

# FunctionWizard<sup>©</sup> Design Document

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## ***Product Description:***

Function Wizard is an application that helps users explore the different properties of a polynomial. The application has two main features. The first feature of the application allows users to enter two different polynomials into text boxes in the user interface. The user can then add, subtract, multiply or divide the two polynomials. The second feature is a polynomial grapher that allows the user to graph any polynomial of their choice. The graphing feature creates a separate window where the graph of the function will be displayed. From the graph of the function, the user will be able to determine the roots, end behaviours and maximums and minimums of the function, along with the general shape of the function.

## ***Marketing Description:***

Is your math homework getting you down? Are you stressed about your next math test? If so, you should buy FunctionWizard<sup>©</sup>. FunctionWizard is the all in one Polynomial calculator that will help you double check all of your math solutions! FunctionWizard<sup>©</sup> can add, subtract, multiply, divide, and also find the exact and approximate roots of any polynomial! All you have to do is enter in the polynomials of your choice and choose which operation you would like to apply to the polynomials. With the click of a button, our application calculates the answer and immediately displays it to the screen. This will save you time and frustration, as it will allow you to easily double check your work. In addition, our calculator can also graph any function of your choice! Simply enter the polynomial you would like to graph and hit the graph button. Our program will create a simple sketch of the function, that will allow you to determine the general characteristics of the function. Think of the long hours you spent, the never-ending equations with 20+ terms you need to simplify, the tear-drenched pages, the frustration at the fact that you forgot an exponent somewhere, and you will start to realize the immense value of this software product. For all of your function needs, use FunctionWizard.

## ***Feature Description:***

### **Polynomial Calculator:**

The Polynomial Calculator allows the user to input two different polynomials of any degree into separate text boxes. The user can then choose which operation they would like to conduct with the two polynomials. The program will perform the calculation and print the result to the screen so that the user can double check their own work.

### **Polynomial Grapher**

The polynomial grapher allows users to graph any polynomial they choose. The user can enter the polynomial in the user interface and then click the “Graph Polynomial” Button. The program produces a sketch of the function in a separate window. From the graph, the user will be able to determine the x and y-intercepts, the end behaviours, the local maximums and minimums, and also the general shape of the function.

## Roots Finder

The roots finder feature allows the user to enter any polynomial, and calculate the exact, and also the approximate roots of the function. The roots finder can approximate the roots within two decimals of accuracy.

## Schedule

Task	Team member(s) responsible	Target completion date	Status
<b>Write the Design Document</b>			Complete
- Product description	Owen	Tues.-Wed.	Complete
- Features description	Owen	Tues.	Complete
- Marketing description	Angela	Tues.	Complete
<b>Code the main program</b>	All (see below)	Wed.	Complete
- setup() (the high-level algorithm)	Angela	Second day	Complete
- Code Polynomials Class	Angela	First week	Complete
- getSum()			
- getDifference()			
- multiply()			
- divide()			
- findRationalRoots(), findApproxRoots()	Angela	Mon.-Tues.	Complete
- graph()	Owen	Mon.-Wed.	Complete
- findDerivative()	Owen, Angela	Mon.	Complete
<b>Create the GUI</b>			Complete
- Design the layout on paper	Angela	Mon.	Complete
- Code the GUI	Angela	Tues., Wed.	Complete
<b>Testing and debugging of main program</b>	All	Wed.	Complete
<b>Write internal documentation</b>	All	Wed.	Complete
<b>Write external documentation</b>	Owen, Nikesh	Wed.	Complete
<b>Submission</b>			Complete
- Make a .zip file of the application	Angela	Wed.	Complete
- Deploy as an executable .exe file	Angela	Wed.	Complete
- Submit on Google Classroom	Angela	Wed.	Complete