

High-level Requirements

1. The expression manipulation page will allow the user to interact with the expression tree in order to transform it.
2. The expression manipulation page will display a goal expression into which the user must transform the current expression tree.
3. The expression manipulation page will have a history bar to allow the user to backtrack to an earlier expression state.
4. The expression manipulation page will render an expression as a graphical tree structure.
 - a. The expressions will be composed of non-mathematical symbols.
 - b. The expression tree should have an inviting appearance, and animate when interacted with.
5. Transformations of expression tree should follow simple discoverable algebraic laws.
6. The website should allow users to ask for help with a problem, for which an AI will determine an algebraic action to suggest to the user
7. The website should allow users to create their own problems using an editor that can both create an expression tree and a goal expression.
 - a. Users can have the option of publicly sharing the problems they create for other users to potentially solve
 - b. Users can share links to problems.
8. The website should have an option to generate a problem
 - a. The user should be able to request problems regarding specific algebraic concepts.
 - b. The user should be able to request problems with random expression-goal pairs.
9. The website should have a tutorial system to give new users a quick walkthrough of the interface.
10. Users should have the option to create an account with the system. Registered users should be able to save problems and group problems into lessons.
11. A central database will store user account data, the problems users create, and links to problems and lessons.