

# Scientific and Advanced Calculator Manual

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## Introduction

The Scientific and Advanced Calculator is a powerful calculator application developed using Flutter. It includes scientific and advanced mathematical functions for a wide range of calculations. This manual will guide you through the features and usage of the calculator.

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## Scientific Calculator

### Trigonometric Functions

- **sin, cos, tan**: Calculate the sine, cosine, and tangent of an angle.
- **asin, acos, atan**: Calculate the inverse sine, cosine, and tangent.

### Inverse Trigonometric Functions

- **$\sin^{-1}$ ,  $\cos^{-1}$ ,  $\tan^{-1}$** : Calculate the arcsine, arccosine, and arctangent.

### Factorial, Exponent, and Square Root

- **! (Factorial)**: Calculate the factorial of a number.
- **^ (Exponent)**: Perform exponentiation.
- **√ (Square Root)**: Calculate the square root of a number.

### Modulus and Reciprocal

- **% (Modulus)**: Calculate the modulus of two numbers.
- **1/x (Reciprocal)**: Calculate the reciprocal of a number.

### Custom Functions

- **$x\sqrt[y]{y}$  (Nth Root)**: Calculate the Nth root of a number.

## Advanced Calculator

### Logarithmic Functions

- **log**: Calculate the logarithm of a number.
- **ln**: Calculate the natural logarithm of a number.
- **ln2**: Calculate the logarithm base 2 of a number.

### Exponential Functions

- **exp**: Calculate the exponential function of a number.

### Absolute Value and Powers

- **|x|**: Calculate the absolute value of a number.
- **$x^3$** : Calculate the cube of a number.
- **$^2$** : Calculate the square of a number.

### Cubed and Nth Roots

- **$\sqrt[3]{y}$  (Cubed Root)**: Calculate the cubed root of a number.
- **$x\sqrt[y]{y}$  (Nth Root)**: Calculate the Nth root of a number.

### Custom Functions

- **$\phi$  (Phi)**: Calculate the golden ratio.

## Usage

- **Input**: Enter numbers and perform operations using the provided buttons.
- **Clear (C)**: Reset the calculator.
- **Delete (D)**: Remove the last entered digit or operation.
- **Equals (=)**: Calculate the result.