# EEE 419/591
# Homework M13

**Basic Calculator:** Using object-oriented programming, create a class that implements a basic calculator. Give your basic calculator a name of your choice. Given two numbers that are to be passed to the basic calculator, it can do the following for functionalities: addition, subtraction, multiplication, and division, depending on the choice of the user who uses this calculator.

**Scientific Calculator:** Create another calculator that is scientific. It does the same functionalities as the basic calculator in addition to the following four: logarithm, exponent, sine, and cosine to a number that the user passes to the scientific calculator. The logarithm and the exponent are to be calculated to the base of x where x is some suitable value of your choice that is to be hard-coded in your code. Such a value will differentiate your code from your peers'.

**Graphical Calculator:** Create a third calculator that is graphical. It implements all the previous functionalities, in addition to plotting a curve for the array that the user feeds in. The user is expected to input an array of their choice that would go on the y-axis of the plot. The x-axis of the plot, on the contrary, will be of your own choice. Make sure that the x-axis ranges over a domain that makes your code unique from your peers in this class.

**GUI:** create a GUI for the basic calculator that has two text boxes, one label and 4 buttons; 1 button for each of its 4 functions. When a button is clicked, the operation behind the button is executed on the two numbers in the textboxes and is displayed in the label in the GUI. Choose a unique set of properties for the GUI to differentiate your work from your peers. Properties include font size, textbox size, GUI color, order/size/location of buttons…etc.

## Output

Your code should print 1 sample output for each of the 3 calculators (basic, scientific, graphical). Pick one functionality in each. No need to demonstrate all functionalities. For these 3 calculators, your demonstrating code should NOT expect anything from the user as an input. Demonstrate using hard-coded numbers in your code. In addition, the GUI should display after the graphical calculator's plot is closed. Your GUI should have a default value in each of the two textboxes. Select these numbers according to your choice.

Turn-in a single ".py" file.