

# FormAlg

Edition and calculation of user's formulas

The screenshot shows the 'Making and computing algebraic formulas' window. The 'Formula' field contains  $F = 6.67E-11 * M * m / d^2$  with the text 'Gravitatory force betwen M and m' below it. The 'parameters' section shows  $M = 6e24$ ,  $m = 70$ , and  $d = 6.7e6$ . The 'Result' field displays  $F = 624.05881042548447$ . Red arrows point from labels 'formula', 'parameters', and 'result' to their respective fields in the interface.

## 1. Type of formulas. Introduction

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## Types of formulas. Introduction

### Possible formulas. Elements

Formulas or algebraic expressions can be introduced, with or without parameters (up to 4), and with the following **operators** (and in the format that is shown):

Operation	symbol	example	That is....
Addition, subtraction	<b>+</b> , <b>-</b>	<b>a+5</b>	<b>a+5</b>
Product	<b>*</b>	<b>2*x</b>	<b>2x</b>
Division	<b>/</b>	<b>(x+1)/(x-1)</b>	<b>(x+1)/(x-1)</b>
Potentialiation	<b>^</b>	<b>b^2</b>	<b>b<sup>2</sup></b>
Factorial	<b>!</b>	<b>n!</b>	<b>n!</b>

**Priority of the operators** (in descendent values)

**!   ^   [/,\*]   [+,-]**

examples:

$$3^3! = 3^6 = 729$$

$$3*5^2 = 3* 25 = 75$$

$$7+2*3^2 = 7 + 2^9 = 7 + 512 = 519$$

In the event of tie, the priority is from left to right:

$$16/4/2 = 4/2 = 2 \quad (\text{No: } 16/2 = 8)$$

Priority can be modified by means of parenthesis

$$(3^3)! = 9! = 362880$$

$$(3*5)^2 = 15^2 = 225$$

$$((7+2)*3)^2 = (9*3)^2 = 27^2 = 729$$

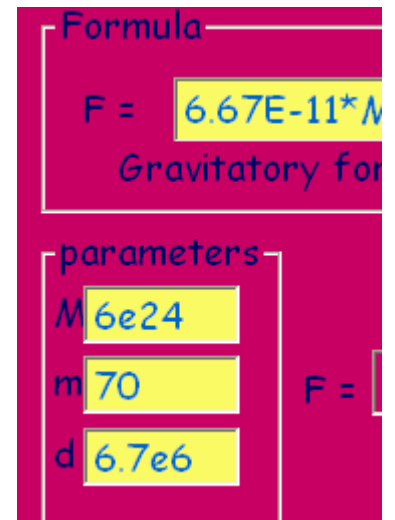
Functions (as  $\sin(x)$ ,  $\ln(x)$ , etc ) cannot be introduced

## Parameters (or variables)

Formulas can contain from 0 until 4 parameters or variables that should be simple letters (they cannot be chains of more than one character)

When you accept the expression (button [Ok] or key [Return]) if it contains parameters they will spread the stalls to introduce their values... If not, the result will be shown immediately

Examples of correct expressions:



The image shows a calculator interface with a pink background. At the top, there is a section labeled "Formula" containing the expression  $F = 6.67E-11 * M$  and the text "Gravitatory for". Below this, there is a section labeled "parameters" containing three input fields: "M" with the value "6e24", "m" with the value "70", and "d" with the value "6.7e6". To the right of these fields, the text "F =" is visible.

## “Double” formulas

Two formulas can be introduced separated by a sign of equality (=)

This may be useful, for example, to confirm solutions of equations

### example:

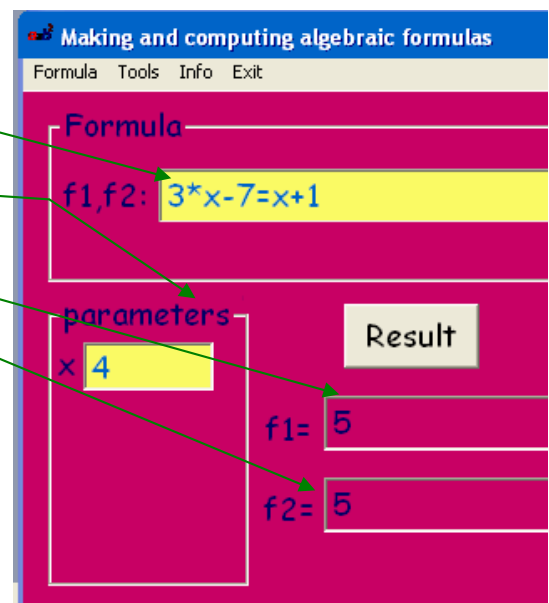
Let us suppose that we have solved the equation  $3x-7 = x+1$ , and the value **4** has come out as solution

If we want to check the correction of the solution with this utility we will introduce:

- the equation in the stall of the formula,
- the solution to check in that of parameters

And the values of the 2 expressions, for this parameter, will appear in the stalls of the result

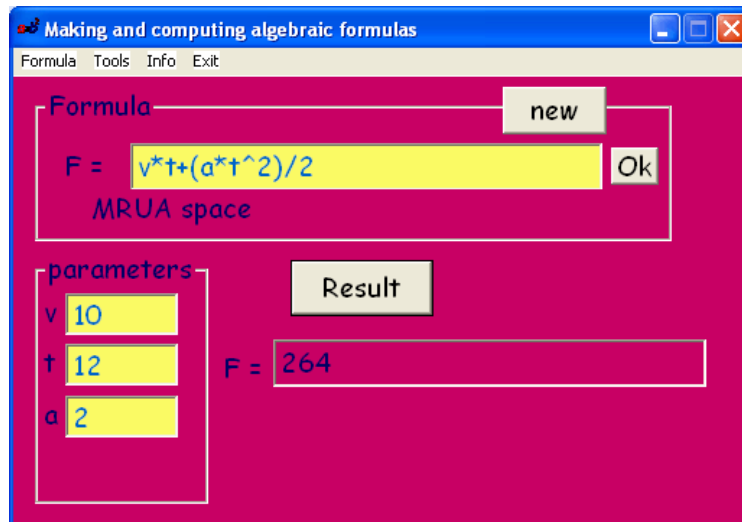
If these values coincide, the solution will be correct.



## Obtaining the results

When we have set a formula we can obtain...

**Simple results** , for each group of parameters that we introduce:



or....

## Charts of values

