High level user stories

Users should be able to access the server so that they can use the service.

Users should be able to input valid algebraic equations so they have a place to start their manipulations.

Users should be able to see the expressions rendered in MathJax so that the expression they entered is clearUsers should be able to access the server so that they can use the service.

Guests should be able to register accounts so that they can maintain a profile with the service.

Members should be able to save their work so that their work isn't lost between sessions.

Users should be able to apply basic operations to their equations and expressions so that they can manipulate their equations

Users should be able to fully manipulate an equation so that they can use the service to its full potential

Users should be able to add comments between operations steps so that they can clarify or explain why they chose to do an operation

Users should be able to log into a website to access the application intead of having to download it and run it on a local server so that the service is easy to find and use.

Low level

As a user, if there is a tree (Specifically OpNode) of the form {expression} {+ or -} {parens} (or vice versa), I want to be able to dissolve the parens subtree so that I can better manipulate the equation, as the parentheses are useless at this point

As a user, if there's a tree of the form {expression} {* or /} {parens} (or vice versa), I want to be able to distribute the expression to all of the factors of the parens subnode so that I can dissolve the parens node and better manipulate the equation

As a user, I want to be able to click on a {*} or {+} node and be able to re-arrange the left and right subtrees

As a user, I want to be able to click on the {=} node and be asked if I want to apply an operation to both sides

As a user, i want to be able to click on any non-equation node and be asked if I want to multiply by 1 or add 0 at this subtree

As a user, I want to be able to click on a node and see equivalent subtrees highlighted so I know what expressions are equal to the one I clicked.

As a user, when I click on a node and see that the left or right hand side of another defined equation is equivalent to the subtree I clicked, I want to be able to substitute the subtree I clicked on with the other child of the defined equation. (For instance, if I click on an x node, and there's another equation that says 'x=2', then I want to be able to replace x with 2)

As an Algebreezy designer, I want to be able to check if two subtrees are 1.) strictly equal and 2.) isomorphic to one another so that I can write code to check for equality in equations and subtrees

As an Algebreezy designer, I need to be able to evaluate the value of an expression so that I can pass this value on to other modules, such as a graph.

As an Algebreezy designer, I need to be able to output an expression as LaTeX formatted text so I can pass it on to other modules (MathJax)

As an Algebreezy designer, I need to be able to output an expression as plain text (The same format it was input as) so that I can copy / paste it.

Rough idea: Make parser accept syntax like x_0, or v_wave to be a subscript

As a user, I want to type shorthand equations like 3x=4 to mean 3*x=4 so that equations I type aren't so tedious.

As a user, I want to be able to press the enter key and see the equation that I typed show up as LaTeX text.

As a user, I want to be able to download all data in my scratchpad to be able to share my work with other users via file.

As a user, I want to be able to name my scratchpad, so that I can refer to it quickly.