

## 2.2 Linear Equations

- 1) Identify linear functions and equations,
- 2) Write linear equations in standard form and graph them.

# Slope-intercept form

When an equation is solved for  $y = mx + b$ , it is in slope-intercept form. Putting the equation into this form makes it easy to graph.

The “**m**” is the slope of the line and “**b**” represents where the line crosses the y-axis.

# Standard Form

An equation in the form  $Ax + By = c$ , where  $A \geq 0$  and  $A$  and  $B$  are both not zero, is in Standard form.

## Is and Equation linear???

An equation is linear (the graph makes a straight line) if:

- 1) the highest power of any variable is 1, or
- 2) no variables are multiplied together, or
- 3) no variables appear in the denominator.

Linear???

$$\textcircled{1} \quad y = \frac{2x}{3}$$

$$\textcircled{2} \quad xy = 5$$

$$\textcircled{3} \quad y = \sqrt{x+4}$$

$$\textcircled{4} \quad x^2 + y = 3$$

Write  $y = -2x + 3$  into Standard Form.

1<sup>st</sup>) get  $x$  and  $y$  on the same side,  
2<sup>nd</sup>) make sure the coefficient of  $x$  is positive.

# Intercept Method

One way to graph a line is by finding where it crosses (intercepts) the x-axis and y-axis.

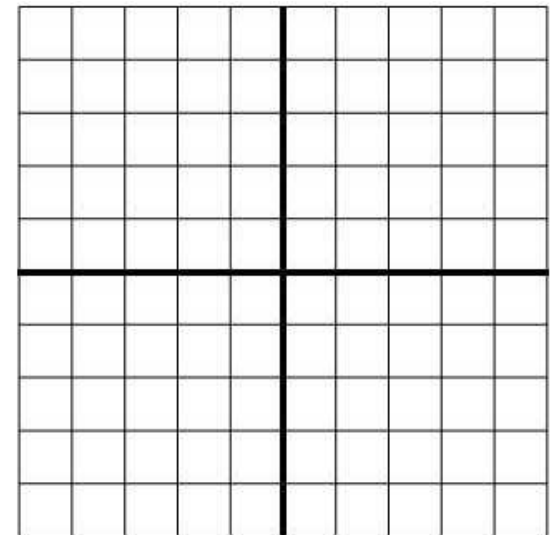
Graph  $3x - 4y + 12 = 0$

x-axis

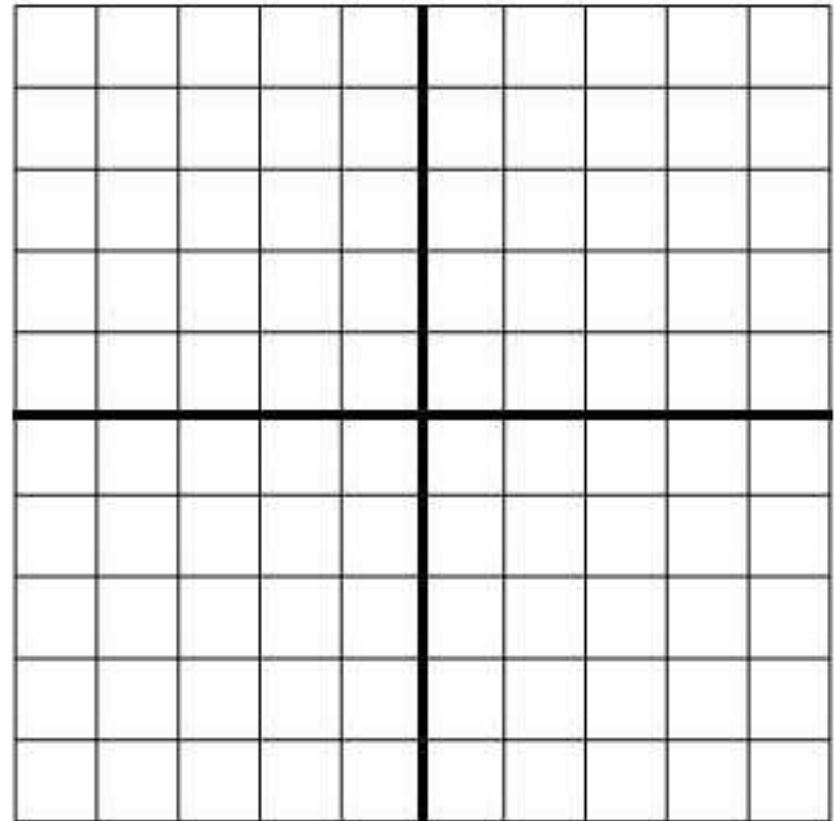
**let  $y = 0$**

y-axis

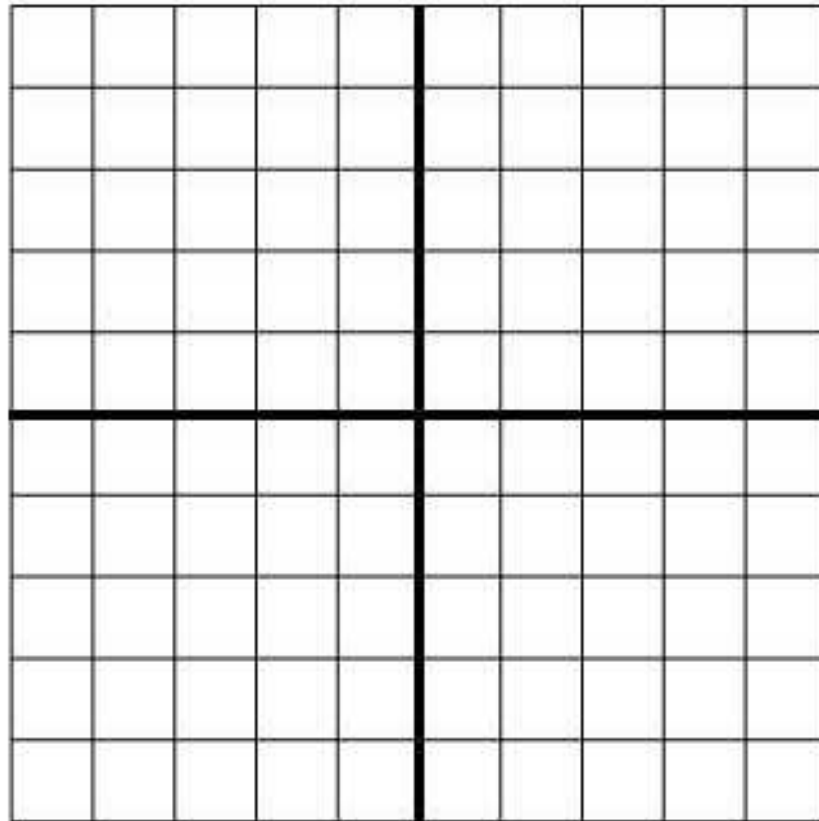
**let  $x = 0$**



Graph  $-6x - 2y = -8$  using the  
Intercept Method.

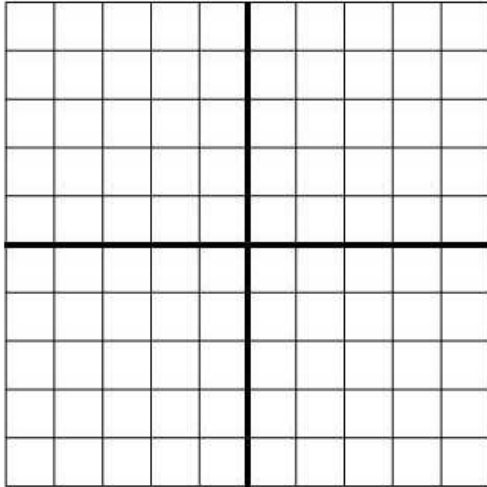


Graph  $y = 2x - 3$

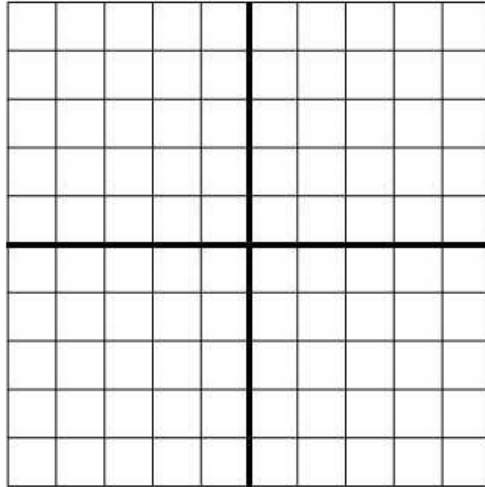


# Special graphs

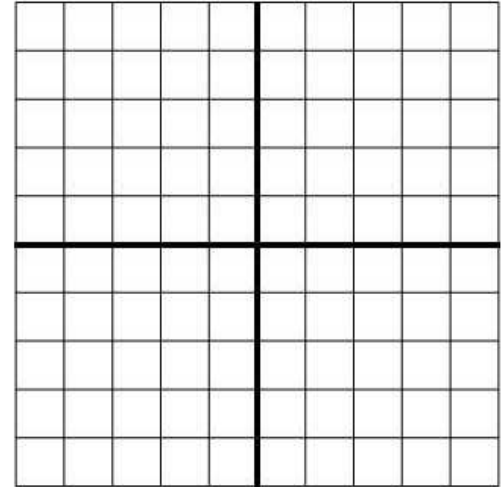
Vertical line



Horizontal line



45° angle line



# Homework

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