Sinusoidium Help Guide

This is the official guide to Sinusoidium

Basics

A cell is the main part of Sinusoidium with 3 parts the delete button, settings button and text entry. The delete button deletes the cell and the settings button opens the settings for that cell. The text entry is where the functionality comes from and will be addressed later.

To add a cell, click the “Add Cell” button which will add a cell to the bottom of the cell list. The project settings button opens the Project Settings window.

The cell list is where all the cells go, and it goes from top to bottom and is executed in that order.

What a cell does

Sinusoidium is a graphing software with many functionalities where you type in commands to each cell. Based on what you type the cell changes the “type” of the cell which include the following

Explicit Expression: if you type in something like “3*x” or “cos(x)” Sinusoidium will graph it like any other graphing calculator only using x as the independent variable. Note that you cannot type in “y = “before that at it will not be recognized

Computable Expression: if you type in something like “2+2” or “3 + 2**3” then Sinusoidium will just add a menu below saying what it equals. Note it can compute expressions with variables and functions

Variable Definition: if you type in something like “a = 2” or “b_2_coolguy = pi/2” then if possible Sinusoidium will define a variable with its name and value. Note that once a variable is defined you can use it in any cell after, and even redefine it later in the cell List

Explicit function Definition: if you type in something like “f(x) =3*x “or “peanuts(x) = cos(2*x)” then Sinusoidium will define a function with that name and expression while also graphing that expression. Note that once a function is defined you can use it later, and you can only have 1 input that being x

How to Type in Cell Math Expression

You type in math for Sinusoidium in a similar way you would for a programming language called python (specifically something called NumPy), but this section is in case you don't know.to show the examples we will be using variables of a,b, and c

Addition: "a+b"

Subtraction: "a-b"

Multiplication: "a*b"

Division: "a/b" same as $\frac{a}{b}$

Exponentiation: "a**b" same asa^b

Parenthesis: "(a)"

Functions: for a function f use "f(input you want)" this applies to functions you define or built in functions (like cos)

Function definition: "name(x) = expression you want"

Built in functions include

sin(x)

cos (x)

tan (x)

cot (x)

csc (x)

sec (x)

(including the arc versions of the above not the hyperbolic ones though)

ln (x)

logBase (x,b) the b is the base

log(x)

sqrt(x)

root(x,n) nth root of x

nCr(n,r) n choose r

nPr(n,r) n permute r

exp(x)

abs(x)

floor(x)

ceil(x)

gamma(x)

Built in constants

e

π as “pi”

τ As “tau” (tau is just 2*pi)

Examples

$3x + 1$ Goes to “3*x +1”

$ax^2 + bx + c$ Goes to “a*x**2 + b*x + c”

$e^{\cos(x)}$ Goes to “e**cos(x)”

$\cos^2(x) + \sin^2(x)$ Goes to “cos(x)**2 + sin(x)**2”