

## Defining and Using Functions

You can use the 3<sup>rd</sup> → *f* button to use a function. Functions are undefined by default.

|        |        |
|--------|--------|
| $f(x)$ | $f(x)$ |
|--------|--------|

Use the 3<sup>rd</sup> → := button to define a function.

|                        |                       |
|------------------------|-----------------------|
| $f(x) := x^2 + 2x + 1$ | $x^2 + 2 \cdot x + 1$ |
|------------------------|-----------------------|

Now the 3<sup>rd</sup> → *f* button can be used to apply the function to values.

|                |                               |
|----------------|-------------------------------|
| $f(2 \cdot t)$ | $4 \cdot t^2 + 4 \cdot t + 1$ |
| $f(12)$        | 169                           |

3<sup>rd</sup> → DEL → *f* deletes both the *f* variable and the *f* function.

|                   |        |
|-------------------|--------|
| $\text{unset}(f)$ | $f$    |
| $f(3)$            | $f(3)$ |

## Using Functions in WYSIWYG

The 3<sup>rd</sup> → *f* button will create an *f* function just as you would use sin, ln, etc.

|                             |
|-----------------------------|
| $3 + \frac{7}{f(\text{I})}$ |
|-----------------------------|

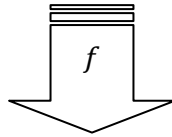
Once you enter a value for the *x* parameter to *f*, you will be shown a ■ that you can use to enter additional parameters to *f*.

You can also move the cursor between the *f* and ( and use ⓧ to delete the *f*. You can then use RCL plus any letter to use  $g(x)$ ,  $h(x)$ , etc.

$$3 + \frac{7}{g|(\square)}$$

Alternatively, you can type a variable immediately before 3<sup>rd</sup> → *f* and it will be used to create the new function.

$$3 + \frac{7}{g|}$$



$$3 + \frac{7}{g(|)}$$

## Defining Functions in WYSIWYG

With a blank console, the 3<sup>rd</sup> → := button will begin defining a function.

$$f(x, \blacksquare) := |$$

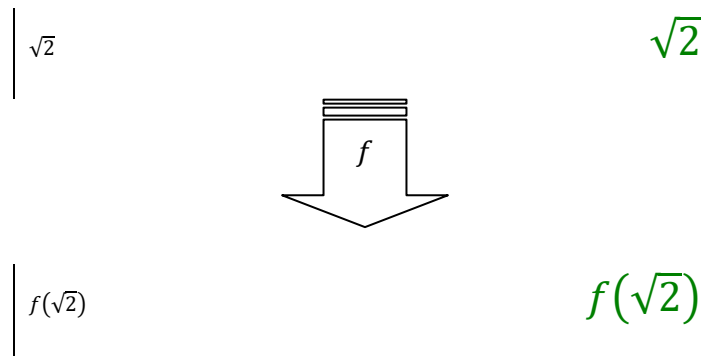
You can begin entering the definition of the function immediately. You can move the cursor to the right of the *f* or *x* and use  $\boxtimes$  to delete them, and then use RCL to replace with any other variable. You can move the cursor to the  $\blacksquare$  and enter a variable to make functions with more than one dependant variable.

Alternatively, you can enter a single variable on the console before using the 3<sup>rd</sup> → := button to create a function with this variable as its name.

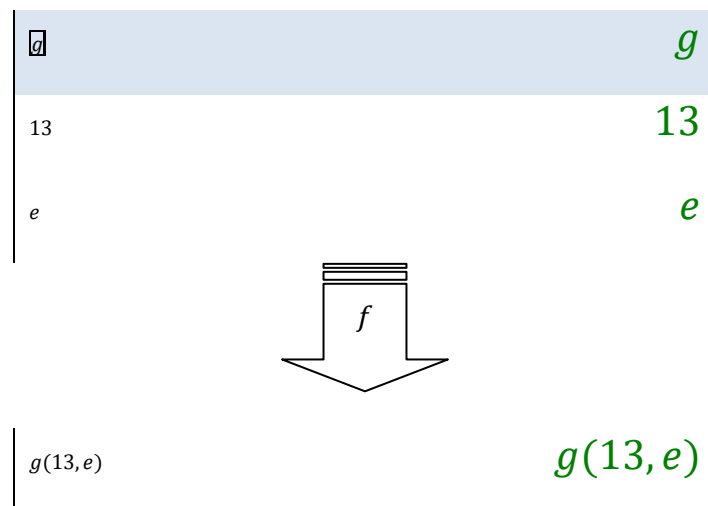
CATALOG → Algebra → Function Templates has several pre-defined function templates and function definition templates to simplify using functions that are not named *f*.

## Using Functions in RPN

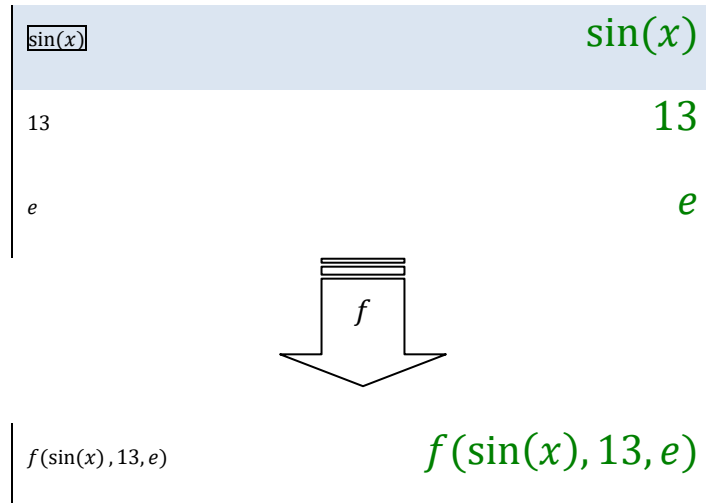
With nothing selected on the stack, the 3<sup>rd</sup>  $\rightarrow f$  button will pop one parameter off the stack and apply  $f$  to it.



If the selected item on the stack is a variable, that variable will be used as the function name, and all items below it will be used as parameters to that function.

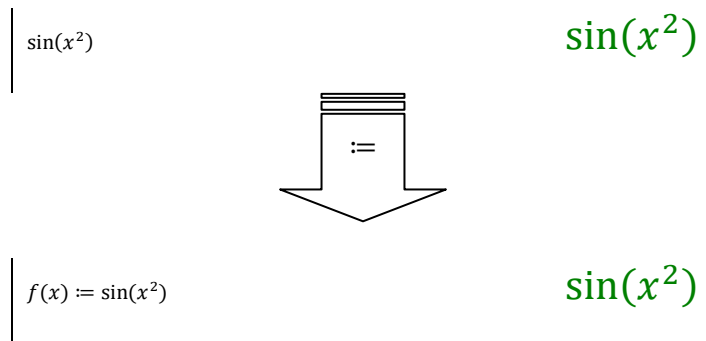


If the selected item on the stack is not a variable,  $f$  will be used as the function name, and the selected item and all items below it will be used as parameters to  $f$ .

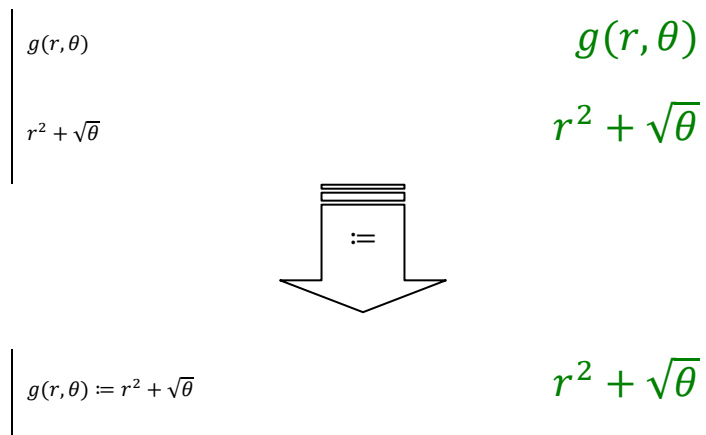


### Defining Functions in RPN

With nothing selected on the stack, the 3<sup>rd</sup>  $\rightarrow :=$  button will pop one parameter off the stack, and define  $f(x)$  to it.

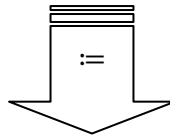


If there is a function of variables immediately preceding the function definition, that function will be assigned the new definition.



If you select the top of a stack of variables, you can create a function based on those variables.

|                   |                   |
|-------------------|-------------------|
| $y$               | $y$               |
| $t$               | $t$               |
| $t^{\frac{2}{3}}$ | $t^{\frac{2}{3}}$ |



|                           |                   |
|---------------------------|-------------------|
| $y(t) := t^{\frac{2}{3}}$ | $t^{\frac{2}{3}}$ |
|---------------------------|-------------------|

CATALOG → Algebra → Function Templates has several pre-defined function templates and function definition templates to simplify using functions that are not named  $f$ .