Examples

$a^i + b_{j+1} + c_l^h$	Alt = a^i+b_(j+1)+c_l^h Alt = (note the space)
R, R, $\mathcal{R}$, $\mathbb{R}$, $\mathfrak{R}$, $\boldsymbol{R}$	R, "R", \scriptR, \doubleR, \frakturR, Ctl b R Ctl b
i, ι, l, ℓ, ϵ, ε, ϕ, φ	i, \iota, l, \ell, \epsilon, \varepsilon, \phi, \varphi
$\emptyset$, ∞, ℵ	\emptyset, \infty, 2132 Alt x (hex Unicode)
$\vec{a}$, $\vec{a}$, $\hat{a}$, $\check{a}$, $\tilde{a}$, $\overrightarrow{ab}$	a\vec, a\hvec, a\hat, a\check, a\tilde, (ab)\vec
$\acute{a}$, $\grave{a}$, $\breve{a}$, $\hat{a}$	a\acute, a\grave, a\breve, 0311 Alt x Left a
a', a'', a'''	a' (same as a\prime), a'', a\pprime
$\dot{a}$, $\ddot{a}$, $\mathring{a}$, $\overset{o}{a}$	a\dot, a\ddot, 030a Alt x Left a, a\above\circ, a\above "o"
$\bar{f}$, $\overline{f}$, $\overline{fg}$ $\overline{fg}$	f\bar, \overbar f, \overbar(fg), (fg)\bar
$\underline{f}$, $\underline{f}$, $\underline{fg}$, $\underline{fg}$	f\ubar, \underbar f, \underbar(fg), (fg)\ubar
$\boxed{a}$, $a_{\square}$	\rect a, a_"\rect" (also a_\\rect)
$\lvert a \rvert$, $\lVert a \rVert$, $\lfloor a \rfloor$, $\lceil a \rceil$	|a|, \norm a\norm, \lfloor a\rfloor, \lceil a\rceil
$\sqrt{a}$, $\sqrt[3]{a}$, $\sqrt[4]{a}$, $\sqrt[n]{a}$	\sqrt a, \cbrt a, \qdrt a, \sqrt(n&a) (or \root n\of a)
$a \cdot b$, $a \times b$, $\langle a, b \rangle$	a\cdot b, a\times b, \bra a,b\ket
$a * b$, $a \star b$, $a \oplus b$, $a \otimes b$	a*b, a\star b, a\oplus b, a\otimes b
$a \vee b$, $a \wedge b$, $\neg a$, ^a, ~a	a\vee b, a\wedge b, \neg a, ^a, ~a
$a \leq b$, $a \neq b$, $a \cong b$, $a \approx b$	a<=b, a/=b, a~=b, a\approx b
$a \sim b$, $a \propto b$, $a \notin B$, $A \nsubseteq B$	a\sim b, a\propto b, a/\in B, A/\subseteq B
$A \cup B$, $A \cap B$, $A \setminus B$, $A \sqcup B$	A\cup B, A\cap B, A\setminus B, A\sqcup B
$f : a \to b$, $a \mapsto b$, $a \Longleftrightarrow b$	f :a->b (or \to, \rightarrow), a\mapsto b, a\Longleftrightarrow b
$L + 1$, $L - 1$, $L{+}1$, $L{-}1$	L+1, L-1, L"+"1, L"2013 Alt x"1 (en-dash)
$m \times n$, $m{\times}n$, $d = 1$, $d{=}1$	m\times n, m"\times"n, d=1, d"="1
$1 \ldots n$, $a \cdots b$, $\vdots$, $\ddots$	1...n (or \ldots), a\cdots b, \vdots, \ddots
$\binom{0}{1}$, $\binom{0}{1}$, $\begin{pmatrix}1 & 2\\ 3 & 4\end{pmatrix}$	(\matrix(0@1)), (0\atop 1), \pmatrix(1&2@3&4)
$Z p$, $Z\,p$, $Z\,p$	Z\hairsp p (1/18em), Z\thinsp p (3/18), Z\nbsp p (or Ctl Shft SP)
$\sum_i a_i$, $\prod_{i=1}^{n} a_i$, $\int_0^1 f(x)\,dx$	\sum_i a_i, \prod_(i=1)^n a_i, \int_0^1 f(x)\dd x
$\iiint_V f$, $\oint_{\partial\Sigma}$	\iiint_V f, \coint_(\partial\Sigma) \zwsp (zero-width arg)
$\frac{a}{b}$, a/b, $a\,/\,b$, a/b, $a \div b$, $\frac{a}{b}$	a/b, a\/b, a\ldiv b, a\sdiv b, a\div b, ribbon UI fraction a/b
$\arg\max_{\phi,T} f_{\phi,T}$	"arg max" \below(\phi,T) \funcapply f_(\phi,T)
$f = \begin{cases} a \\ b \text{ if } y \end{cases}$	f={\eqarray(a@ b" if "y)\close or f=\cases(a@ b" if "y)
$f = \begin{cases} a \\ b \text{ if } y \end{cases}$	f={\matrix(a@ b" if "y)\close "Column Alignment" → Left on $\begin{matrix} a \\ b \text{ if } y \end{matrix}$
$f = \begin{cases} a+b & \text{if } a < 5 \\ c & \text{otherwise.} \end{cases}$	f={\matrix(a+b&" if "a<5@c&"otherwise.")\close
f^{g^h}	\smash(f^g^h) (reduce vertical space)
$\{x \mid f_x > 0\}$, $\left\{x \,\middle|\, f_x > 0\right\}$	{x\mid f_x>0}, {x\mid f_x>0\vphantom A^A^A } (taller)
$\mathbb{U}$, $a \circledast b$	\hsmash U "\thinsp I", a\hsmash"\otimes" "\oplus" b
$\tilde{E}'[S[p + \varphi(\Delta)]]$	First apply red text color to $\varphi(\Delta)$, then apply black text color to Δ.

Cheat-Sheet for Math in Microsoft Word

Useful links

Murray Sargent's reference document and blog.

Equation numbering

This equation is created using a table:

$$e(B) = \sum_{p \in B} \|I'[p] - I[p]\|^2. \tag{1}$$

It renumbers automatically if copied. We replace its content:

$$x = \int_0^1 e^{-\sqrt{t^2+1}}\, dt. \tag{2}$$

Creating a reference to "Equation (2)" involves two steps:

- Click on the "2" to the right side of the equation, and perform `Insert → Bookmark` with some name such as `eq_x`.
- Type "Equation " and perform `Insert → Cross-reference → BookMark → Paragraph number` and select `eq_x`.

See also these macros for equation numbers (Office 2007/2010).

Line spacing

Within a paragraph, formulas such as `f^g^h` may be taller than the paragraph text, e.g., f^{g^h}, resulting in uneven vertical spacing. Instead, we can ignore vertical size using `\smash(f^g^h)` to create the formula f^{g^h} which does not alter the line spacing.

An alternative used in this paragraph is to force the paragraph line spacing to a specific value, here 10pt – thus we get f^{g^h}.

Display versus inline

Display mode: A paragraph containing just a math formula, without any characters before or after the formula, is auto-centered. (The period is *inside* the formula.)

$$\sum_i a + b.$$

Inline mode: To obtain this more compact style, append a space after the formula (or place the period outside the formula) and set paragraph formatting to "center":

$\sum_i a + b$.

To preserve display-mode, insert text inside math using double-quotes, e.g., `" where "` in:

$$\sum_i a + b \quad \text{where} \quad a \neq b.$$

i.e.: `Alt =`\sum_i a+b`Right`" where " a/=b. `Alt =`.

Horizontal alignment

To align these two equations, we select each "=" and right-click-select `Align at this Character`.

$$(x+a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$$

$$(1+x)^n = 1 + \frac{nx}{1!} + \frac{n(n-1)x^2}{2!} + \cdots$$

Some large equations can be made to fit by using an almost imperceptibly smaller font size (here 8.5pt instead of 9pt):

$$\mathrm{Mag}_{E_H}(p) = \sum_{\Delta = p - \lfloor p \rfloor - \delta,\ \delta \in \{\binom{0}{0},\binom{1}{0},\binom{0}{1},\binom{1}{1}\}} w(\Delta) E_H[S[p-\Delta]+\Delta]\,.$$

Other built-in examples

$$f(x) = a_0 + \sum_{n=1}^{\infty} \left(a_n \cos\frac{n\pi x}{L} + b_n \sin\frac{n\pi x}{L} \right)$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$e^x = 1 + \frac{x}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots, \qquad -\infty < x < \infty$$

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