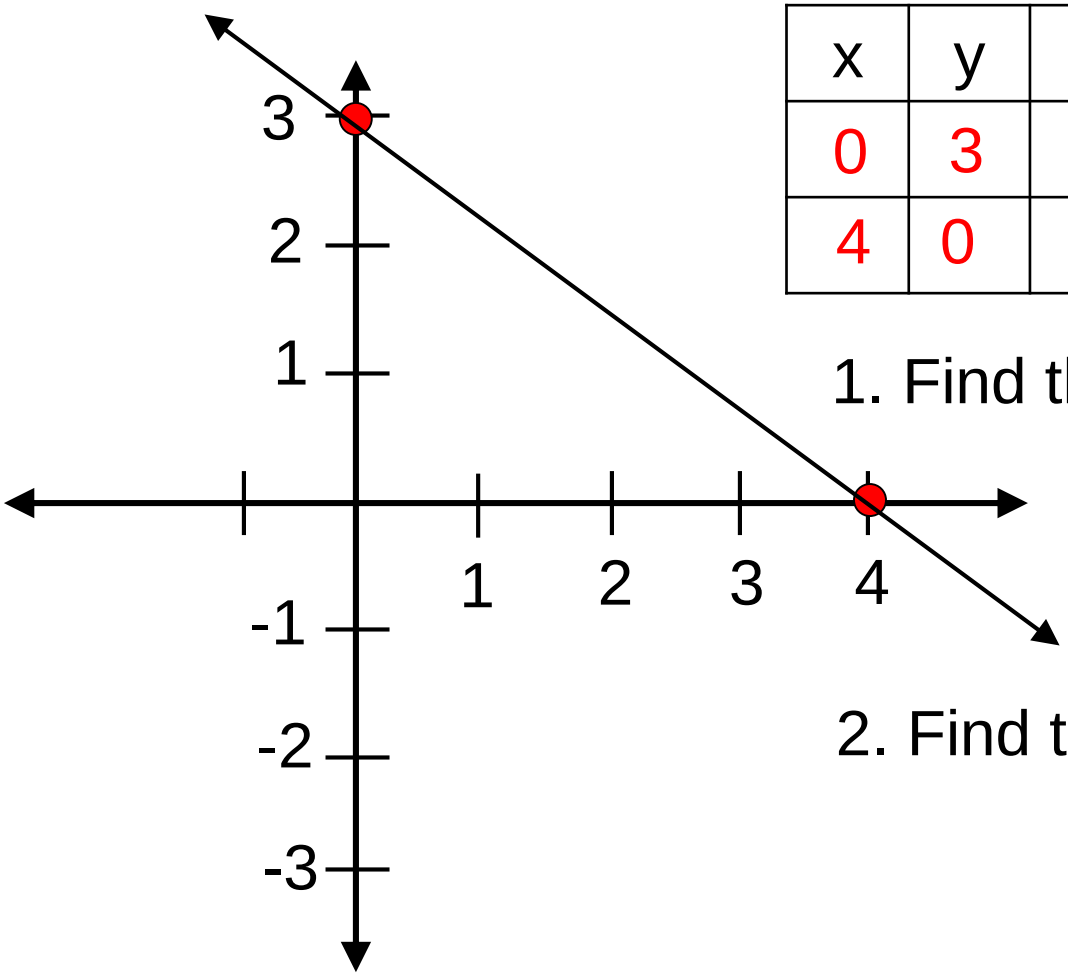
Key Point



Standard form of a linear equation: An equation Of the form: Ax + By = C.

Example: 3x + 4y = 12

Graphing Standard form equations.



x	y	Ordered Pair
0	3	(0, 3)
4	0	(4, 0)

1. Find the y-intercept (let x = 0)

$3(0) + 4y = 12$

$4y = 12$

$y = 3$

2. Find the x-intercept (let y = 0)

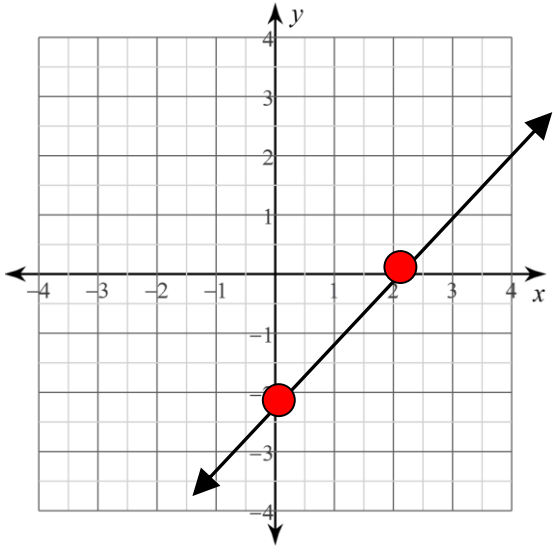
$3x + 4(0) = 12$

$3x = 12$

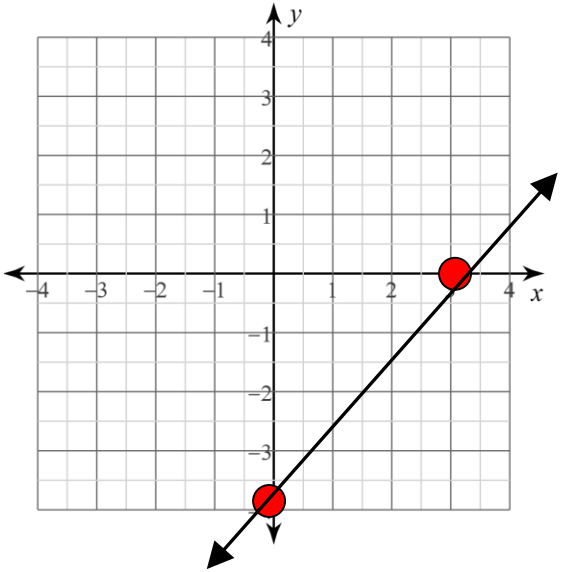
$x = 4$

Graph the lines.

3x - 3y = 6



4x - 3y = 12



-4x + 2y = 8