



# PolyCalc 2.0

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## User Manual

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## **Introduction**

Hey there! Thanks for choosing PolyCalc 2.0! We're at the top in the calculator industry for simulating the most realistic polynomial calculator with an easy-to-use graphical user interface. This polynomial calculator will help you better understand the polynomial world and excel in your math classes!

## **Equipment/Software Required**

- Processing 3.5.3
- G4P GUI Builder 4.3
- A functioning computer
- Mouse and keyboard
- A monitor with a screen that is at least 1200 pixels wide and 1000 pixels tall

# User Interface

## Control Window

The control window of our polynomial calculator is composed of various text fields and a drop list with different options. The user can type the polynomial function in the text fields, and check the answer on the textbox, the user may also use the drop list for different computations of the polynomial functions.

The screenshot shows a window titled "PolyCalc2" with a standard macOS-style title bar (red, yellow, and grey buttons). The interface is divided into several sections:

- Top Section:** A light blue button labeled "PolyCalc 2.0" is centered at the top.
- Input Section:** Below the top button, there are two columns. The left column has a red label "Enter Your 1st Polynomial" above a white text input field. The right column has a red label "Enter Your 2nd Polynomial" above a white text input field.
- Operation Section:** Between the two input fields is a blue button labeled "Select" with a small blue dropdown arrow on its right side.
- Info Section:** Below the input fields, there are two "Polynomial Info:" labels in blue boxes, each followed by a large white rectangular area for displaying information.
- Progress Bar:** A horizontal green progress bar with a dashed line is located below the info sections.
- Output Section:** At the bottom, there is a green label "Answer:" followed by a large white text input field. Below this is another "Polynomial Info:" label in a blue box, followed by a large white rectangular area for displaying information.

## Enter Polynomials

<b>Enter Your 1st Polynomial</b> <input type="text"/>	<b>Enter Your 2nd Polynomial</b> <input type="text"/>
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- The two text boxes above are for the user to type in their polynomial functions and the user can input by clicking the textbox. The user can choose to type 1 or 2 polynomial functions at once.
- The format for input is as follows:

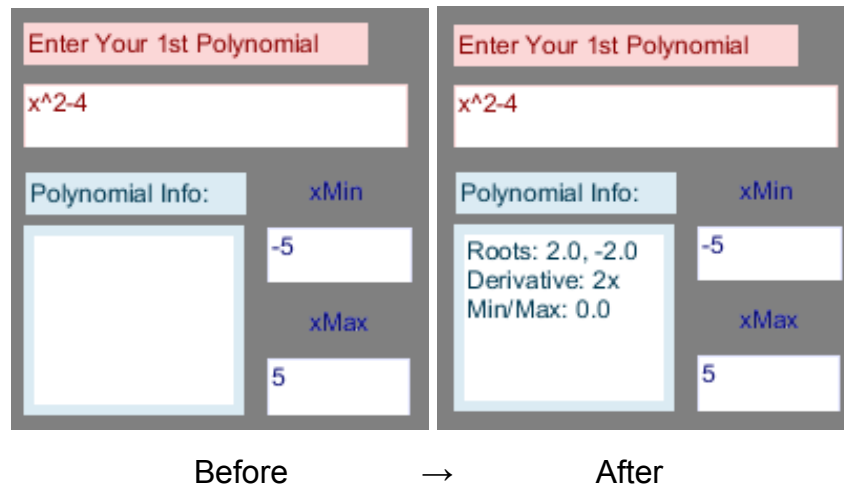
E.g.  $4x^4+5x^2+2x+7$

- DO NOT put a space in between the polynomial terms, keep the operation signs (e.g. "+") in between with no space
  - Use "^" for exponents
  - Put the constant at last
- Specify the range of x-values by entering the maximum and minimum value of x in the text boxes below. Those two values will be used when graphing the polynomial function.

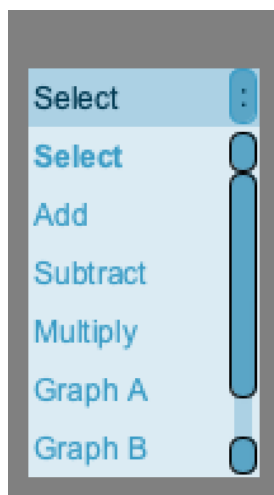
xMin
<input type="text" value="-5"/>
xMax
<input type="text" value="5"/>

## Polynomials Information

- The box below the polynomial function will display more information about the polynomial, which will show its rational roots, rational maxima/minima, and derivatives. Simply click the white textbox underto see more information



## Select An Operation



- This drop list can be found in between the two textboxes that store polynomial functions the user input.
- The drop list contains various operations for polynomials, including addition, subtraction, multiplication and graphing. The user can select any operations by clicking the corresponding option.

## Displaying Answer

- The answer can be found by clicking the white box under the green line, and the corresponding polynomial information of the polynomial roots, maxima/minima, and derivatives will be shown.
- All answers can be updated by clicking the box again.

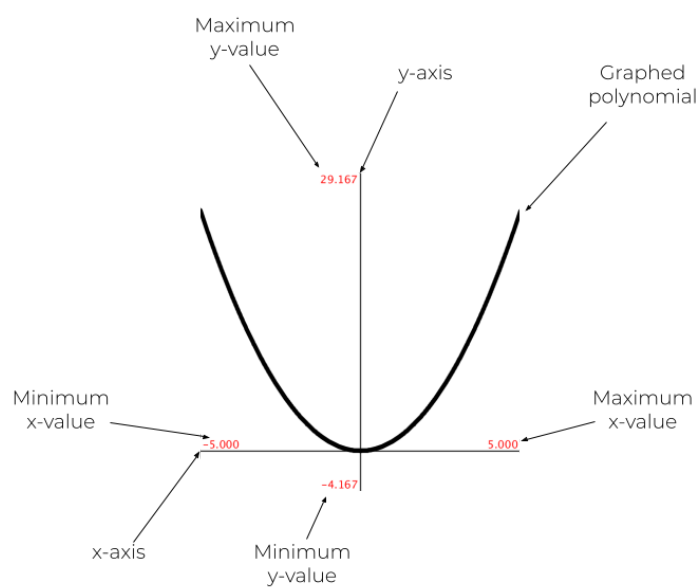
Answer:

Polynomial Info:

## Graphics

### Graphing

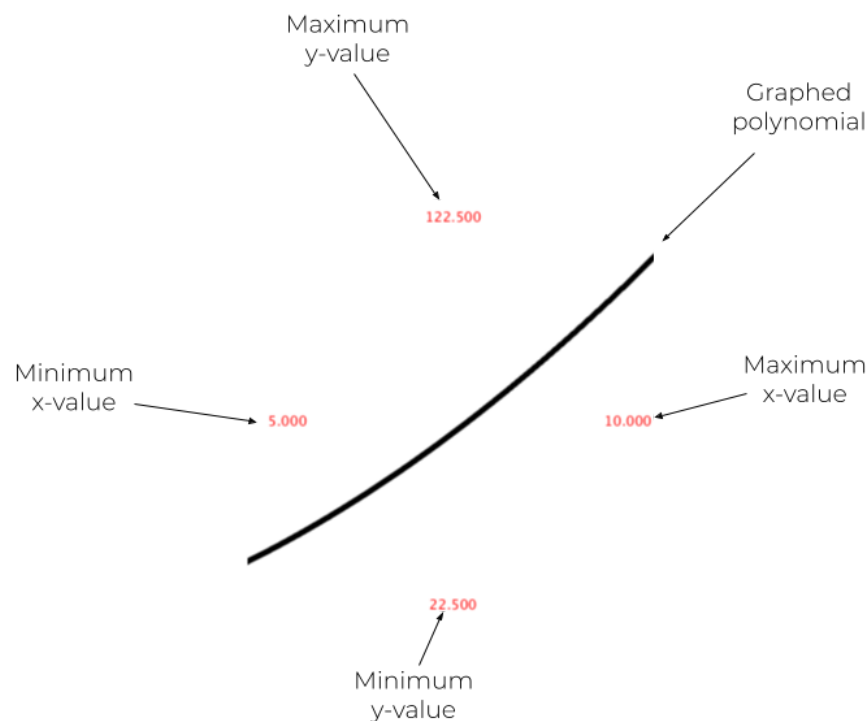
If graphing is selected, the program will open a window that will create a graph of the polynomial you have selected within the minimum and maximum x-values that you specify.



This is the graph displayed when the polynomial is  $x^2$  and the x-values range is -5 to 5.

The minimum and maximum x-values of the polynomial within the bounds that you specified will be displayed on the x-axis in red.

The minimum and maximum y-values of the polynomial within the bounds that you specified are displayed on the y-axis in red.



This is the graph displayed when the polynomial is  $x^2 + 10$  and the x-values range is 5 to 10.

Since the x-axis is not within the minimum and maximum y-values, the minimum and maximum x-values of the polynomial that you specified are displayed on the left and right of the window in red.



Since the y-axis is not within the minimum and maximum x-values, the minimum and maximum y-values of the polynomial within the bounds that you specified are displayed on the bottom and top of the window in red.

## **Legal - License Information**

By using Schattman Instruments Company™ software you are agreeing to all terms and conditions in effect at the time of purchase. Please carefully review and agree to our terms and conditions before using our product.

## **Credits**

*PolyCalc 2.0* was designed by Tina Xu, Ishaan Bansal, and Sean Lee from Schattman Instruments Company™.