KahoeTech© Fonts for Macintosh

KahoeTech Latin, KahoeTech Greek, and KahoeTech Symbols

KahoeTech fonts make it possible to build remarkably complex mathematical expressions in a word-processing environment without the aid of an external equation editor. While in many cases there are simple ways to remember appropriate keystokes, you will usually need to use a character selection utility such as PopChar or the Mac OS X Character Palette. Adobe InDesign has a built-in glyph selection palette.

You also need to turn off "smart quotes" in your Preferences.

KahoeTech Latin

This font contains the Roman alphabet, italicized for mathematics, as well as subscript and superscript versions of all lower-case letters (except o), all numerals, and a few upper-case letters. The general rule is simple: The option key produces a subscript and option-shift produces a superscript. There are a few exceptions, which we'll describe later. Also, superscripts have zero width and behave as if preceded by a backspace. This allows you to "stack" subscripts and superscripts by typing the subscript first and then the superscript. For example: typing a, option-k, option-shift-2 results in a_k^2. The following are several other examples that can be "typed" very easily:

$$f(x) = x^3 + 3x^2 \qquad \sum_{n=1}^{\infty}\sqrt{a_n}$$

$$w_x^2 + y_r^3 = f_\infty \qquad \lim_{x\to\infty} e^{-x} = 0$$

$$f'(x) = \lim_{\Delta x\to 0}\big(f(x+\Delta x) - f(x)\big)/\Delta x.$$

$$x_+ = x_c - f(x_c)/f'(x_c) \qquad \int x^n\,dx = \tfrac{1}{n+1}\,x^{n+1} + C$$

As you see in these examples, the font also contains subscript and superscript versions of numerous symbols: +, −, =, /, comma, and period. There are also subscript versions of → and ∞, and superscript versions of parentheses.

On the Macintosh keyboard, option-e, option-i, option-u, and option-n are normally used to get acute, circumflex, umlaut (dieresis), and tilde accents, respectively. For instance, typing option-n followed by n gives ñ. Consequently, in order to get a subscript n in KahoeTech, you must type option-n n. Subscript versions of e, i, and u are obtained similarly.

Spacing. In addition to the normal space (width = 0.3 em), there are two narrow spaces. One is in the place of the letter o (width = 0.1 em), and the other is option-space (width = 0.05 em). Using these liberally allows you to fine-tune spacing to suit your taste. Consequently, default spacing tends to be rather tight, and characters will sometimes overlap. *Note*: Option-space does not work in some applications.

Because of the zero-width characters and thin spaces, cursor positioning in complicated expressions can be a bit tricky. To help with this, there is an italic version of the font, in which all characters have positive width and each type of space is signified by an icon. Here's an example of an expression involving several zero-width characters and narrow spaces:

$$\sum_{n=1}^{\infty} f'(x_n^2).$$

After highlighting it and selecting the italic font, you see this:

$$\sum_{n=1}^{\infty} f'(x_n^2).$$

So changing to italics is a kind of "show invisibles" function. In *Word*, the idiotic slanted cursor still makes things difficult, but at least you can see the actual structure of the expression.

Fractions. You can also make simple fractions out of the subscripts and superscripts. Option-\ and option-o make the line. Start with option-\ , and end with option-o. Use either to fill in between.

$$\frac{2}{3} \qquad \frac{x-2}{x+1} \qquad \frac{h(x)}{x}$$

Viewed through the italic font, the preceding expressions appear like so:

$$\frac{2}{3} \qquad \frac{x}{x+} \qquad \frac{2}{1} \qquad \frac{h}{x}$$

Radicals. The square-root symbol is at option-shift-'. An extender line is at option-shift-o. Type the extender at the end and to fill in between. The extender has zero width.

$$\sqrt{2.743} \qquad \sqrt{x^2+2}$$

Derivatives. In the place of the percent sign and the ampersand, there are partial derivative and derivative "operators," respectively:

$$\frac{\partial}{\partial} \qquad \frac{d}{d}$$

These make it easy to type things like this:

$$\frac{dr}{dt} = \frac{\partial r}{\partial x}\frac{\partial x}{\partial t} + \frac{\partial r}{\partial y}\frac{\partial y}{\partial t}$$

Integrals. Indefinite integrals are easy. An integral sign is in the place of the number sign #.

$$\int f'(x)dx = f(x) + C$$

For definite integrals—if you really want to—you *can* do this:

$$\int_0^1 f(x)dx,$$

but the subscripts and superscripts are not at the proper levels/sizes for lower and upper limits of integration. To get much better looking definite integrals, you need to use the KahoeTech Symbols font, which we describe later in this document.

Math Accents. The tilde and the circumflex ("hat") each have zero width and are typed *after* the accented letter. The fraction bar extender (option-n o) gives a bar accent in a similar manner. A superscript asterisk is at option- ' .

$$\widetilde{x} \qquad \hat{y} \qquad \bar{u} \qquad t^*$$

KahoeTech Greek

This font is basically the same as KahoeTech Latin, except it's based on the Greek alphabet. Whenever there is a Roman equivalent, that key is used. For instance, typing b gives you β. In other cases, the following more-or-less standard correspondences apply:

Greek:	χ	θ	ξ	ψ	ω
Roman:	c	q	x	y	w

Just as with KahoeTech Latin, the italic version of the font exposes zero-width characters and narrow spaces.

KahoeTech Symbols

This font contains many symbols including arrows, logic and set symbols, alternative upper-case Roman letters, wide accents, large grouping symbols, and a large integral sign.

$$\widetilde{xy} \rightleftharpoons u + v \qquad \mathcal{S} \Leftrightarrow \mathcal{A} \qquad \vec{x} \in \mathbb{R}^n$$

$$\therefore z \in \mathbb{R} \qquad h \downarrow 0 \qquad p \otimes q = \mp \phi$$

$$x \preccurlyeq y \;\Leftrightarrow\; y - x \in \mathcal{C}_+$$

$$\langle u, v \rangle \equiv u^T v = \sum u_i v_i$$

$$\forall \epsilon > 0,\ \exists \varrho \in \mathcal{D} \subseteq \mathbb{R}$$

In place of the letter n, there is a negating slash:

$$\mathcal{A} \not\subset \mathcal{B} \not\Rightarrow x \notin \mathbb{R}.$$

More elaborate expressions can be constructed on multiple lines. In the following, the ∞ sign is a subscript on the first line and $n=1$ is a superscript on the third. Those were made with KahoeTech Latin.

$$\mathcal{Y} \triangleq \bigcup_{n=1}^{\infty} \mathcal{D}(\mathcal{L}_n)$$

Here is a two-line expression that uses a two-piece radical. The small 3 signifying the cube root is a KahoeTech Latin subscript. The fraction bar and the radical extender are made from the same symbol.

$$\sqrt[3]{\frac{x+3}{2x^2-1}}$$

These matrices make use of multiline parentheses and square brackets.

$$\begin{pmatrix} 1 & 0 & 0 & \cdots \\ 0 & 1 & 0 & \\ \vdots & & \ddots & \\ 0 & & & 1 \end{pmatrix} \qquad \begin{bmatrix} 2 & 5 \\ 3 & 7 \end{bmatrix}^{-1}$$

Large integrals can be contructed two ways. The easiest way is to use the integral sign (shift-3). In *Word* you have to expand the line width to make the entire sign is visible; so there's no good way include limits of integration.

$$\iint_{\Omega} x^2 y \, dx \, dy$$

An alternative is the nonslanted *multiline* integral sign. Here the limits are subscripts and superscripts from KahoeTech Latin.

$$\int_0^1 \sqrt{x} \, dx \qquad \int_a^b \frac{x \, dx}{x+1}$$