Calc Manual

Last updated, November, The 26th, 2023

	Table	01	Contents
I. Introduction			2
I.1. Install			2
I.2. Contributors			2
II. Usage			
II.1. Basic operators			
II.2. Variables			
II.3. Built-in variables			
III. Functions			4
III.1. Implemented			4
III.2. Trigonometry			5
III.3. Exp/ln			6
III.4. Root			7
III.5. Partial function			7
III.6. Vectorization			8

I. Introduction

Calc is a fully-featured calculator written in Rust for education purpose, it was designed to be minimalistic but then went off the rails and a lot of feature where implemented.

Now Calc is a powerful calculator capable of exact rational computation, matrix and vectors algebra, bindings to gnuplot and terminal plotting, with dozens of updates and currently (as of writing this manual) in version 2.11.4.

If you prefer a website you may want to read **The Online Book** which is always up to date.

I.1. Install

You can install it via cargo



Visit Calc to see all the install page

I.2. Contributors

Name	Role	Website
Charlotte THOMAS	Main developer/ Maintener	Personal Page
Léana 江	Help, cleanup	Website/Blog

II.1. Basic operators

Calc have the basic operators which are

- + for the addition
- - for the substraction
- * for the multiplication
- / for the division (or for a rational)
- ^ for the exponentation

II.2. Variables

It also supports variable the syntax is

```
1 myvar = value
```

for example

```
1 var = (2+2)
```

```
ð<sup>3</sup>Σx<sup>2</sup>: ../../target/release/mini-calc
Welcome to calc v2.0.0 by Charlotte Thomas
type help for getting help for the commands

> var = 5
> var +1
6
>
```

Figure 1: Example of setting a variable

II.3. Built-in variables

The following variables are built-in:

- pi is pi as a double precision float
- e is e as a double precision float

III. Functions

III.1. Implemented

The following functions are currently implemented:

Trigonometry

- sin (vectorized)
- cos (vectorized)
- tan (vectorized)

Hyperbolic trigonometry

- sinh (vectorized)
- cosh (vectorized)
- tanh (vectorized)

Reverse trigonometry

- acos (vectorized)
- asin (vectorized)
- atan (vectorized)

Exponentiation

- exp (vectorized)
- In (alias: log) (vectorized)

Vectors

• norm

Matrices

- det
- invert

Plot

- plot
- termplot

Other

- sqrt (vectorized)
- factorial (alias: fact)
- abs
- ceil
- floor
- round

III.2. Trigonometry

For trigonometry, the input is assumed to be in radians, if it is in degrees you need to add false or true as a second argument, example shown bellow.

Figure 2: Usage of trigonometry

III.3. Exp/1n

If you use the exp function you can pass as a second argument the base you want to use if no second arguments are passed it will used the natural base.

Figure 3: Usage of exp/ln

III.4. Root

You can specify in second argument an integer to take the nth root, if not it take the square root.

Figure 4: Usage of sqrt

III.5. Partial function

The calculator's language supports partial function.

```
Welcome to Calc v2.7.0 by Charlotte Thomas, type help for help
> log10(x) = log(x,10)
> \exp 10(x) = \exp(x,10)
> log10(exp10(2))
2.00000
> log10(exp10(3))
3.00000
> log10(exp10(3.2))
3.20000
> log10(exp10(3.4))
3.40000
> cos_degrees(x) = cos(x,true)
> cos_degrees(180)
-1.00000
> cos degrees(90)
0.00000
```

Figure 5: Example of a partial function

III.6. Vectorization

Functions have been vectorized.

```
Welcome to Calc v2.10.0 by Charlotte Thomas, type help for help > sqrt([1,4,9,16,25])
[1.00000,2.00000,3.00000,4.00000,5.00000]
>
```

Figure 6: Example of a vectorized function