

These notes are meant to supplement the material not be a substitute. Please read the book and these notes to help you prepare for doing homework and understand class topics.

1. What is a graph?
2. constructing meaningful plots and graphs
3. plotting x-y data on a graph
4. describing plots or graphs
5. reading and interpreting data from plots
6. Finding intercepts
7. Linear equations

Graph of Equations

The graph of an [equation](#) can help you see relationships between real-life quantities. Graphs and plots are key in introductory courses in which quantitative skills are emphasized because they are the essence of giving students multiple representations of mathematical concepts; they can be expressed numerically, visually, and symbolically.

What is a graph? Why are they so important?

Graphs play an important role in the modeling and understanding of complex natural systems and pop up in a number of places in the introductory geoscience curriculum.

Essential concepts

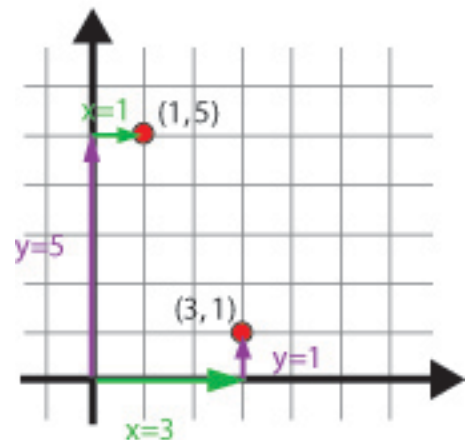
Although they are certain to have experienced plots and graphs in high school, students often struggle with the basics of graphing. When I teach graphs, I find that there are five important concepts that I expect my students to be familiar with:

Plotting data

there are two axes - horizontal (often called the

x-axis) and vertical (often called the y-axis),
a point on the graph is denoted by an ordered pair (or coordinates (e.g., (3,8)) where:

- the first number refers to horizontal position on the x-axis,
- the second number refers to vertical position on the y-axis,

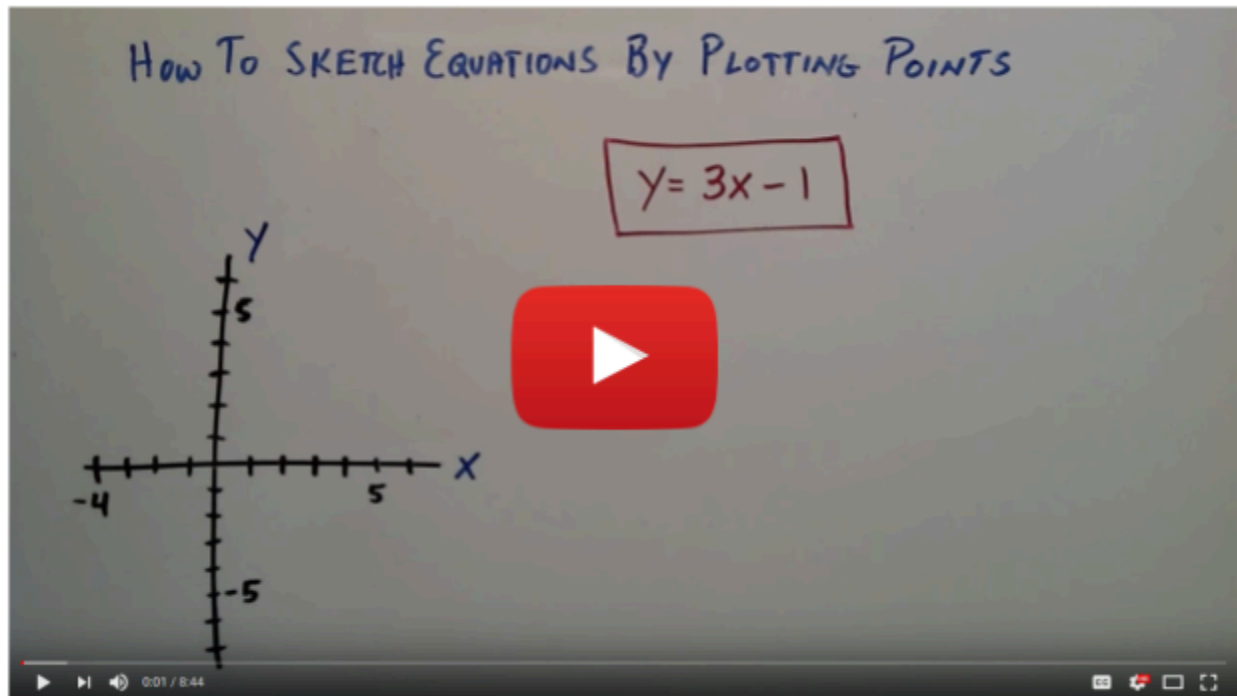


- sometimes the ordered pairs are listed in tabular format with headings that correspond to the labels on the axis

the two axes intersect at point called the origin with coordinates $(0,0)$,

the reason that we plot data is so that we can more easily observe trends or behavior of the data

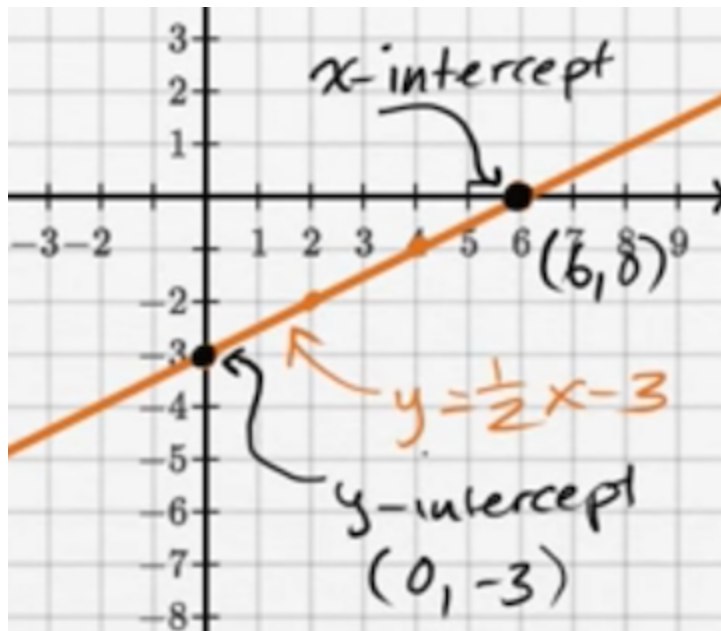
Sketch a graph by plotting points



Intercepts of a graph

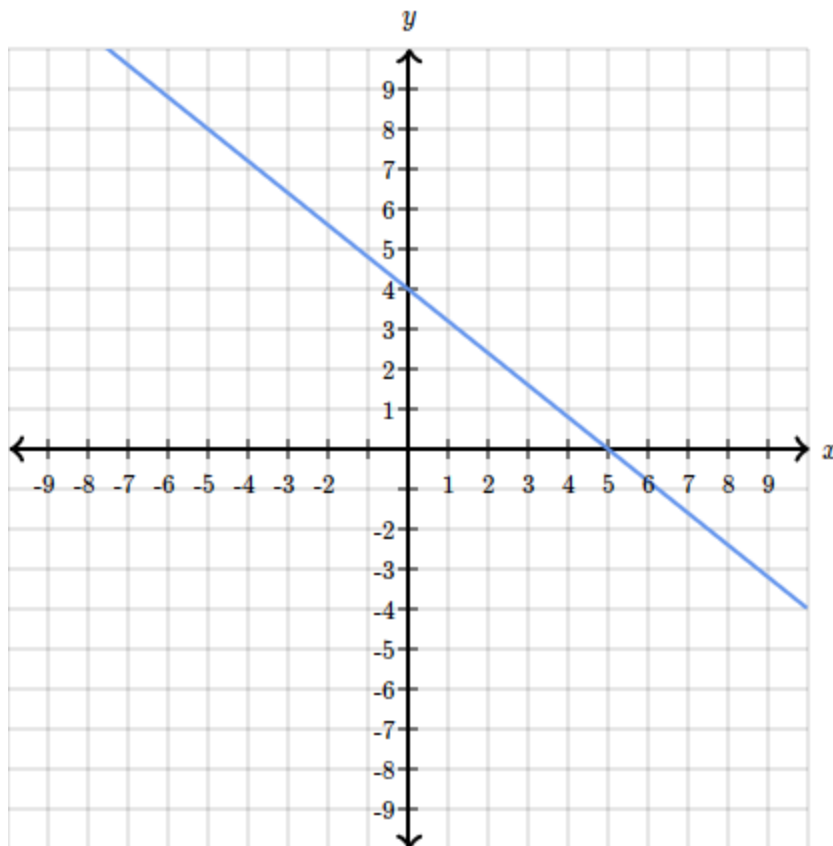
What are intercepts?

The x-intercept is the point where a line crosses the x-axis, and the y-intercept is the point where a line crosses the y-axis.



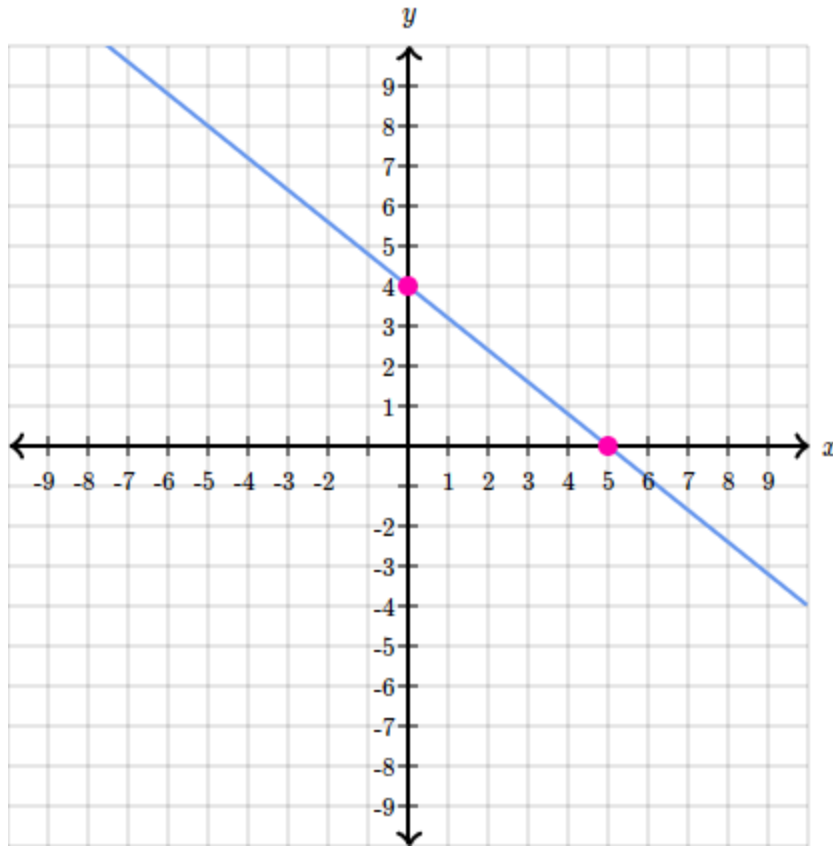
Examples: Intercepts from a graph

Looking at the graph, we can find the intercepts.



Functions and their Graphs (Graph Of Equations)

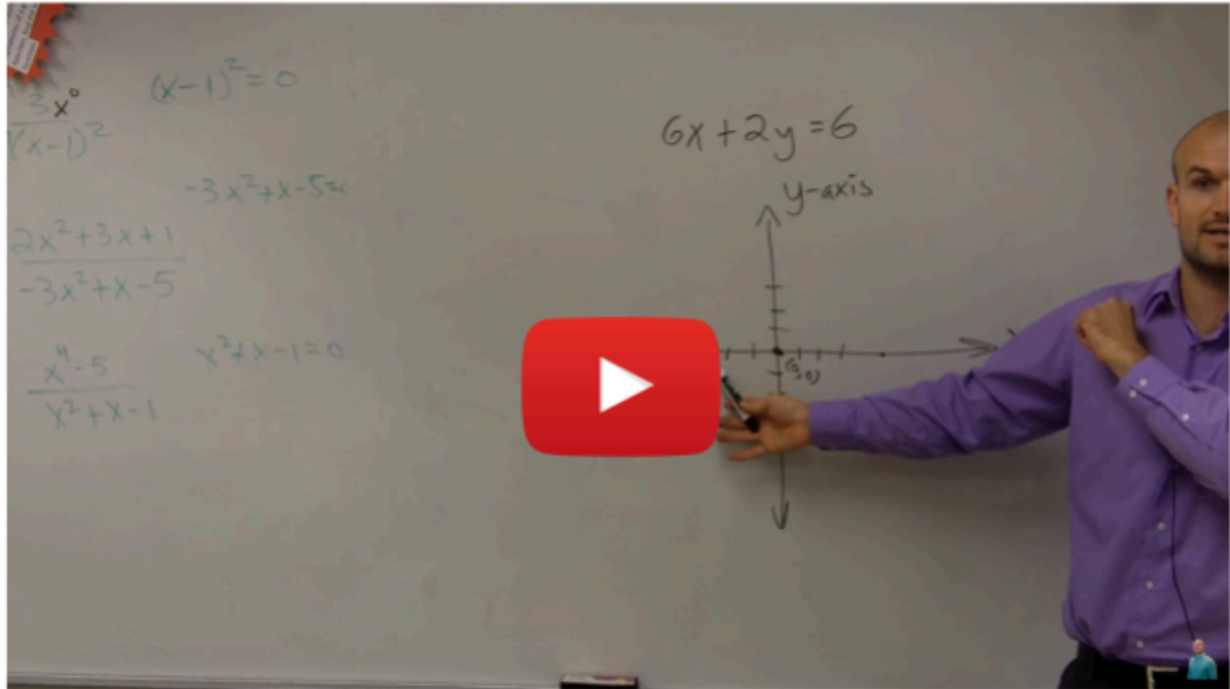
The line crosses the axes at two points:



The point on the x-axis is **(5,0)**. We call this the x-intercept.

The point on the y-axis is **(0,4)**. We call this the y-intercept.

Finding Intercepts from an equation



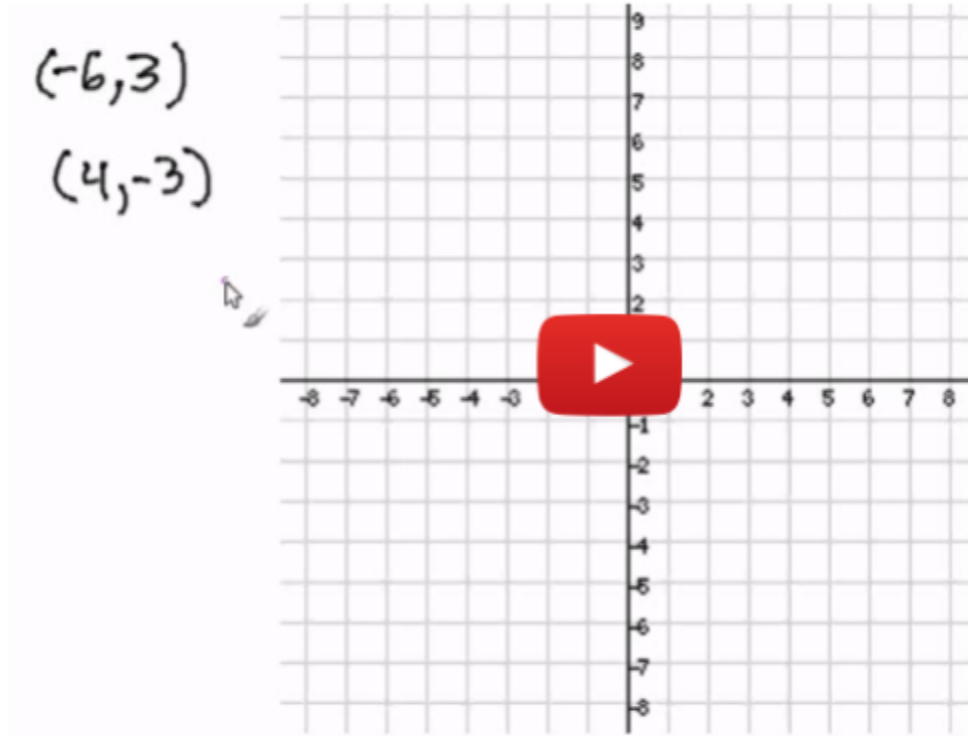
#linearequations #graphinequations

How do find the x and y intercepts and graph

Linear Equations in two variables

A linear equation in two variables describes a relationship in which the value of one of the variables depends on the value of the other variable. In a linear equation in x and y , x is called x is the independent variable and y depends on it. We call y the dependent variable. If the variables have other names, yet do have a dependent relationship, the independent variable is plotted along the horizontal axis. Most linear equations are functions (that is, for every value of x , there is only one corresponding value of y). When you assign a value to the independent variable, x , you can compute the value of the dependent variable, y . You can then plot the points named by each (x,y) pair on a coordinate grid. The real importance of emphasizing graphing linear equations with your students, is that they should already know that any two points determine a line, so finding many pairs of values that satisfy a linear equation is easy: Find two pairs of values and draw a line through the points they describe. All other points on the line will provide values for x and y that satisfy the equation.

Finding the slope given two ordered pairs (two points)



Finding the Slope Given 2 Points

Writing Equations of Lines Parallel and Perpendicular to a Given Line Through a Point

