1 Usage

1.1 Input

Upon calling makepoints, print a number 0 or 1 to cin. 0 is for generating a slope field, 1 is for generating a curve.
To generate a slope field, enter the following arguments in this order:

```
string rpn #a string containing a postfix mathematical expression, according to the defi
#the next four variables define the section of the Cartesian Plane with a slope field in
double xmin
double xmax
double ymin
double ymax
int xs #the number of columns in the slope field
int ys #the number of rows in the slope field
```

And to generate a curve:

```
string rpn
double xmin
double xmax
double ymin
double ymax
double initx #the x-coordinate of the initial condition
double inity #the y-coordinate of the initial condition
double samples #the number of line segments making up the curve
double len #the length of the desired curve
```

1.2 Output

All input is printed to cout.

If a slope field was generated, then the output will be a list of numbers, corresponding to slopes. They are ordered as follows: First is the slope corresponding to the bottom-leftmost point in the slope field. From there they increase in y but not in x, ys times. Then it returns to the bottom and increments x by 1, and so on, going up each column in turn. Each slope is separated by a new line.

If a curve was generated, then the output will be a list of pairs of numbers. Within pairs, numbers are separated by spaces, and pairs are separated by new lines. The first element of a pair corresponds to its relative x-position in the specified range; -1 is the furthest left x value, and 1 is the furthest right. Similarly, the second corresponds to its relative y-position, again from -1 to 1. The pairs are all sorted from smallest to greatest value of x. The curve is generated by "connecting the dots" in order of increasing x.

2 Postfix String

2.1 Functions

2.1.1 Nice Functions

$x\ y\ + = x + y$	$x\ y\ - = x - y$	$x\ y\ * = x \times y$
$x\ y\ / = \frac{x}{y}$	$x\ y\ \hat{} = x^y$	
x l $= \ln(x)$	x a $= \lvert x \rvert$	

2.1.2 Trig Functions

x s $= \sin(x)$	x c $= \cos(x)$	x t $= \tan(x)$
x u $= \arcsin(x)$	x v $= \arccos(x)$	x w $= \arctan(x)$
x p $= \sec(x)$	x q $= \csc(x)$	x r $= \cot(x)$
x d $= \text{arcsec}(x)$	x e $= \text{arccsc}(x)$	x f $= \text{arccot}(x)$
x h $= \sinh(x)$	x i $= \cosh(x)$	x j $= \tanh(x)$
x m $= \text{arcsech}(x)$	x n $= \text{arccoth}(x)$	x o $= \text{arccsch}(x)$
x g $= \text{sech}(x)$	x k $= \text{csch}(x)$	x z $= \coth(x)$
x A $= \text{arcsec}(x)$	x B $= \text{arccsc}(x)$	x C $= \text{arccot}(x)$

2.2 Requirements

- The RPN expression must have every argument separated by one space.
- The RPN expression must have a trailing space.