

Maple Reference

Mathematical Operators and Constants

The symbols in the table below are used to create Maple expressions.

Symbol	Description	Example
<code>+, -, *, /, ^</code>	arithmetic operators	<code>2+54/3*5^3;</code>
<code>(,)</code>	expression delimiters	<code>(2+12/25)*3^(7/3);</code>
<code>Pi</code>	π	<code>5*Pi;</code>
<code>I</code>	imaginary unit, $\sqrt{-1}$	<code>2+5*I;</code>
<code>infinity</code>	positive infinity, ∞	
<code>alpha, beta, gamma</code>	other constants	

Special Maple Delimiters and Command Terminators

The symbols in the table below are used in Maple to terminate commands, assign results to named labels, and to delimit sets and lists.

Symbol	Description	Example
<code>;</code>	terminate command, get output	<code>2*31^12*Pi;</code>
<code>:</code>	terminate command, suppress output	<code>2*31^12*Pi:</code>
<code>=</code>	equality, for setting up equation	<code>2*x+3=5</code>
<code>:=</code>	assignment of a label to an expression	<code>f := 23*x+5*y;</code> <code>2*f;</code>
<code>-></code>	function definition	<code>g := x -> x^2+2*x;</code> <code>g(x);</code>
<code>..</code>	numerical range, mostly used in plot	<code>-2..2</code> <code>plot(x^2,x=0..5);</code>
<code>[,]</code>	delimit a list in Maple	<code>[1,2,3,4]</code>
<code>{,}</code>	delimit a set in Maple	<code>{2,5,x,r}</code>
<code>' '</code>	delay evaluation, often used to clear out a variable given a previous value	<code>x := 2;</code> <code>x := 'x';</code> <code>x;</code>
<code>'' ''</code>	used to delimit a character string, for example a plot title	<code>plot(x^2,x=-2..2,title =</code> <code>My First Plot);</code>

Standard Mathematical Functions

Command	function	Example
<code>abs</code>	absolute value	<code>abs(-12/31);</code>
<code>sqrt</code>	square root function	<code>sqrt(35);</code> <code>sqrt(x+1);</code>
<code>exp</code>	e to the : e^{2x}	<code>exp(2*x);</code>
<code>ln</code>	natural logarithm	<code>ln(200.4);</code>
<code>sin, cos, tan</code> <code>cot, sec, csc</code>	trig functions	<code>cos(Pi);</code> <code>tan(x);</code>
<code>arccos, arcsin</code> <code>arctan, arccot</code> <code>arcsec, arccsc</code>	inverse trig functions	<code>arcsin(1/2);</code> <code>arctan(x);</code> <code>arccsc(1);</code>

Essential Maple Commands

The following commands are those used most often in Calculus. Note that each example ends with a semi-colon, which is the signal to Maple to process the command and print its result.

Command	Description	Example
<code>with</code>	load a Maple package	<code>with(CalcP7);</code>
<code>subs</code>	substitute a value substitute into a function	<code>subs(x=2,x*exp(x));</code> <code>f(2);</code>
<code>evalf</code>	evaluate to a decimal (floating-point) approximation	<code>evalf(Pi);</code>
<code>expand</code>	expand an expression	<code>expand((x+1)^8);</code>
<code>factor</code>	factor an expression	<code>factor(x^2+x);</code>
<code>simplify</code>	simplify an expression	<code>simplify((x^2+x)/(x+1));</code>
<code>solve</code>	solve an equation analytically	<code>solve(2*x+3 = 5,x);</code>
<code>fsolve</code>	solve an equation numerically	<code>fsolve(x=tan(x),x=Pi/2..3*Pi/2);</code>
<code>D</code>	differentiation operator (works only on a function)	<code>D(g)(x);</code> <code>D(g)(2);</code>
<code>diff</code>	differentiation of an expression or a function	<code>diff(x^2,x);</code> <code>diff(g(x),x,x);</code>
<code>int</code>	indefinite or definite integral	<code>int(x^2,x);</code> <code>int(x^2,x=0..1);</code>
<code>limit</code>	limit of an expression or a function	<code>limit(sin(x)/x,x=0);</code> <code>limit(f(x),x=0);</code>
<code>plot</code>	two-dimensional plot more than one function	<code>plot(x^2,x=-2..2);</code> <code>plot([x^3,2*x],x=-2..2);</code>
<code>plot3d</code>	three dimensional plot	<code>plot3d(x^2+y^2,x=-1..1,y=-1..1);</code>
<code>map</code>	apply a function to a list	<code>map(t -> 1/t,[1,2,3,4]);</code>
<code>seq</code>	define a sequence	<code>seq(i^3,i=1..5);</code>