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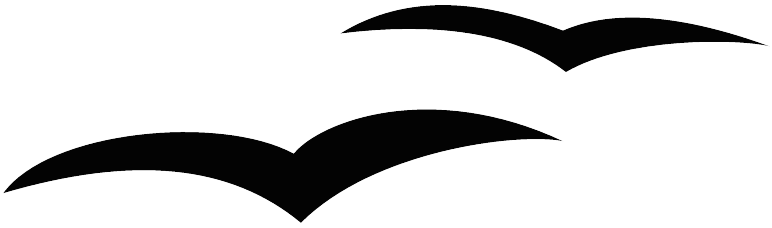
OpenOffice.org HowTo:

Formula Command Reference



Formula Command Reference
0.4
First edition: 05 June 2003
First English edition: 05 June 2003

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Overview

OpenOffice.org's burgeoning popularity has increased the need for a comprehensive set of HowTos to aid users.

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Feedback

Please direct any comments or suggestions about this document to:
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Acknowledgments

This document was inspired by the de.OpenOffice.org German language Formula How-To.

Layout is in accordance with the OpenOffice.org Style Guide for U.S. Documentation

Modifications and updates

This is the first edition. Place any modifications and updates in this section.

Fred Saalbach 27 Mar 2004

Document Revision	Date	Description of Change
0.1	06/05/03	Initial edition issued for comment
0.2	03/27/04	Added table “Commands, attributes – continued.” showing font colors, and commands switching from serif to sans serif fonts. Fred Saalbach
0.3	03/31/04	Minor corrections to additions to above. Ian Laurenson
0.4	04/04/04	Revised table of contents. Fred Saalbach

Command Reference

Commands

Unary / Binary Operators

Operation	Command	Display
+sign	+1	$+1$
-sign	-1	-1
+/- sign	+-1	± 1
-/+ sign	neg 1	∓ 1
Boolean not	neg a	$\neg a$
Addition +	a + b	$a + b$
Multiplication dot	a cdot b	$a \cdot b$
Multiplication (X)	a times b	$a \times b$
Multiplication (*)	a * b	$a * b$
Boolean and	a and b	$a \wedge b$
Subtraction (-)	a - b	$a - b$
Division (fraction)	a over b	$\frac{a}{b}$
Division (operand)	a div b	$a \div b$
Division (slash)	a / b	a / b
Boolean or	a or b	$a \vee b$
Concatenate	a circ b	$a \circ b$

Table 1Commands, unary & binary.Relations

Relational Operators

Operation	Command	Display
Is equal	a = b	$a = b$
Is not equal	a <> b	$a \neq 2$
Approximately	a approx 2	$a \approx 2$
Divides	a divides b	$a \mid b$
Does not divide	a ndivides b	$a \nmid b$
Less than	a < 2	$a < 2$
Greater than	a > 2	$a > 2$
Similar to or equal	a simeq b	$a \simeq b$
Parallel	a parallel b	$a \parallel b$
Orthogonal to	a ortho b	$a \perp b$
Less than or equal to	a leslant b	$a \leqslant b$
Greater than or equal to	a geslant b	$a \geqslant b$
Similar to	a sim b	$a \sim b$
Congruent	a equiv b	$a \equiv b$
Less than or equal to	a <= b	$a \leq b$
Greater than or equal to	a >= b	$a \geq b$
Proportional	a prop b	$a \propto b$
Toward	a toward b	$a \rightarrow b$
Arrow left	a dlarrow b	$a \Leftarrow b$
Double arrow left and right	a dlrarrow b	$a \Leftrightarrow b$
Arrow right	a drarrow b	$a \Rightarrow b$

Table 2Commands, relations.

Set Operations

Operation	Command	Display
Is in	a in b	$a \in b$
Is not in	a notin b	$a \notin b$
Owens	a owns b	$a \ni b$
Empty set	emptyset	$\emptyset$
Intersection	a intersection b	$a \cap b$
Union	a union b	$a \cup b$
Difference	a setminus b	$a \setminus b$
Quotient	a slash b	a / b
Aleph	aleph	$\aleph$
Subset	a subset b	$a \subset b$
Subset or equal to	a subseteq b	$a \subseteq b$
Superset	a supset b	$a \supset b$
Superset or equal to	a supseteq b	$a \supseteq b$
Not subset	a nsubset b	$a \not\subset b$
Not subset or equal	a nsubseteq b	$a \not\subseteq b$
Not superset	a nsupset b	$a \not\supset b$
Not Superset or equal	a nsupseteq b	$a \not\supseteq b$
Natural Numbers Set	setN	$\mathbb{N}$
Set of Integers	setZ	$\mathbb{Z}$
Set of rational numbers	setQ	$\mathbb{Q}$
Set of real numbers	setR	$\mathbb{R}$
Set of complex numbers	setC	$\mathbb{C}$

Table 3Commands, set operators.

Functions

Operation	Command	Display
Exponential	func e^{a}	e^{a}
Natural logarithm	ln(a)	$\ln(a)$
Exponential function	exp(a)	$\exp(a)$
Logarithm	log(a)	$\log(a)$
Power	a^{b}	a^{b}
Sine	sin(a)	$\sin(a)$
Cosine	cos(a)	$\cos(a)$
Tangent	tan(a)	$\tan(a)$
Cotangent	cot(a)	$\cot(a)$
Square root	sqrt{a}	$\sqrt{a}$
Arcsine	arcsin(a)	$\arcsin(a)$
Arc cosine	arccos(a)	$\arccos(a)$
Arctangent	arctan(a)	$\arctan(a)$
Arc cotangent	arccot(a)	$\operatorname{arccot}(a)$
n^{th} root	nroot{a} {b}	$\sqrt[a]{b}$
Hyperbolic sine	sinh(a)	$\sinh(a)$
Hyperbolic cosine	cosh(a)	$\cosh(a)$
Hyperbolic tangent	tanh(a)	$\tanh(a)$
Hyperbolic cotangent	coth(a)	$\coth(a)$
Absolute value	abs{a}	$\lvert a \rvert$
Arc hyperbolic sine	arsinh(a)	$\operatorname{arsinh}(a)$
Arc hyperbolic cosine	arccosh(a)	$\operatorname{arcosh}(a)$
Arc hyperbolic tangent	arctanh(a)	$\operatorname{artanh}(a)$
Arc hyperbolic cotangent	arccoth(a)	$\operatorname{arcoth}(a)$
factorial	fact(a)	$a!$

Table 4Commands, function.

Operators

All operators can be used with the limit functions (“from” and “to”)

Operation	Command	Display
Limit	Lim(a)	$\lim a$
Sum	sum(a)	$\sum a$
Product	prod(a)	$\prod a$
Coproduct	coprod(a)	$\coprod a$
Limits from and to (shown with intigral)	int from {r_0} to {r_t} a	$\int_{r_0}^{r_t} a$
Intigral	int{a}	$\int a$
Double intigral	iint{a}	$\iint a$
Tripple Intigral	iiint{a}	$\iiint a$
Lower limit shown with summation symbol	sum from{3}b	$\sum_{3} b$
Curved intigeral	lint a	$\oint a$
Double curved intigeral	llint a	$\oint\!\oint a$
Tripple curved intigeral	lllint a	$\oint\!\oint\!\oint a$
Upper limit shown with product symbol	prod to{3} r	$\prod^{3} r$

Table 5Commands, operators.

Attributes

Operation	Command	Display
Acute accent	acute a	$\acute{a}$
Grave accent	grave a	$\grave{a}$
Reverse circumflex	check a	$\check{a}$
Breve	breve a	$\breve{a}$
Circle	circle a	$\mathring{a}$
Vector arrow	vec a	$\vec{a}$
Tilde	tilde a	$\tilde{a}$
Circumflex	hat a	$\hat{a}$
Line above	bar a	$\bar{a}$
Dot	dot a	$\dot{a}$
Wide vector arrow	widevec abc	$\overrightarrow{abc}$
Wide tilde	widetilde abc	$\widetilde{abc}$
Wide circumflex	widehat abc	$\widehat{abc}$
Double dot	ddot	$\ddot{a}$
Line over	overline abc	$\overline{abc}$
Line under	Underline abc	$\underline{abc}$
Line through	overstrike acb	~~*acb*~~
Ripple dot	dddot a	$\dddot{a}$
Transparent (useful to get a placeholder of a given size)	phantom a	
Bold font	bold a	$\boldsymbol{a}$
Italic font[1]	ital a	a
Resize font	size 16 qv	qv

Table 6Commands, attributes.

1 Unquoted text that isn't a command is considered to be a variable. Variables are, by default, italicized.

Attributes Continued

Operation	Command	Display
Following item in sans serif font[2]	font sans qv	*qv*
Following item in serif font	font serif qv	*qv*
Following item in fixed font	font fixed qv	*qv*
Make color of following text cyan	color cyan qv	*qv*
Make color of following text yellow	color yellow qv	*qv*
Make color of following text green	color green qv	*qv*
Make color of following text blue	color blue qv	*qv*
Make color of following text white	color white qv	*qv*
Make color of following text red	color red qv	*qv*
Make color green returns to default color black	color green X qv	*X qv*
Brace items to change color of more than one item	color green {X qv}	*X qv*

Table 7Commands, attributes - continued.

2 There are three custom fonts, sans serif (without kicks), serifs (with kicks), and fixed (non proportional). To change the actual fonts used for custom fonts and the fonts used for variables (unquoted text), numbers and functions, use: **Format > Fonts**.

Others

Operation	Command	Display
Infinity	infinity	∞
Partial	partial	∂
Nabla	nabla	∇
There exists	exists	$\exists$
For all	forall	$\forall$
H bar	hbar	$\hbar a$
Lambda bar	lambdabar	λ
Real part	re	$\Re$
Imaginary part	im	$\Im$
Weierstrss p	wp	$\wp$
Left arrow	leftarrow	$\leftarrow$
Right arrow	rightarrow	$\rightarrow$
Up arrow	uparrow	$\uparrow$
Down arrow	downarrow	$\downarrow$
Dots at bottom	dotslow	$\ldots$
Dots at middle	dotsaxis	$\cdots$
Dots vertical	dotsvert	$\vdots$
Dots diagonal upward	dotsup	$\iddots$
Dots diagonal downward	dotsdown	$\ddots$

Table 8Commands, others.

Brackets

Operation	Command	Display
Round Brackets	(a)	(a)
Square Brackets	[b]	$[b]$
Double Square Brackets	ldbracket c rdbracket	$[\![c]\!]$
Single line	lline a rline	$\lvert a \rvert$
Double line	ldline a rdline	$\lVert a \rVert$
Braces	lbrace w rbrace	$\{w\}$
Angle Brackets	langle d rangle	$\langle d \rangle$
Operator Brackets	langle a mline b rangle	$\langle a \mid b \rangle$
Group brackets (used for program control)	{a}	a
Round brackets scalable (To make brackets scalable add the word “left before a left bracket and “right” before a right bracket	left (stack{a # b # z} right)	$\left(\begin{matrix} a \\ b \\ z \end{matrix} \right)$
Square brackets scalable	left [b right]	$\left[b \right]$
Double square brackets scalable	left ldbracket c right rdbracket	$\left[\!\left[c \right]\!\right]$
Line scalable	left lline a right rline	$\left\lvert a \right\rvert$
Double line scalable	left ldline d right rdline	$\left\lVert d \right\rVert$
Brace scalable	left lbrace e right rbrace	$\left\{ e \right\}$
Angle bracket scalable	left langle f right rangle	$\left\langle f \right\rangle$
Operator brackets scalable	left langle g mline h right rangle	$\left\langle g \middle\vert h \right\rangle$
Over brace scalable	{The brace is above} overbrace a	$\overbrace{The\ brace\ is\ above}^{a}$
Under brace scaleable	{the brace is below}underbrace {f}	$\underbrace{the\ brace\ is\ below}_{f}$

Table 9Commands, braces.

Formats

Operation	Command	Display
Left Superscript	a lsup{b}	${}^{b}a$
Center Superscript	sum(a)a csup{b}	$\sum_{a}^{b}$
Right Superscript	a^{b}	a^{b}
Left subscript	a lsub{b}	${}_{b}a$
Center subscript	a csub{b}	a_{b}
Right subscript	a_{b}	a_{b}
Align character to left	(alignl(a))	$((a))$
Align character to center	(alignc(a))	$((a))$
Align character to right	(alignr(a))	$((a))$
Vertical stack of 2	binom{a}{b}	$\binom{a}{b}$
Vertical stack, more than 2	stack{a # b # z}	$\begin{matrix} a \\ b \\ z \end{matrix}$
Matrix stack	matrix{a # b ## c # d}	$\begin{matrix} a & b \\ c & d \end{matrix}$
Common mathematical arrangement	matrix{a # "="b ## {} # "="c}	$\begin{matrix} a & =b \\ & =c \end{matrix}$
New Line	asldkfjo newline sadkfj	$\begin{matrix} asldkfjo \\ sadkfj \end{matrix}$
Small gap (apostrophe)	stuff`stuff	$stuff\ stuff$
Large gap (tilde)	stuff~stuff	$stuff\ \ stuff$

Table 10Commands, formats.

Characters

Greek

%ALPHA A	%BETA B	%CHI X	%DELTA Δ	%EPSILON E
%ETA H	%GAMMA Γ	%IOTA I	%KAPPA K	%LAMBDA Λ
%MU M	%NU N	%OMEGA Ω	%OMICRON O	%PHI Φ
%PI Π	%PSI Ψ	%RHO P	%SIGMA Σ	%THETA Θ
%UPSILON Υ	%XI Ξ	%ZETA Z		
%alpha α	%beta β	%chi χ	%delta δ	%epsilon ϵ
%eta η	%gamma γ	%iota ι	%kappa κ	%lambda λ
%mu μ	%nu ν	%omega ω	%omicron o	%phi ϕ
%pi π	%rho ρ	%sigma σ	%tau τ	%theta θ
%upsilon υ	%varepsilon ε	%varphi φ	%varpi ϖ	%varrho ϱ
%varsigma ς	%vartheta ϑ	%xi ξ	%zeta ζ	$\wedge$

Table 11Characters, Greek.

Special

%and	%angle $\sphericalangle$	%element $\in$	%identical $\equiv$	%infinite ∞
%noelement $\notin$	%notequal $\neq$	%or $\vee$	%perthousand ‰	%strictlygreaterthan $\gg$
%strictlylessthan $\ll$	%tendto $\rightarrow$			

Table 12Characters, special.