Lesson 2

Practice of Lesson 1

Factor
x^2 + 2 x + 1

Simplify
x^2 + 2 x + 1

Solve
2x =6

Using both methods used in class, give me the Square root of

x^2 + y^2

Lists and Matrix Form

m={{a,b}, {c,d}}

m // MatrixForm

Equations

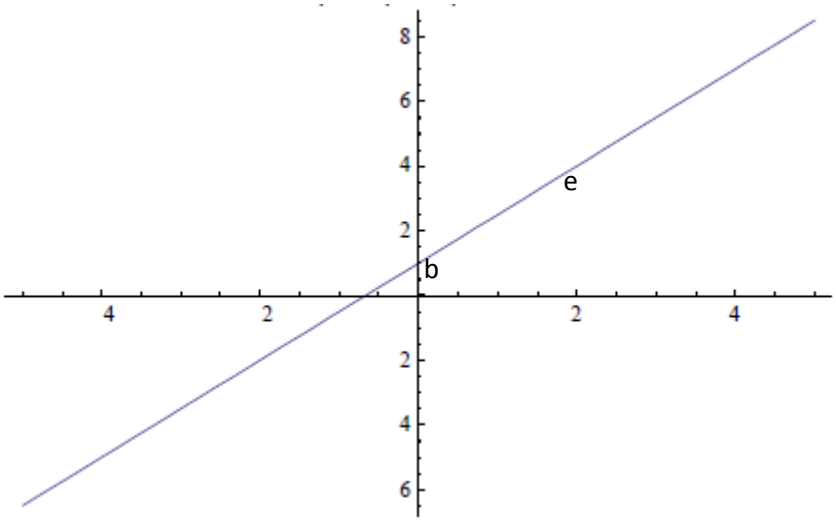
For x =2, and y=3

$$\frac{|x^2 - y^3| - 4x}{3y^5} = \frac{5}{243} = 0.02$$

For x = -3, y=2, and z = -2

$$\sqrt{x^4 y - z} + \frac{x - y^3}{z^2} = 2\sqrt{41} - \frac{11}{4} = 10.06$$

Euclid Graphs	Linear Algebra and Euclid Graphs
 He was a Greek Mathematician EucladianGraphs http://en.wikipedia.org/wiki/Eucl	Y = mx +b m = b =



The slope m of the line through the points (x_1, y_1) and (x_2, y_2) is given by

$$m = \frac{y_2 - y_1}{x_2 - x_1} \qquad (x_1 \neq x_2)$$

Why can't x1 not equal x2

Using "b" for the y intercept for the first point (x1, y1). Find a second point "e" for (x2, y2) and find the slope of the line.

Your answer should be in Y = mx +b

In order to use the above linear equation in Mathematica we need to use "Plot" function. Moreover a range should be specified to limit the x or y axis. Range is included inside the Plot function after your linear equation.

include only slope and y intercept for your linear equation in your code.

Plot[linear equation, Range{}]

Range is specified in the following format {x, -5, 5 }

Distance Formula

Letting (x_1, y_1) and (x_2, y_2) represent two points on the Cartesian plane, the distance between these two points may be found using the following formula, derived from the Pythagorean Theorem:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Using the following points from the previous graph (0,1)=b and (2,4)=e find the distance between these points.

Use mathematica to do this problem. Show code.

Midpoint Formula

Letting (x_1, y_1) and (x_2, y_2) represent two points on the Cartesian plane, the midpoint between these two points may be found using the following formula, which finds the average of the two x-values and the average of the two y-values:

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Find the Midpoint for points "b" (0,1), "e" (2,4)

Use mathematica to do this problem. Show code.

Point-Slope Form of a Line

Given an ordered pair (x_1, y_1) and a real number m, an equation for the line passing through the point (x_1, y_1) with slope m is $y - y_1 = m(x - x_1)$. Note that m, x_1, and y_1 are all constants, and that x and y are variables. Note also that since the line, by definition, has slope m, vertical lines cannot be described in this form.

Find the equation, in slope-intercept form, for the line which is parallel **to this line and passes through the point (0, 4)**

Use the slope found previously for this equation. Put the equation in Mathematica are the graphs the same.

Plot[{linear equation 1, linear equation2**}, Range{}]**