NAME

eqn – typeset mathematics

SYNOPSIS

eqn [file] ...

DESCRIPTION

Eqn is a troff (I) preprocessor for typesetting mathematics on the Graphics Systems phototypesetter. Usage is almost always

eqn file ... | troff

If no files are specified, *eqn* reads from the standard input. A line beginning with ''.EQ'' marks the start of an equation; the end of an equation is marked by a line beginning with ''.EN''. Neither of these lines is altered or defined by *eqn*, so you can define them yourself to get centering, numbering, etc. All other lines are treated as comments, and passed through untouched.

Spaces, tabs, newlines, braces, double quotes, tilde and circumflex are the only delimiters. Braces ''{}'' are used for grouping. Use tildes ''~'' to get extra spaces in an equation.

Subscripts and superscripts are produced with the keywords **sub** and **sup.** Thus *x sub i* makes x_i, *a sub i sup 2* produces a_i^2, and *e sup {x sup 2 + y sup 2}* gives $e^{x^2+y^2}$. Fractions are made with **over.** *a over b* is $\frac{a}{b}$ and *1 over sqrt {ax sup 2 +bx+c}* is $\frac{1}{\sqrt{ax^2+bx+c}}$. **sqrt** makes square roots.

The keywords **from** and **to** introduce lower and upper limits on arbitrary things: $\lim_{n\to\infty} \sum_0^n x_i$ is made with *lim from {n-> inf} sum from 0 to n x sub i.* Left and right brackets, braces, etc., of the right height are made with **left** and **right:** *left [x sup 2 + y sup 2 over alpha right] ~=~1* produces $\left[x^2 + \frac{y^2}{\alpha}\right] = 1$. The **right** clause is optional.

Vertical piles of things are made with **pile, lpile, cpile,** and **rpile:** *pile {a above b above c}* produces $\begin{matrix} a \\ b \\ c \end{matrix}$. There can be an arbitrary number of elements in a pile. **lpile** left-justifies, **pile** and **cpile** center, with different vertical spacing, and **rpile** right justifies.

Diacritical marks are made with **dot, dotdot, hat, bar:** *x dot = f(t) bar* is $\dot{x} = \overline{f(t)}$. Default sizes and fonts can be changed with **size n** and various of **roman, italic,** and **bold.**

Keywords like *sum* ($\sum$) *int* ($\int$) *inf* (∞) and shorthands like >= ($\geq$) -> ($\rightarrow$), != ($\neq$), are recognized. Spell out Greek letters in the desired case, as in *alpha, GAMMA.* Mathematical words like sin, cos, log are made Roman automatically. Troff (I) four-character escapes like \(bs (\) can be used anywhere. Strings enclosed in double quotes "..." are passed through untouched.

SEE ALSO

A System for Typesetting Mathematics (Computer Science Technical Report #17, Bell Laboratories, 1974.)
TROFF Users' Manual (internal memorandum)
TROFF Made Trivial (internal memorandum)
troff (I), neqn (I)

BUGS

Undoubtedly. Watch out for small or large point sizes – it's tuned too well for size 10. Be cautious if inserting horizontal or vertical motions, and of backslashes in general.