Work Done

The programming has included setting up the basic layout of the UI with the help of features such as buttons and textviews. The button features were further used to get the input from the user. To provide evidence of further work that was put in to improve on the skills attained through class, the background has been edited.

The code then had to be filled in to enable the application to just start and from there on logical code which allowed input output functionality was added.

We have then implemented code for several basic and scientific calculations which have been all mentioned below.

The code has also been well explained using comments.

The calculator has the following functions:
- sin ()
- cos ()
- tan ()
- square root
- exponential (e^x)
- log (base 10)
- ln (base e)
- power (x^y)
- factorial (x!)
- history
- delete
- addition (+)
- subtraction (-)
- Multiplication (*)
- Division (/)
- modulus (|x|)
- brackets
- clear

We use an external library named exp4j, which is an expression builder and executor. We import the Expression, ExpressionBuilder and Operator packages of the library.

We used the operator package of the library to implement our own Factorial function into the program.

We input the string from the user, and we pass it through the expression package of the library, and we get a float output, which is then displayed to the user.

The clear button erases the screen and is ready for a new input.

Meanwhile, on the side we record the calculations done by the user and pass it to the History activity and post it there. We do this using the startActivity function.
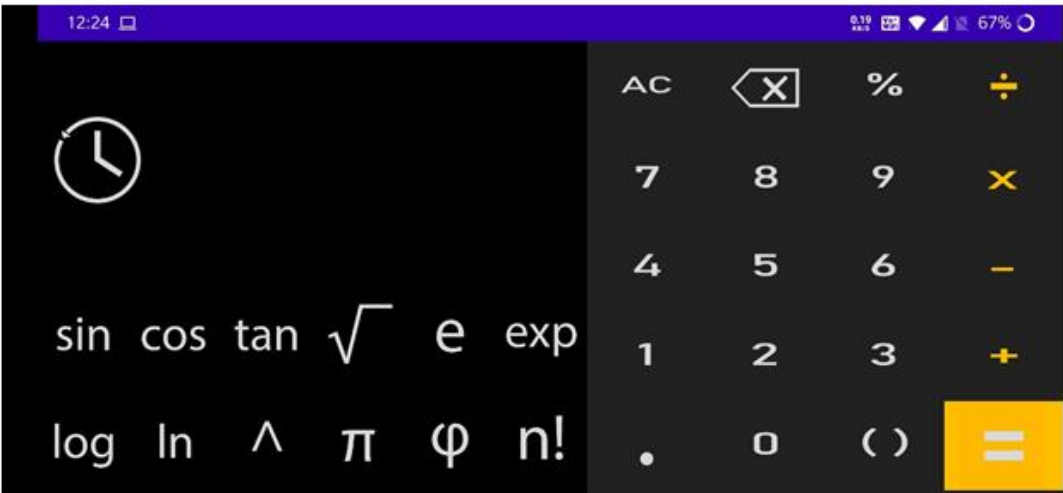
It also takes care of invalid cases, where we implement the try and catch module of Java exception handling with which we try to eliminate the chances of the app crashing.
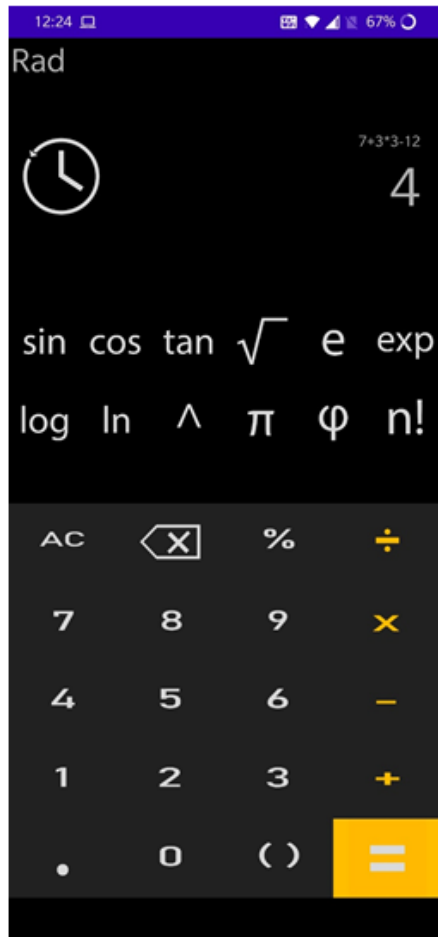
Results and Discussion
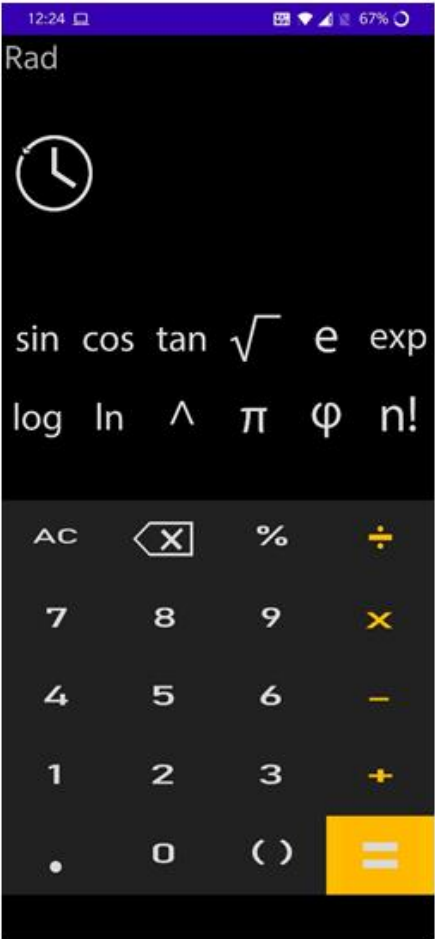
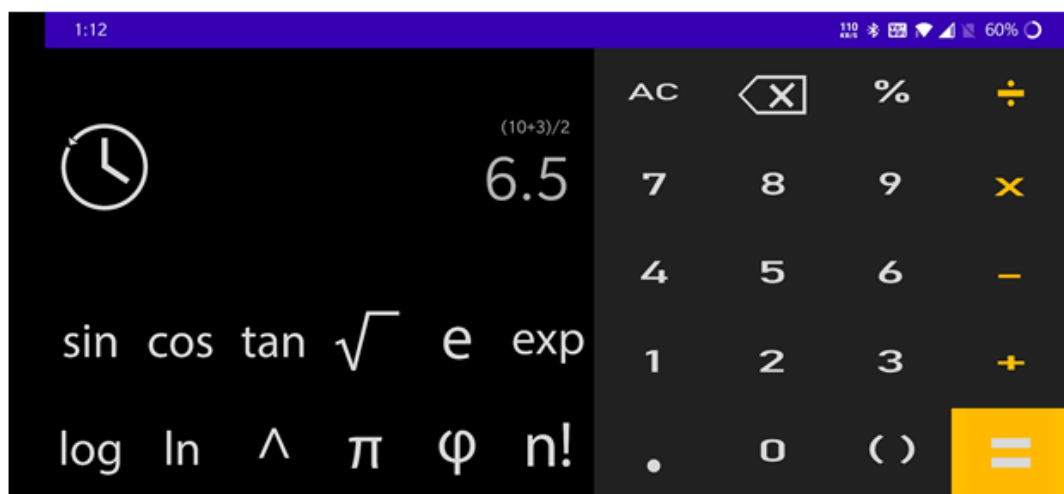This is the Home Screen of the App
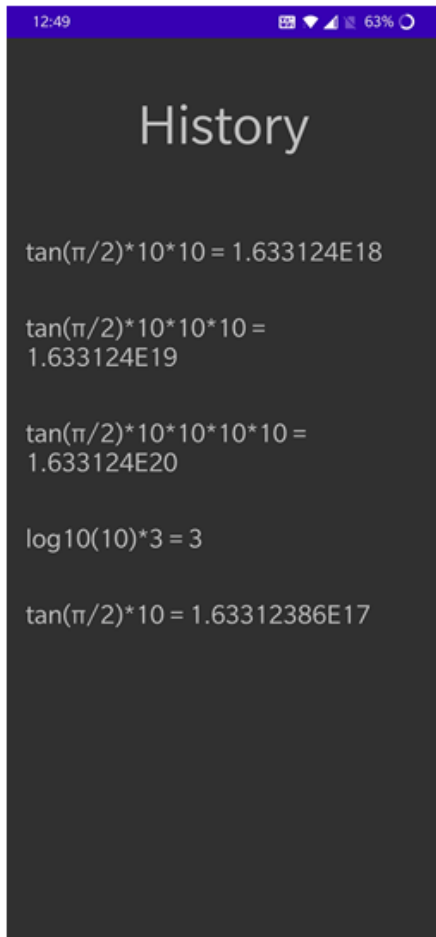
Portrait Mode Left
Landscape Mode Bottom

Basic 4 Function
Functionality of the
Calculator

Portrait Mode Left
Landscape Mode Bottom

History

tan(π/2)*10*10 = 1.633124E18

tan(π/2)*10*10*10 = 1.633124E19

tan(π/2)*10*10*10*10 = 1.633124E20

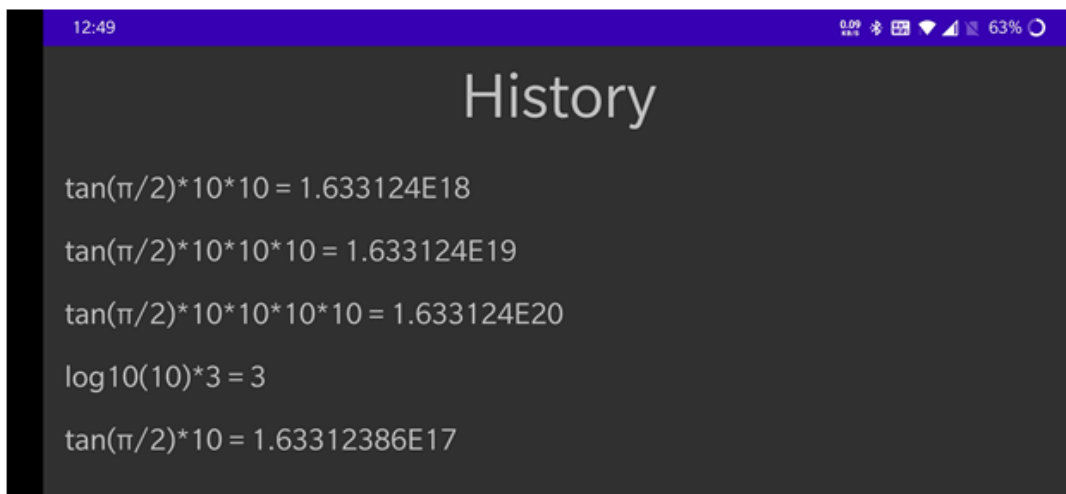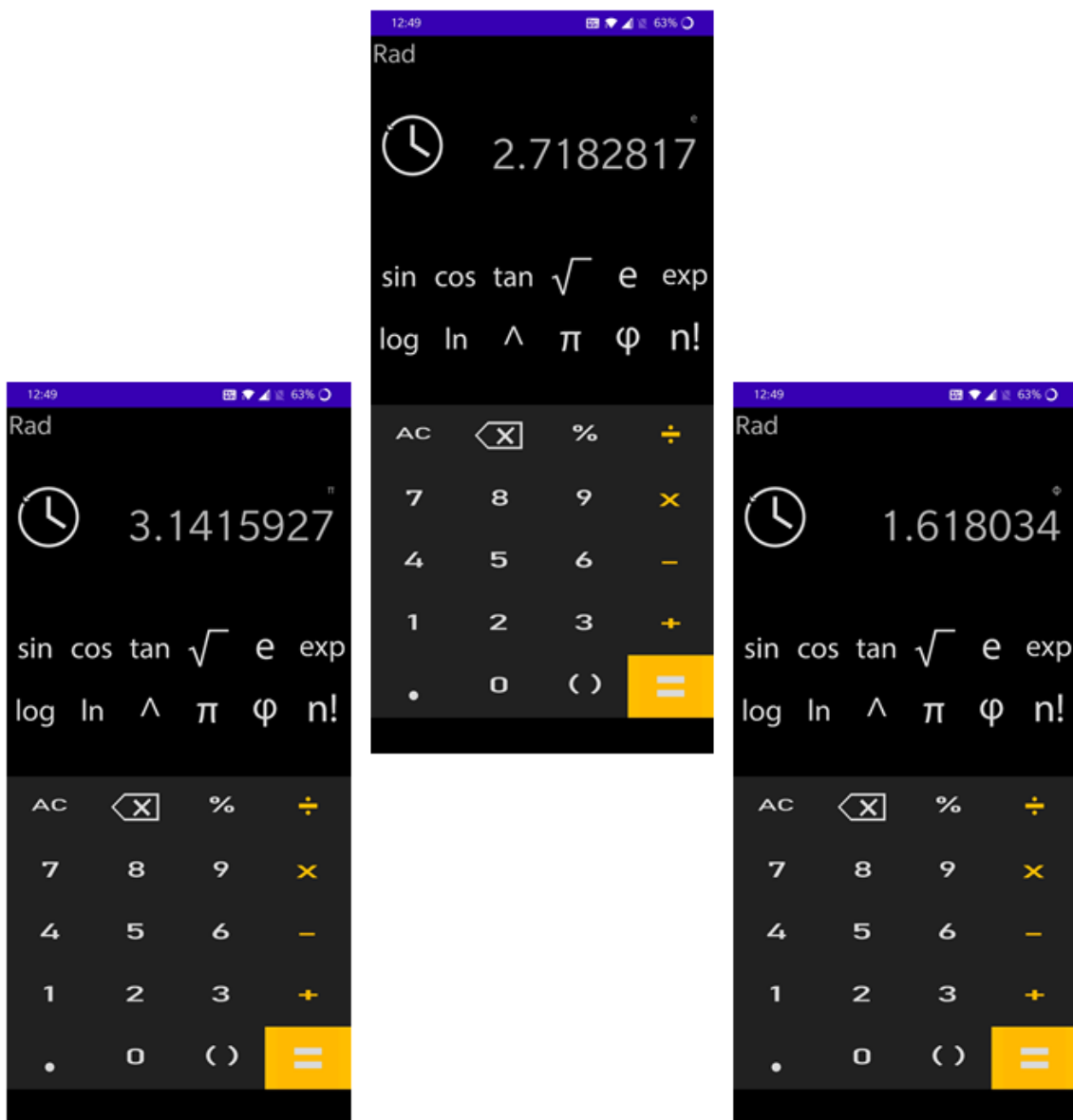log10(10)*3 = 3

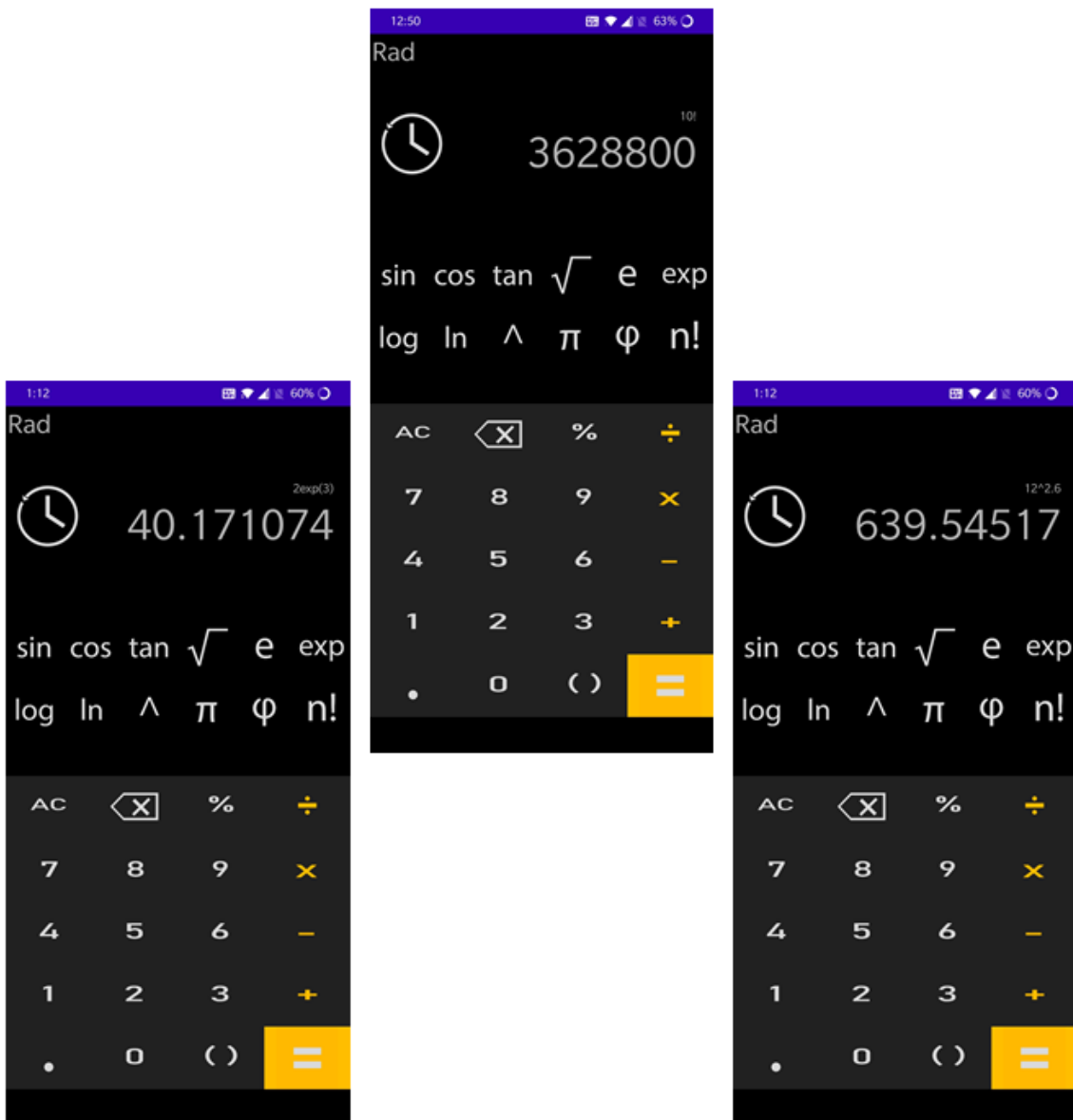tan(π/2)*10 = 1.63312386E17

This is the History Page of the App

It stores previous 5 Calculations done.

Portrait Mode Left
Landscape Mode Bottom

History

tan(π/2)*10*10 = 1.633124E18

tan(π/2)*10*10*10 = 1.633124E19

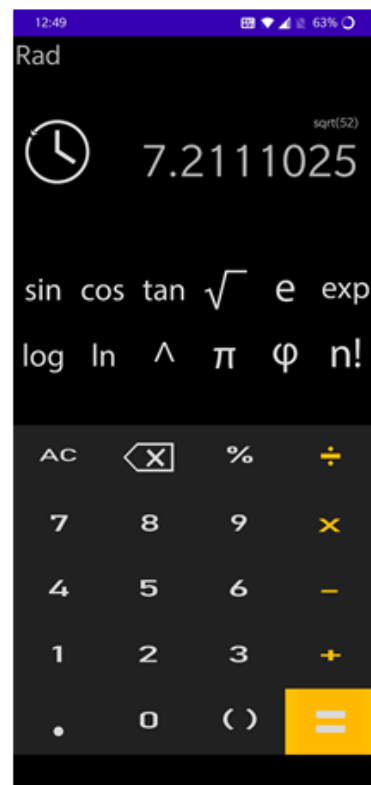tan(π/2)*10*10*10*10 = 1.633124E20
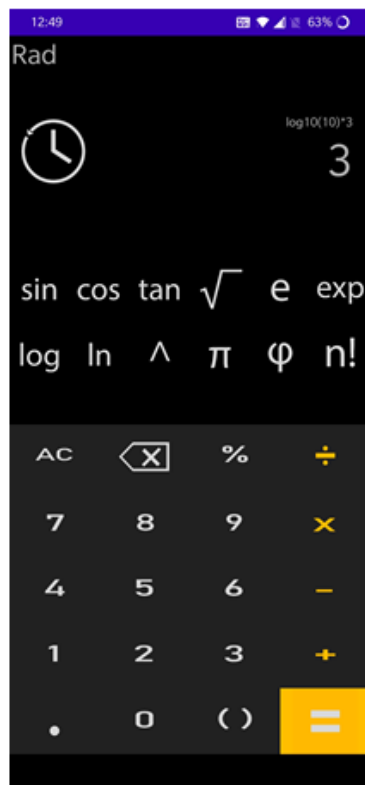
log10(10)*3 = 3

tan(π/2)*10 = 1.63312386E17

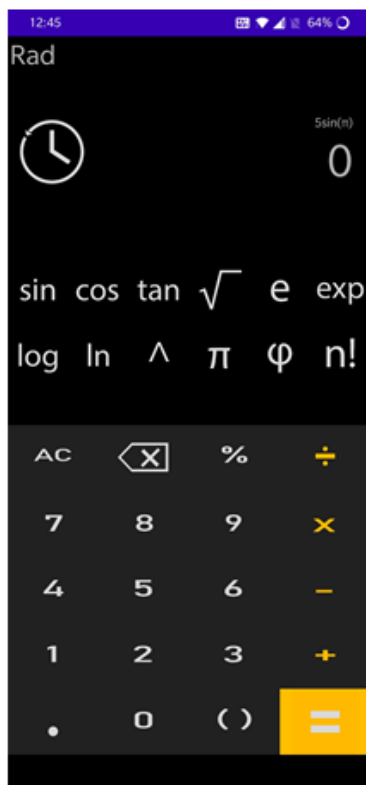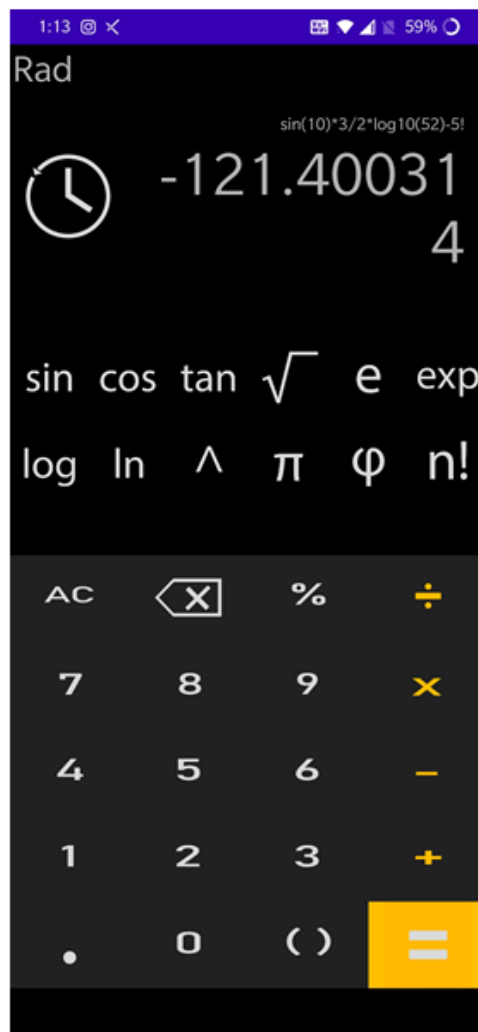We have also allowed the used to use special function such as π, e and φ.

This shows us the Exponential, Factorial and Power Function

This shows us the Trigonometric, Logarithmic and Square Root Function

We have used a library function named exp4j and used a smart expression builder which can solve complex mathematical equations with ease. We can use trigonometric, logarithmic, exponential, factorial and etc in the equation.

Conclusion and Future Features

In all honesty, the application developed is well capable of practical functionality. It is well thought of and equally well implemented. However, there is definitely scope of improvement. Several additional features could be included for a more complete application experience.

Some of which could include:

1. Customizable background and theme: User can choose from a wide range of options of backgrounds and themes such as Light, Dark, Glossy and etc.

2. Enabling users to add in constants of their choosing: This calculator can be used as an excellent equation solver, so add the feature of constants as per users will be really helpful for them.

3. Plotting and comparing graphs: This is an upgradation from Constants, and we can imply this using the right libraries.

4. Equation solving: The next level of the app which just super transforms the app into an elite math tool. As our library already supports this, we just have to imply it and it will make it complete.

The main reason why this app is better than any other is because of its size. The program is in short, a calculator like no other which helps you calculate even complex scientific expressions in no time. It is well designed, so that even the average man with no previous knowledge about android programming could use it as well.