```
  __ \  |   |  __|  _ \      Pure 0.56 (i686-pc-linux-gnu)
  |   | |   |  |    __/      Copyright (c) 2008-2012 by Albert Graef
  .__/ \__,_|_|  \___|       (Type 'help' for help, 'help copying'
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    Loaded prelude from /usr/local/lib/pure/prelude.pure.
```

```
> using scratch::latex;
> let s = list (keys _symbols_) ;
> #s ;
```
   216
```
> let ms = redim (11,20) (matrix (s+[1,2,3,4]));
> ms;
```

$$\begin{bmatrix}
\alpha & \beta & \chi & \delta & \epsilon & \eta & \gamma & \iota & \kappa & \lambda & \mu & \nu & \omega & \phi & \pi & \psi & \rho & \sigma & \tau & \theta \\
\upsilon & \xi & \zeta & F & \varepsilon & \varkappa & \varphi & \varpi & \varrho & \varsigma & \vartheta & \Delta & \Gamma & \Lambda & \Omega & \Phi & \Pi & \Psi & \Sigma & \Theta \\
\Upsilon & \Xi & \aleph & \beth & \gimel & \daleth & \pm & \mp & \times & \div & \cdot & * & \star & \dagger & \ddagger & \amalg & \cap & \cup & \uplus & \sqcap \\
\sqcup & \vee & \wedge & \oplus & \ominus & \otimes & \circ & \bullet & \diamond & \triangleleft & \triangleright & \trianglelefteq & \trianglerighteq & \oslash & \odot & \bigcirc & \lhd & \Diamond & \bigtriangleup & \bigtriangledown \\
\Box & \rhd & \setminus & \wr & \leq & \geq & \neq & \sim & \ll & \gg & ? & \simeq & \subset & \supset & \approx & \asymp & \subseteq & \supseteq & \cong & \smile \\
\sqsubset & \sqsupset & \equiv & \frown & \sqsubseteq & \sqsupseteq & \propto & \in & \ni & \prec & \succ & \vdash & \dashv & \preceq & \succeq & \models & \perp & \parallel & \mid & \nvdash \\
\nleq & \ngeq & \approxeq & \nsim & \nshortmid & \nshortparallel & \ngtr & \lesssim & \gtrsim & \lessgtr & \lesseqgtr & \gtreqless & \leftarrow & \rightarrow & \leftarrow & \Leftarrow & \to & \Rightarrow & \leftrightarrow & \Leftrightarrow \\
\mapsto & \hookleftarrow & \leftharpoonup & \leftharpoondown & \rightleftharpoons & \longleftarrow & \Longleftarrow & \longrightarrow & \Longrightarrow & \longleftrightarrow & \Longleftrightarrow & \longmapsto & \hookrightarrow & \rightharpoonup & \rightharpoondown & \leadsto & \uparrow & \Uparrow & \downarrow & \Downarrow \\
\updownarrow & \Updownarrow & \nearrow & \searrow & \swarrow & \nwarrow & \ldots & \vdots & \cdots & \ddots & \infty & \triangle & \angle & \aleph & \hbar & \imath & \jmath & \ell & \wp & \Re \\
\Im & \mho & \prime & \emptyset & \nabla & \partial & \top & \bot & \vdash & \dashv & \forall & \exists & \neg & \flat & \natural & \sharp & & \clubsuit & \diamondsuit & \heartsuit \\
\spadesuit & \blacksquare & \pounds & \sum & \int & \oint & \prod & \coprod & \bigcap & \bigcup & \bigsqcup & \bigvee & \bigwedge & \bigodot & \bigotimes & \bigoplus & & 1 & 2 & 3 & 4
\end{bmatrix}$$

```
> alpha + beta^gamma - Delta + aleph^rho + hbar^N ;
```
   $\alpha + \beta^\gamma - \Delta + \aleph^\rho + \hbar^N$

```
> sum/prod - nabla + forall * exists ;
```
   $\dfrac{\sum}{\prod} - \nabla + \forall \cdot \exists$

```
> {a,b,c ; mu, nu, rho ; Phi, Psi, Sigma} ;
```
   $$\begin{bmatrix} a & b & c \\ \mu & \nu & \rho \\ \Phi & \Psi & \Sigma \end{bmatrix}$$

```
> {i,0,-1 ; 1,0,i ; 0,0,i} * {u,v,w} ;
```
   $$\begin{bmatrix} i & 0 & -1 \\ 1 & 0 & i \\ 0 & 0 & i \end{bmatrix} \cdot \begin{bmatrix} u & v & w \end{bmatrix}$$

```
> e^(i*z+alpha);
```
   $e^{i \cdot z + \alpha}$

```
> (x^n - z)/(x-z);
```
   $\dfrac{x^n - z}{x - z}$

```
> Integral Omega (ExtD omega);
```

$$\int_{\Omega} \mathrm{d}\omega$$

> `Integral (Bdry Omega) omega ;`

$$\int_{\partial\Omega} \omega$$

> `Diff f x ;`

$$\frac{\partial f}{\partial x}$$

> `Lambda!i;`

$$\Lambda_i$$

> `F!!(1..10);`

$$F_1{:}\,F_2{:}\,F_3{:}\,F_4{:}\,F_5{:}\,F_6{:}\,F_7{:}\,F_8{:}\,F_9{:}\,F_{10}{:}\,[]$$

> `q ~= -q ;`

$$q \neq -q$$

> `a && b || c;`

$$a \wedge b \vee c$$

> `~ T ;`

$$\neg\, T$$

> `neg T;`

$$-T$$

> `hbar^N/(2*m*c);`

$$\frac{\hbar^N}{(2 \cdot m) \cdot c}$$

> `forall:x:in:T:exists:y:in:S ;`

$$\forall{:}\,x{:}\in{:}\,T{:}\,\exists{:}\,y{:}\in{:}\,S$$

> `Re ~= Im ;`

$$\Re \neq \Im$$

> `A:cap:cup:B;`

$$A{:}\cap{:}\cup{:}B$$

> `Integral D (Diff F u);`

$$\int_D \frac{\partial F}{\partial u}$$

> `infty == inf;`

$$\infty = i\,n\,f$$

> `F x y z;`

$$\mathrm{F\ x\ y\ z}$$

> `// function form => in tt`
> `cdots;`

$$\cdots$$

```
> ldots;
```
...
```
> longleftarrow;
```
$\longleftarrow$
```
> longrightarrow;
```
$\longrightarrow$
```
> Box;
```
$\square$
```
> sharp;
```
$\sharp$
```
> X!sharp;
```
$X_\sharp$
```
> Q^sharp;
```
$Q^\sharp$
```
> quit
```
$\boxed{\sharp\ \text{Dead}}$
```
>
```