

Java Calculator v2.2 Manual

Introduction

The Java Calculator is a cross-platform, text-interpreting calculator written in the Java Programming Language. It is meant to run on any computer with the Java Runtime Environment installed (Java 6 or higher). The calculator provides basic operations, common functions such as natural logarithms and square roots, trigonometric functions, and useful statistical functions like mean and standard deviation.

New in this Version

- Additional constants have been added.
- The UI has been retooled to make use of layout managers and pluggable looks and feels.

Basic Controls

The calculator graphical user interface (GUI) has four main parts, the menu bar, the display, the input bar, and the button panel. The display is where problems and their solutions will be shown. The input bar is where problems can be entered in for the calculator to solve. Problems can be entered into the input bar by typing on the keyboard or by clicking on the buttons below it. Once the problem is typed in, press enter on your keyboard or press the “Enter” button. The button panel contains the numbers 0-9, the basic operators, a few common functions, the mathematical constants π and e , and the “Clear” and “Enter” buttons. More advanced functions can be found under the functions menu in the menu bar or can be typed directly in the input bar.

Operators

The calculator has the four basic operations, addition (+), subtraction (-), multiplication (*), and division (/), as well as the exponent operator (^). Do not worry about the subtraction operator being confused with the negative sign. The program is designed to distinguish between the two on a syntactical basis.

Constants

π – the ratio of a circle's circumference to its diameter (3.14159)

e – the base of the natural logarithm (2.718)

h – Planck's constant in J·s (6.626×10^{-34})

c – the speed of light in a vacuum in m/s (2.998×10^8)

G – Newton's gravitational constant (6.674×10^{-11})

ϵ – permittivity of free space, also known as the electric constant (8.854×10^{-12})

μ – permeability of free space, also known as the magnetic constant (1.257×10^{-6})

Common Functions

The following are common functions supported by the Java Calculator.

sqrt – square root function

ln – natural logarithm

abs – absolute value

exp – inverse natural logarithm, equivalent to e^x .

Trigonometric Functions

The following trigonometric functions are supported.

sin – sine function

cos – cosine function

tan – tangent function

arcsin – inverse sine

arccos- inverse cosine

arctan – inverse tangent

Trigonometric functions can be evaluated in radian, degree, or gradian mode. To select the mode use the Mode menu in the menu bar.

Statistical Functions

The following statistical functions are supported by the calculator. These functions take arguments separated by commas, such as mean(3,2,1).

mean – takes the arithmetic mean of the arguments

median – takes the median of the arguments

stddev – takes the sample standard deviation of the arguments

permut – takes a permutation given two arguments n and r using the equation

$$\frac{n!}{(n-r)!}$$

comb – takes a combination given two arguments n and r using the equation

$$\frac{n!}{r!(n-r)!}$$

geommean – takes the geometric mean of the arguments according to the following equation, where x is one of the arguments and n is the number of arguments

$$\left(\prod_1^n x\right)^{1/n}$$

binompdf – binomial distribution function; takes three arguments n , p , and k ; calculates the probability of obtaining exactly k successes in n attempts given independent probability of success p

binomcdf – binomial distribution function; takes three arguments n , p , and k ; calculates the probability of obtaining k or less successes in n attempts given independent probability of success p

geompdf – geometric distribution function; takes two arguments k and p ; calculates the probability of obtaining first success on k th try given independent probability of success p

geomcdf – geometric distribution function; takes two arguments k and p ; calculates the probability of obtaining first success in k tries or less given independent probability of success p

Supported Looks and Feels

- Metal
- Nimbus
- Motif
- System (OS-dependent)