# *TEXDraw*

LaTeX Graphic Mathematical Expressions Input for Unity

Documentation Reference for V4.0

*For general information and help please refer to Documentation Manual*

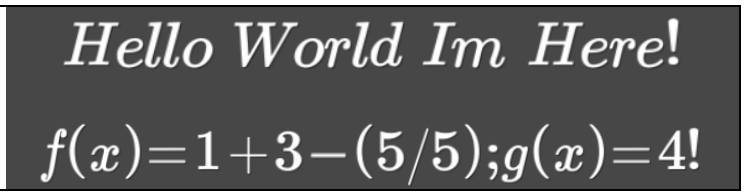
# TEXDraw Syntaxes

## An Introduction ...

As a basic feature, you can write anything regularly just like standard text generator, it accepts letters, digits, popular symbols (that exist on physical keyboard), whitespaces, unicode characters, and also multi-lines.

```
Hello World Im Here!

f(x)=1+3-(5/5);g(x)=4!
```



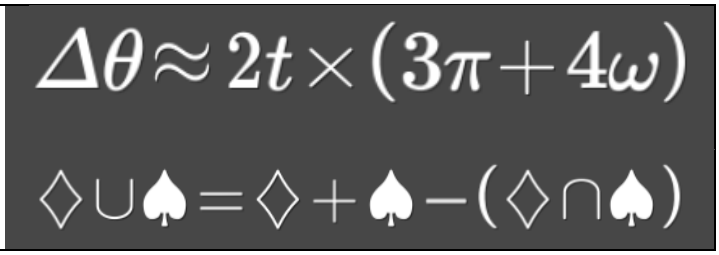

Though they mostly work for all characters, please keep a note that Tab spaces do not work. Characters `{`, `}`, `\`, `^`, and `_` is can't be used directly, instead type a backslash `\` before it. For example, `\}` and `\^`.

## The Power of Backslashes ...

The big deal of using this package is coming from the use of backslash. Backslashes can be used for either declaring a command or symbol. Symbol in TEXDraw is created by typing a backlash after character name. Go to next section for list of symbols used in TEXDraw.

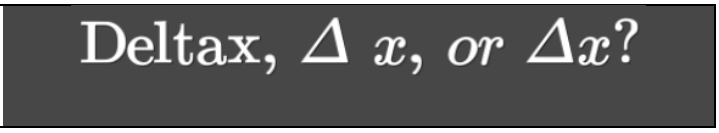
```
\Delta\theta\approx2t\times(3\pi+4\omega)

\diamondsuit\cup\spadesuit=\diamondsuit+\spadesuit-(\diamondsuit\cap\spadesuit)
```




Sometimes you might find problem when joining a symbol with letter character, to do that you need to group the letter using braces `{}` so the parser can separate it.

```
\Deltax, \Delta x, or \Delta{x}?
```

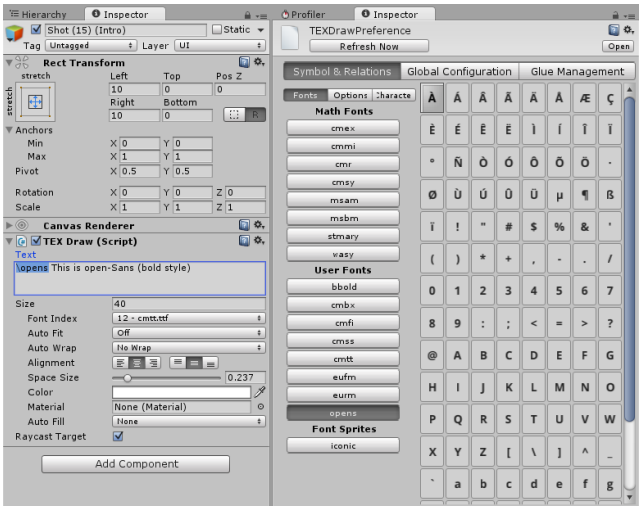


## Using Custom Font Asset

The first common usage of commands is change which font is used in rendering. The complete format of this is:

```
\<fontname>[style]{text here}
```

Where `<fontname>` is the file name (according to the list) of font that you'll use. `[style]` means what font style will be use with options `[b]` (bold), `[i]` (italic), `[bi]` (bold-italic), `[]` (normal style), or no at all (styles remain unchanged).




```
\opens[i] Open Sans italic

\bbold Double \eufm{Inside but}
still double 'till} back again
```

Since V2.6, all braces is optional. This makes syntax slightly cleaner without dying with lots of braces. Like second example above, this one...

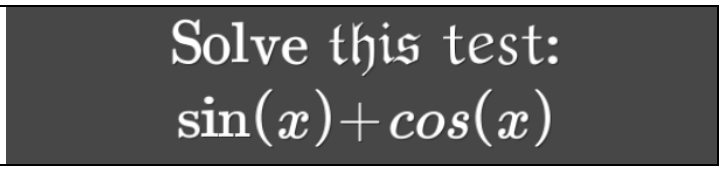
```
\size[2]{R\color[ff0]{e\cmtt{d\size[1]{d\color[f11]{e\cmss{r}}}}}}
```

Are equivalent to...

```
\size[2] R\color[ff0] e\cmtt d\size[1] d\color[f11] e\cmss r
```

Another easy implementation for this is by undefined symbols. Type backslash followed by a non-symbol-defined word will generate a text with different styling. This behavior is mostly used for differentiate between math function and variable.

```
\text Solve \eufm this \eurm test:
\sin(x)+cos(x)
```




For turning off font styling (similar to selected -1 in inspector), you can use `\math` instead.

If you only want to change the styling, use `\style` instead.

## Writing Fractions

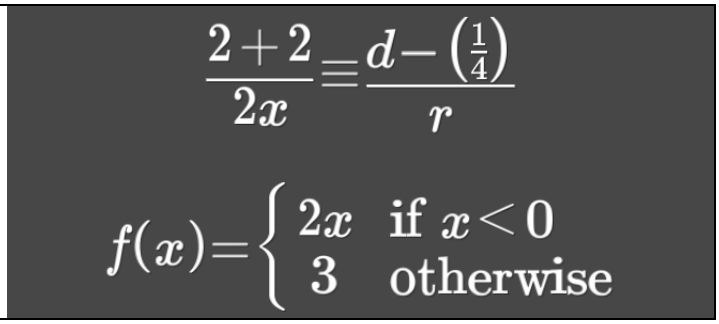
Fractions is common in math, they have a numerator and denominator. It is possible to write them in TEXDraw, to do that, we need to follow on this rule:

`\[n|l|r]frac{numerator}{denominator}`

Don't understand? At very basic usage, type `\frac` followed by numerator surrounded by braces and then denominator with also surrounded by braces will generate a fractions. Nested fraction (i.e., fraction inside a fraction) also supported here.

```
\frac{2+2}{2x}\equiv\frac{d-(\frac{1}{4})}{r}
```

```
f(x)=\lbrace\nfrac{2x}{3}\nlfrac{\if x<0}{\otherwise}
```




If you look at the second example, `\nfrac` is another variation of fraction where it doesn't render a line. So do the `l` and `r` attribute, which is aligning the position either numerator or denominator to the left or right. The combination of `n` and `l` or `r` attribute like example above (`\nlfrac`) is also supported.

## Writing Roots

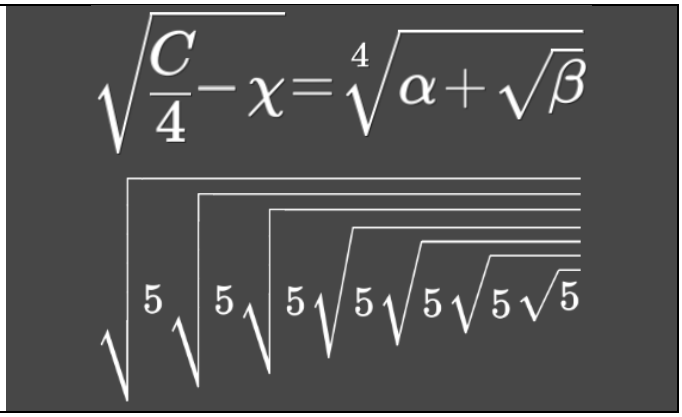
Root is another common math operation in everyday life. It's consisting of expandable surd (radical) sign (√) with a thick line on the root base. Writing Roots is easy, by follow on this format:

`\root[degree]{base}`

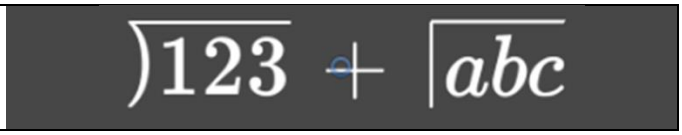
Here, type \root followed by base root surrounded by braces. The degree symbol is optional, but if you need it, simply type it before root base and surrounded by square bracket. Unlike fraction, root doesn't have any variations, but the root sign (√) can be replaced by typing a delimiter in `[degree]`

```
\root \frac{C}{4}-\chi}=\root[4]\alpha+\root{\beta}
```

```
\root 5\root 5\root 5\root 5\root 5\root 5\root 5
```



```
\root[)]{123} + \root[|]{abc}
```

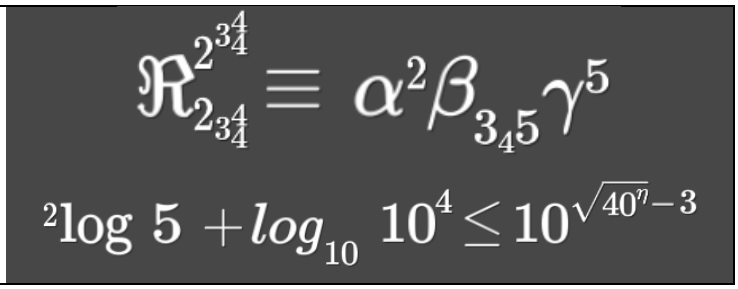


## Superscript and Subscript

Scripts in TEXDraw can be achieved by typing `^` for superscript, or `_` for subscript. Optionally you can put braces `{}` after it so it is clear which character are taken into account

```
\Re^{2^3^4_4}_{2_3_4^4}\equiv
\alpha^2\beta_3_4}5\gamma^5

^2\log 5 +\log_10
10^4\leq10^{\root{40^\eta}-3}
```



Note the first example. Scripts have depth level, and it is limited to three, beyond that, they won't go smaller again.

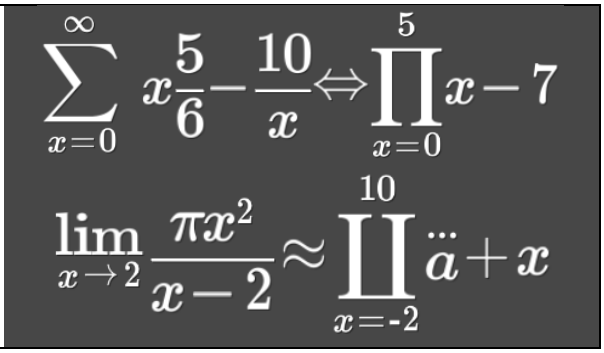
**NOTE:** Scripts have issues when used in conjunction with TexSupPerCharacterBase. Make sure *always* make braces `{}` after script, otherwise it'll mess up final rendering.

## Expression Over/Under another Expression

Scripts put expressions in front their base expression, but to put it directly over/under them, they need to declare scripts for two times. That's mean `^^` to put it over, and `__` to put in under. Double script isn't necessary if base expression is member of Big Operator.

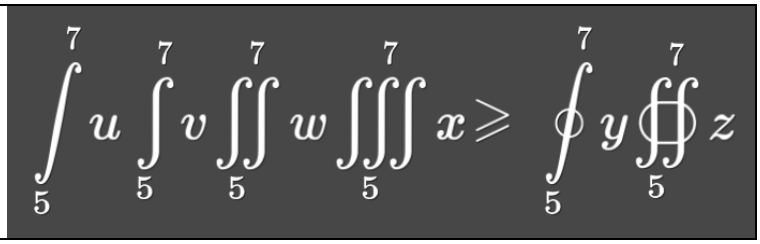
```
\sum^\infty_{x=0} x\frac{5}{6}-
\frac{10}{x}\Leftrightarrow\prod^5_{x=0}
x-7

\lim__{x\rightarrow2}\frac{\pi{x}^2}{x-
2}\approx\coprod^10_{x=\min2}{a^^{...}+x
}
```

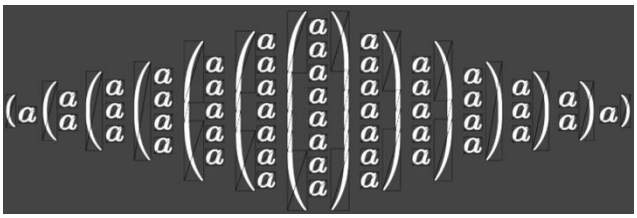


For integrals, they'll automatically aligned to *hardcoded* alignment.

```
\int^7_5}u
\varint^7_5}v
\iint^7_5} w
\iiint^7_5} x
\geqslant
\oint^7_5}y
\oiint^7_5}z
```



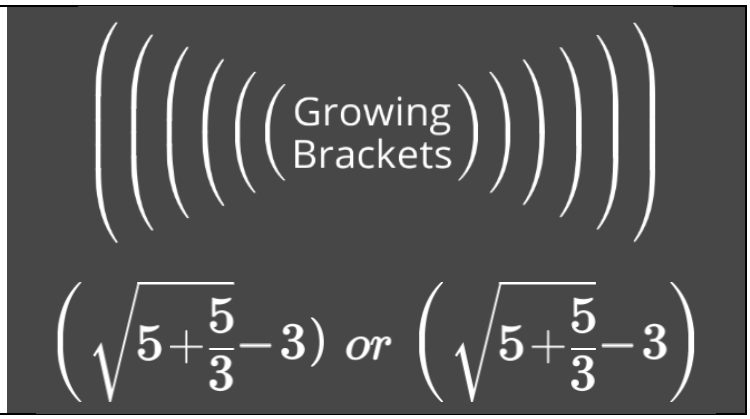
## Using Expandable Delimiters



Delimiters like brackets `()`, or any other variations like `[]`, `{}`, `||` can expand higher or equal than their neighbors, automatically. This feature called Expandable delimiter and they can expand either vertically or horizontally depending on the specific character itself.

Growing brackets determining it's minimum height by comparing  on other character in either left or right side of it. This behavior mostly result in equal height on pairs, except on specific case, and therefore, optional braces `{}` can be given to make both equal in height

```
((((((\opens\nfrac{Growing}
    {Brackets}}))))))
```




```
(\root{5+\frac{5}{3}}-3) or
({\root{5+\frac{5}{3}}-3})
```

## Using Horizontal Extension

Horizontal extension is something like expandable delimiter... but expand horizontally. This situation can be used for something like very long horizontal Arrow, or if you want to create some horizontal arrow with text/graphic placed above/under it. This feature can be used by putting double script before a horizontal extension. This is also works for vertical extension, but they'll rotated clockwise (so it is still a horizontal extension).

```
{left}__{\leftarrow}
    \blacksquare
{right}__{\rightarrow}
```

```
{\boxtimes
{\ldot\ldot}__{\rightarrow}
    \odot}__\rbrack
```

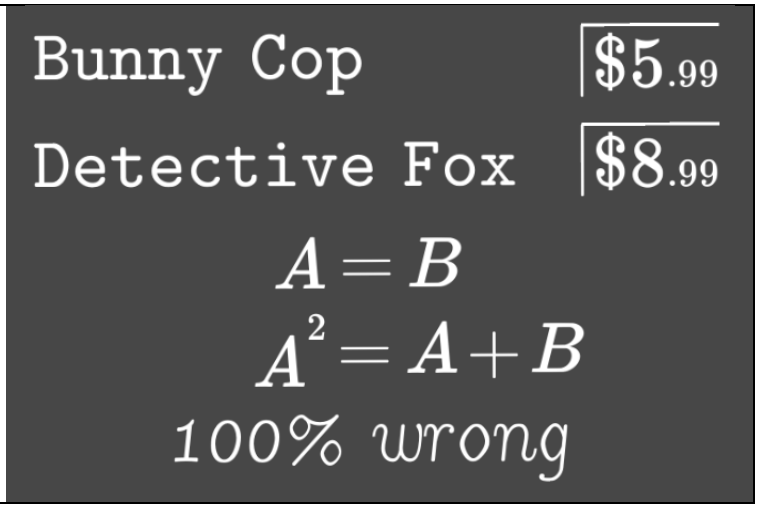
## Preserving Fixed amount of Horizontal Space

`\[l|r]hold[width]{base}`

`\hold` command preserves a relative amount of `[width]`, and then use the reserved space to fill with `{base}`, optionally. If `{base}` is an Expandable delimiter, it'll expand automatically. Also optionally you can choose the alignment either left or right using `\lhold` or `\rhold`. Much likely you'll use this to align expressions correctly without splitting game objects.

```
\lhold[7]{Bunny Cop}
\math\root[|]$5\size[.].99
\lhold[7]{Detective Fox}
\math\root[|]$8\size[.].99

\rhold[4]{A}=\lhold[4]{B}
\rhold[4]{A^2}=\lhold[4]{A+B}
\cmfi 100% wrong
```

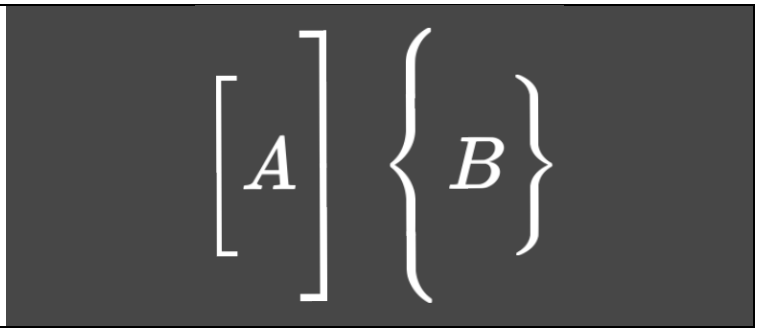



## Preserving Fixed amount of Vertical Space

`\[t|v|b]hold[height]{base}`

This version of \hold command reserves expression vertically. Use this if you want a fixed tall of expandable delimiters.

```
\vhold[2]{[}A\vhold[3]{]}
\vhold[3]{\{}B\vhold[2]{\}}
```



## Custom Color

`\color[hexcolor]{base}`

Rendered color can be configured by \color and specifying by `[hexcolor]`. Supported schemes for `[hexcolor]` is `[#rgb]`, `[#rgba]`, `[#rrggbb]`, `[#rrggbbaa]`. It also accept without hashtag `[rgb]`, or unity's html name `[yellow]`, or even customized 4-bit console color.

```
\color[f52] a\color[#bf1]
b\color[#2f9] c\color[cyan]
d\color[46f] e

\clr[0]0\clr[1]1\clr[2]2\clr[3]3
\clr[4]4\clr[5]5\clr[6]6\clr[7]7
\clr[8]8\clr[9]9\clr[a]a\clr[b]b
\clr[c]c\clr[d]d\clr[e]e\clr[f]f
```

Beside `\color`, there's also `\clr` and `\mclr`. The difference between these three is in how they mix existing color. `\color` will overwrite RGB, but A will be multiplied, `\clr` overwrites all RGBA channel, while `\mclr` (abbreviate for *mix-color*) will multiply all RGBA channel.

## Custom Size

`\size[ratio-offset]{base}`

The `\size` command resize characters relatively, optionally offset can be given for shift character upward. Unlike other commands, size work independently each other, so they can't be nested. There also special typos like `\size[.]` to make it smaller as script, and `\size[..]` to make it smaller as size of nested scripts.

```
\eufm{Station} 9\size[.45-
.15]\frac{3}{4}

This{\size[..]is ridicolously
small as}__{\Rightarrow}Hell
```

## Writing Matrix

Matrix is a bunch of expression that grouped in specific column and row. Matrix is separated in column by `&`, then in row by `|`. By default, matrix is filled row-by-row.

```
\[v]matrix{n11&n12&n13|n21&n22&n23|n31&n32&n33 … }
```

```
[\matrix{x|y}]\times|\matrix{2&8|
3&\min1}|=(\matrix{\min9&8|9&\alp
ha})
```

$$\begin{bmatrix} x \\ y \end{bmatrix} \times \begin{vmatrix} 2 & 8 \\ 3 & -1 \end{vmatrix} = \begin{pmatrix} -9 & 8 \\ 9 & \alpha \end{pmatrix}$$

```
n_{xy}=\{\matrix{n_0& ...
&n_x||{:\dot}&&{:\dot}||n_y& ...
&n_{xy}}\}
```

$$n_{xy} = \left\{ \begin{matrix} n_0 & \cdots & n_x \\ \vdots & & \vdots \\ n_y & \cdots & n_{xy} \end{matrix} \right\}$$

To write matrix column-by-column you can type `\vmatrix{…}` instead, so `\matrix{a&b|c&d}` is equal to `\vmatrix{a|c&b|d}`.

## Writing Table

Writing Table in TEXDraw is similar to Matrix, the only difference is that they added some lines between and outside of each child. In this table, you can also set-up cell alignment and line widths.

```
\[v|r|l]table[line-widths]{n11&n12&n13|n21&n22&n23|n31&n32&n33 … }
```

You can type \rtable for alignment to the right, or \vtable if you want column-by-column table (like matrix above). You can also change each cell line thickness by modifying the line-widths section. In Line-width options, type 6 digits that defines their thickness of (correspond to) Horizontal lines in outside, first, and secondary cell, while last 3 digits represent the thickness for vertical lines in outside, first, and secondary cell. Maximum allowed line thickness is 2, while you still can type them zero if you doesn't want to.

```
\ltable[111121]\Number&\Class&\Na
me|001&A&John|002&B&Skeet|003&C&B
row
```

| Number | Class | Name |
|---|---|---|
| 001 | *A* | *John* |
| 002 | *B* | *Skeet* |
| 003 | *C* | *Brow* |

## Adding Diagonal Overlay Lines

Sometimes, in math, you need a line that crosses some formula either horizontal or diagonally. TEXDraw made them simpler.

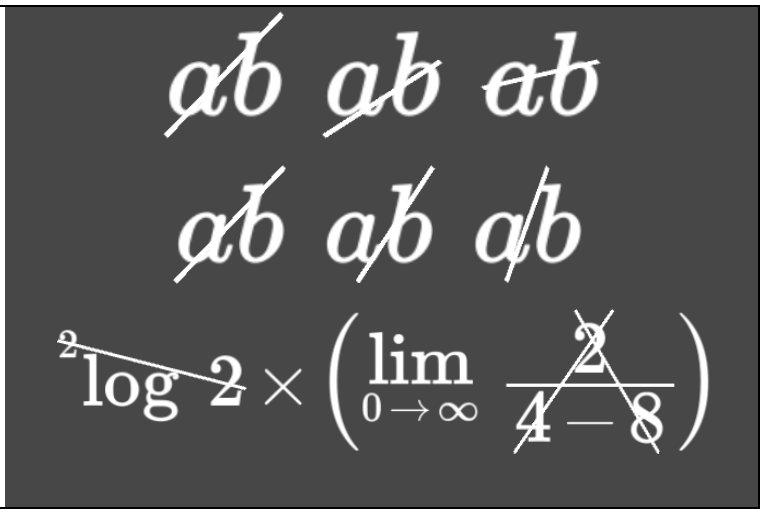
```
\[v|n]not[offset1-offset2]{base}
```

Formula above creates a diagonal line across base. Default direction is from bottom-left to top-right, and you can inverse it by using \nnot. Additionally, `[offset1-offset2]` determine distances between corners (horizontally), while \vnot giving distances from corner vertically. Both also can be combined.

```
\not[0-0]{ab} \not[0-.4]{ab}
\not[.4-.4]{ab}

\vnot[0-0]{ab} \vnot[.3-0]{ab}
\vnot[.3-.3]{ab}

\nnot[.6-.3]{^2\log
2}\times(\lim__{0\rightarrow\inft
y} {\vnot[.1-.8]\vnnot[.9-
.2]{\frac{2}{4-8}}})
```



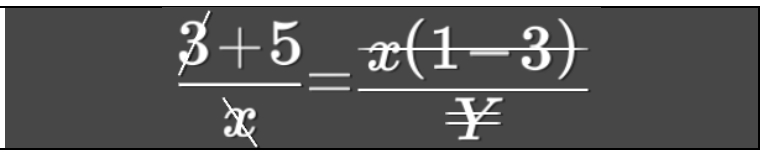
## Adding Horizontal Overlay Lines

To give horizontal line across base, you can instead choose one of four choices below.

```
\[h|d|u|o]not[offset]{base}
```

`\hnot` means strikethrough, while `\dnot` means double strikethrough. `\unot` and `\under` can be used as underline, while `\onot` and `\over` means overline. All of them are matter of placing and can be shifted vertically using `[offset]`, optionally.

```
\frac{\not{3}+5}{\nnot{x}}=\frac{
\hnot{x(1-3)}}{\dnot{Y}}
```



## Clickable Link

`\[u]link[eventname]{base}`

This command requires TEXLink to be added besides TEXDraw, otherwise it is never functional at all. This command make {base}'s color goes interactable through user interaction.

When user clicks on {base}, TEXLink's event `OnLinkClicked(string)` are triggered, where `(string)` is what `[eventname]` says, or `{base}`, if it omitted.

There's also \ulink to get  a hyperlink-like by giving underline beneath it.

## Meta (Paragraph-wide) configuration

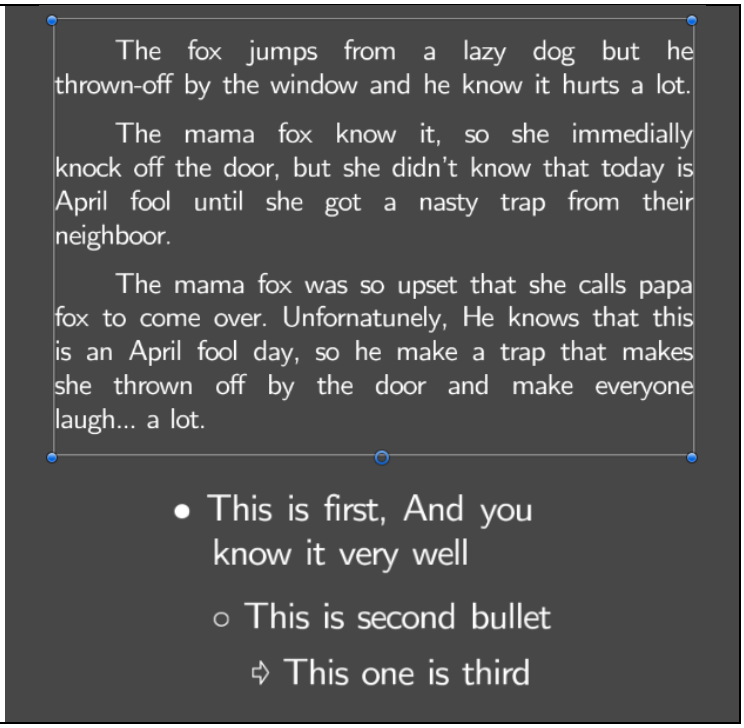
Meta is a special command that instead of make the effect on specific block, it's affect the whole paragraph, and any paragraph beneath it. The options of using Meta are:

| | | | | | |
|---|---|---|---|---|---|
| `font` | `f` | Select font by index | `kern` | `k` | Additional character kerning |
| `Size` | `s` | Override an absolute size | `lead` | `l` | Left margin of first line in paragraph |
| `align` | `x` | Align paragraph by l, c, or r | `line` | `h` | Set a fixed line height |
| `Left` | `b` | Left paragraph margin | `space` | `n` | Additional line spaces at every line |
| `right` | `r` | Right paragraph margin | `para` | `p` | Additional line spaces at end of paragraph |

You can combine multiple options into one like: `\meta[left=2 align=r para=1]` or make it shorter: `\meta[@b2xrp1]`. Meta is really useful if you want to create paragraph-based text or bulleted list of things. Also if you put meta on empty paragraph, the paragraph will have zero height. You can reset the properties back by entering empty `\meta[]`

```
\meta[lead=2 para=.5 kern=-.05]
The fox jumps from a lazy dog but he thrown-off by the window and he know it hurts a lot.
The mama fox know it, so she immedially knock off the door, but she didn't know that today is April fool until she got a nasty trap from their neighboor.
The mama fox was so upset that she calls papa fox to come over. Unfornatunely, He knows that this is an April fool day, so he make a trap that makes she thrown off by the door and make everyone laugh... a lot.
```

```
\meta[lead=-1.5 left=1.5 para=.5 kern=-.05]
\rhold[1]\bullet This is first, And you know it very well
\rhold[2]\circ This is second bullet
\rhold[3]\pointer This one is third
```



## Apply 3D Transformation to Character

`\[m]trs[transformation]{base}`

Using this command, characters can be translated, rotated, and scaled either individually (`\trs`) or by median (`\mtrs`). Please note that this command only doing the transformation, after *boxing* process, so this mean other character won't be recalculated anymore. The rules for `[transformation]` is like:

| Example | Means | Example | Means |
|---|---|---|---|
| [T1.0] | Move by 1 unit at Z direction | [R20,30] | Rotate by (X, Y) = (20,30) |
| [T1,2] | Move at (X,Y) = (1,2) | [S2] | Scale by factor of 2, uniformly |
| [T3,2,-1] | Move at (X,Y,Z) = (3,2,-1) | [S1,3] | Scale by (X,Y) = (1,3) |
| [R20] | Rotate by 20 degree at Z | [T2R30] | Move (Z) = 2, then Rotate (Z) = 30 |
| [RX-20] | Rotate by -20 degree at X | [S2TZ1] | Scale by factor of 2 then move Z by 1 |

```
\trs[R10]Slanted \trs[S1.6]\cmss
text

\trs[R10]B}\trs[Y.15R14]i}\trs[Y.
3R13]n}\trs[Y.45R10]d}\trs[Y.5R6]
  i}\trs[Y.5R2]n}\trs[Y.5R-1]g}
  \trs[Y.45R-9]I}\trs[Y.4R-8]t}
```

3D Transformation like this are super useful if the calculation is automated.

## Make Background Behind Text

`\[v]bg[hexcolor]{base}`

This is fairly new feature to TEXDraw. This command will draw a solid rectangle behind base with given hex-color. The `hexcolor` syntax that used here is exactly the same with \color used. The \vbg option is added so you have option if margin need to be added or not.

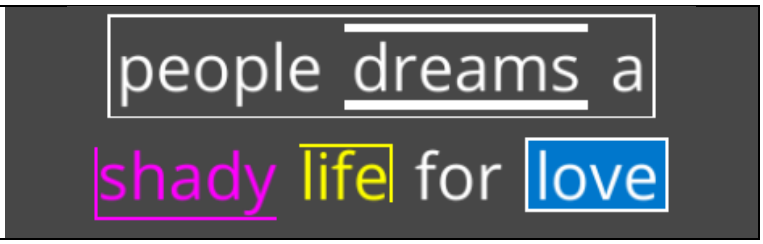
```
\bg[brown] I know}
{\bg[yellow]\color[black]
something
\vbg[green]\color[white]really}
matters \bg[purple] in life.
```

## Make Border Around Text

`\[v]border[serialwidth hexcolor]{base}`

This new feature comes with 4.0. Unlike \table, this allows you to give different width to each side. This serialwidth can be input as: [`x`] means for all side (left-right-top-bottom); [`xx`] for left-right, top-bottom; [`xxxx`] for left, bottom, right, top (counter-clockwise from left); where `x` is digit from `0` to `9`. Like \bg, you can use \vborder to omit margin between the border and the text inside.

```
\border people
\border[03]{dreams} a
\vborder[1100 magenta] shady}
\vborder[0011 yellow] life}□for
\vborder\bg[07c] love
```



# TEXDraw Symbols

These +600 symbols are available

## Greek Letters

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\alpha$ | \alpha | $\eta$ | \eta | $\nu$ | \nu | $\upsilon$ | \upsilon |
| $\beta$ | \beta | $\theta$ | \theta | $\xi$ | \xi | $\phi$ | \phi |
| $\gamma$ | \gamma | $\iota$ | \iota | $\pi$ | \pi | $\chi$ | \chi |
| $\delta$ | \delta | $\kappa$ | \kappa | $\rho$ | \rho | $\psi$ | \psi |
| $\epsilon$ | \epsilon | $\lambda$ | \lambda | $\sigma$ | \sigma | $\omega$ | \omega |
| $\zeta$ | \zeta | $\mu$ | \mu | $\tau$ | \tau | | |
| $\varepsilon$ | \varepsilon | $\varrho$ | \varrho | $\varpi$ | \varpi | $\ni$ | \backepsilon |
| $\vartheta$ | \vartheta | $\varsigma$ | \varsigma | $\varphi$ | \varphi | | |
| $\Gamma$ | \Gamma | $\Lambda$ | \Lambda | $\Sigma$ | \Sigma | $\Psi$ | \Psi |
| $\Delta$ | \Delta | $\Xi$ | \Xi | $\Upsilon$ | \Upsilon | $\Omega$ | \Omega |
| $\Theta$ | \Theta | $\Pi$ | \Pi | $\Phi$ | \Phi | | |

## Common Ordinary Symbol

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| / | \forwardslash<br>\slash | ¿ | \invquestion | ¡ | \invfaculty | - | \min<br>\varminus |
| # | \numbersign | ? | \question | ! | \faculty | & | \ampersand |
| % | \percent | $ | \dollar | ” | \cdqot<br>\doublequote | ’ | \semiquote |
| ‰ | \permil | ¢ | \cent | “ | \odqot<br>\vardoublequote | , | \comma |
| @ | \commercialat | : | \colon | ; | \semicolon | . | \ldot<br>\ldotp |

## Miscellaneous Symbol

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\partial$ | \partial | $\prime$ | \prime | þ | \thorn | ℧ | \mho |
| $\ell$ | \ell | $\backprime$ | \backprime | Þ | \Thorn | ð | \eth |
| $\imath$ | \imath | $\infty$ | \infty | ð | \dh | ב | \beth |
| $\jmath$ | \jmath | $\varnothing$ | \varnothing | ɔ | \openo | ג | \gimel |
| ℘ | \wp | $\emptyset$ | \emptyset | ⅎ | \Finv | ד | \daleth |
| ℜ | \Re | $\forall$ | \forall | ⅁ | \Game | Ϝ | \digamma |
| ℑ | \Im | $\exists$ | \exists | $\surd$ | \surd | $\varkappa$ | \varkappa |
| ℵ | \aleph | $\nexists$ | \nexists | ∐ | \amalg | 𝕜 | \Bbbk |
| ® | \circledR | ¬ | \neg<br>\lnot | $\nabla$ | \nabla | ħ | \hslash |
| Ⓢ | \circledS | ⌐ | \rnot | $\smallint$ | \smallint | ℏ | \hbar |
| ∁ | \complement | ¥ | \yen | ⁄ | \diagup | ╲ | \diagdown |
| ⋈ | \bowtie | ¦ | \brokenvert | ə | \inve | \ | \backslash |

## Astronomical Symbols

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☊ | \ascnode | ☿ | \mercury | ♉ | \taurus | ♐ | \sagittarius |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☋ | \descnode | ♃ | \jupiter | ♊ | \gemini | ♑ | \capricornus |
| ♀ | \male | ♄ | \saturn | ♋ | \cancer | ♒ | \aquarius |
| ♂ | \female | ♅ | \uranus | ♍ | \virgo | ♓ | \pisces |
| ♁ | \earth | ♆ | \neptune | ♎ | \libra | ☌ | \conjunction |
| ☼ | \sun | ♇ | \pluto | ♏ | \scorpio | ☍ | \opposition |

## Block Shapes

| | | | | | |
|---|---|---|---|---|---|
| ▲ | \blacktriangle | ○ | \circ | △ | \bigtriangleup<br>\triangle |
| ▼ | \blacktriangledown | ● | \bullet | ▽ | \bigtriangledown |
| ◀ | \blacktriangleleft | ◯ | \bigcirc | △ | \vartriangle |
| ▶ | \blacktriangleright | | \star | ▽ | \triangledown |
| ◖ | \halfleftcirc | ★ | \blackstar | ◀ | \leftblacktriangle |
| ◗ | \halfrightcirc | □ | \square | ▶ | \rightblacktriangle |
| ◐ | \blackhalfleftcirc | ■ | \blacksquare | ◊ | \lozenge |
| ◑ | \blackhalfrightcirc | ◇ | \diamond | ♦ | \blacklozenge |

| | | | | | |
|---|---|---|---|---|---|
| | \leftmoon | | \bendsquare | | \ataribox |
| | \rightmoon | | \pentagon | | \clubsuit |
| | \smiley | | \hexagon | | \spadesuit |
| | \blacksmiley | | \varhexagon | | \diamondsuit |
| | \frownie | | \octagon | | \heartsuit |

## Geometrical Symbol Shapes

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \flat | | \angle | | \smile | | \smallsmile |
| | \natural | | \varangle | | \frown | | \smallfrown |
| | \sharp | | \measuredangle | | \top | | \dagger |
| | \eighthnote | | \sphericalangle | | \bot<br>\perp | | \ddagger |
| | \quarternote | | \diameter | | \clock | | \phone |
| | \halfnote | | \invdiameter | | \pointer | | \recorder |
| | \fullnote | | \rightturn | | \bell | | \ball |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \twonote | | \leftturn | | \check | | \lightning |
| | \AC<br>\photon | | \penstar | | \checkmark | | \varlightning |
| | \gluon | | \hexstar | | \pilcrow | | \currency |
| | \VHF | | \varhexstar | | \kreuz | | \comment |
| | \vernal | | \davidstar | | | | \maltese |

## Boxed Binary Operators

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \oplus | | \boxarrowup | | \varotimes | | \boxplus |
| | \ominus | | \boxarrowdown | | \varoast | | \boxminus |
| | \otimes | | \boxarrowleft | | \varobar | | \boxtimes |
| | \oslash | | \boxarrowright | | \varodot | | \boxdot |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \odot | | \varolessthan | | \varoslash | | \varboxast |
| | \obar | | \varogreaterthan | | \varobslash | | \varboxbar |
| | \obslash | | \varovee | | \varocirc | | \varboxdot |
| | \olessthan | | \varowedge | | \varoplus | | \varboxslash |
| | \ogreaterthan | | \Yup | | \varominus | | \varboxbslash |
| | \ovee | | \Ydown | | \circledcirc | | \varboxcirc |
| | \owedge | | \Yleft | | \circledast | | \varboxbox |
| | | | \Yright | | \circleddast | | \varboxempty |

## Binary Operators

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \plus | | \pm | | \mp | | \cdot |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \minus | | \cup | | \cap | | \centerdot |
| | \times | | \ucup | | \nplus | | \wr |
| | \ast | | \sqcup | | \sqcap | | \moo |
| | \div | | \wedge<br>\land | | \vee<br>\lor | | \merge |
| | \vartimes | | \varcurlywee | | \varcurlywedge | | \varbigcirc |
| | \dotplus | | \minuso | | \baro | | \talloblong |
| | \intercal | | \sslash | | \bbslash | | \oblong |
| | \fatsemi | | \fatslash | | \fatbslash | | \pointleft |
| | \divideontimes | | \binampersand | | \bindnasrepma | | \pointright |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \doublebarwedge<br>\Barwedge | | \barwedge | | \veebar | | \pointup |
| | \leftthreetimes | | \Cap<br>\doublecap | | \Cup<br>\doublecup | | \pointdown |
| | \rightthreetimes | | \curlywedge | | \curlyvee | | |
| | | | \ltimes | | \rtimes | | |

## Relation Comparer

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \less<br>\l | | \gtr<br>\g | | \prec | | \succ |
| | \leq | | \geq | | \preceq | | \succeq |
| | \leqq | | \geqq | | \precsim | | \succsim |
| | \leqslant | | \geqslant | | \precapprox | | \succapprox |
| | \lesssim | | \gtrsim | | \preccurlyeq | | \succcurlyeq |
| | \lessapprox | | \gtrapprox | | \curlyeqprec | | \curlyeqsucc |
| | \eqslantless | | \eqslantgtr | | \subset | | \supset |
| | \lessgtr | | \gtrless | | \subseteq | | \supseteq |
| | \lesseqgtr | | \gtreqless | | \subseteqq | | \supseteqq |
| | \lesseqqgtr | | \gtreqqless | | \Subset<br>\doublesubset | | \Supset<br>\doublesupset |
| | \ll<br>\Less | | \gg<br>\Gtr | | \sqsubset | | \sqsupset |
| | \lll<br>\llless | | \ggg<br>\gggtr | | \sqsubseteq | | \sqsupseteq |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\lvertneqq$ | \lvertneqq | $\gvertneqq$ | \gvertneqq | $\subsetplus$ | \subsetplus | $\supsetplus$ | \supsetplus |
| $\lessdot$ | \lessdot | $\gtrdot$ | \gtrdot | $\subsetpluseq$ | \subsetpluseq | $\supsetpluseq$ | \supsetpluseq |

## Miscellaneus Relations

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| $\triangleleft$ | \triangleleft | $\triangleright$ | \triangleright | $=$ | \equal<br>\eq | $\equiv$ | \equiv |
| $\vartriangleleft$ | \vartriangleleft | $\vartriangleright$ | \vartriangleright | $\doteqdot$ | \doteqdot<br>\Doteq | $\triangleq$ | \triangleq |
| $\trianglelefteq$ | \trianglelefteq | $\trianglerighteq$ | \trianglerighteq | $\risingdotseq$ | \rising<br>dotseq | $\fallingdotseq$ | \falling<br>dotseq |
| $\trianglelefteqslant$ | \trianglelefteq<br>slant | $\trianglerighteqslant$ | \trianglerighteq<br>slant | $\asymp$ | \asymp | $\propto$ | \propto |
| $\leftslice$ | \leftslice | $\rightslice$ | \rightslice | $\varsmallpropto$ | \varsmall<br>propto | $\varpropto$ | \varpropto |
| $\vdash$ | \vdash | $\dashv$ | \dashv | $\sim$ | \sim | $\approx$ | \approx |
| $\Vdash$ | \Vdash | $\vDash$ | \vDash | $\thicksim$ | \thicksim | $\thickapprox$ | \thickapprox |
| $\Vvdash$ | \Vvdash | $\approxeq$ | \approxeq | $\simeq$ | \simeq | $\eqsim$ | \eqsim |
| $\in$ | \in | $\ni$ | \ni | $\backsim$ | \backsim | $\backsimeq$ | \backsimeq |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \inplus | | \niplus | | \bumpeq | | \Bumpeq |
| | \therefore | | \because | | \eqcirc | | \circeq |
| | \mid | | \parallel | | \interleave | | \pitchfork |
| | \shortmid | | \shortparallel | | | | \between |

## Negated Relations

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \nless | | \ngtr | | \nprec | | \nsucc |
| | \nleq | | \ngeq | | \npreceq | | \nsucceq |
| | \lneq | | \gneq | | \precneqq | | \succneqq |
| | \nleqslant | | \ngeqslant | | \precnsim | | \succcnsim |
| | \lneqq | | \gneqq | | \precnapprox | | \succnapprox |
| | \nleqq | | \ngeqq | | \nsubseteq | | \nsupseteq |
| | \lnsim | | \gnsim | | \subsetneq | | \supsetneq |
| | \lnapprox | | \gnapprox | | \varsubsetneq | | \varsupsetneq |
| | \nsim | | \ncong | | \nsubseteqq | | \nsupseteqq |
| | \nmid | | \nparallel | | \subsetneqq | | \supsetneqq |
| | \nshortmid | | \nshort parallel | | \varsubsetneqq | | \varsupsetneqq |
| | \nvdash | | \nVdash | | \ntriangleleft | | \ntriangleright |
| | \nvDash | | \nVDash | | \ntrianglelefteq | | \ntrianglerighteq |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | \ntriangleleft eqslant | | \ntriangleleft eqslant |

## Primary Arrows

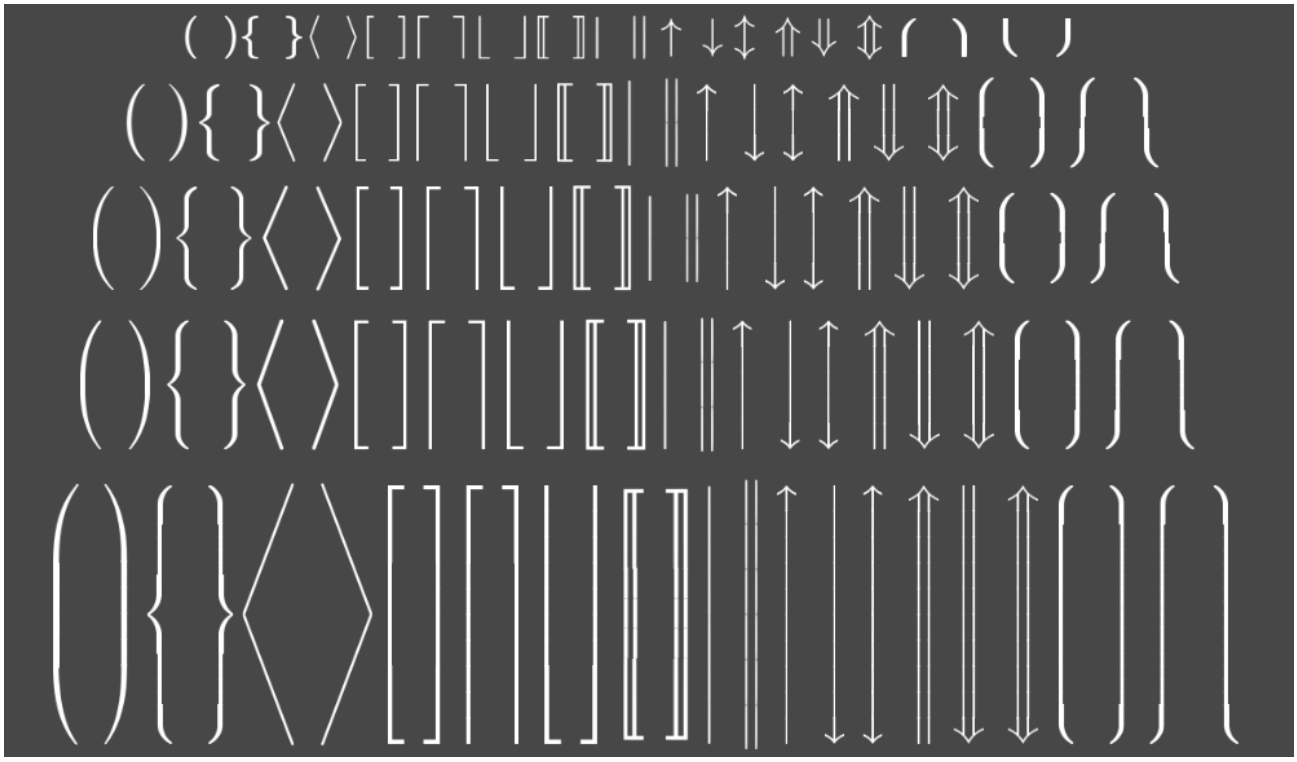
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \uparrow | | \Uparrow | | \leftharpoonup | | \nearrow |
| | \downarrow | | \Downarrow | | \leftharpoondown | | \searrow |
| | \leftarrow | | \Leftarrow | | \rightharpoonup | | \swarrow |
| | \rightarrow | | \Rightarrow | | \rightharpoondown | | \nwarroy |
| | \leftright arrow | | \Leftright arrow | | \upharpoonleft | | \nnwarrow |
| | \updownarrow | | \Updownarrow | | \upharpoonright | | \nnearrow |
| | \circle arrowright | | \curve arrowleft | | \downharpoonleft | | \sswarrow |
| | \circle arrowleft | | \curve arrowright | | \downharpoonright | | \ssearrow |

*) New in V2.6, every horizontal arrow can stretch automatically using ^^ or __ (example: {into}__{\rightarrow}). In 2.7, Vertical delimiters also accepted with rotating the character clockwise.

## Compound Arrows

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | \shortup arrow | | \upuparrows | | \leftright harpoons | | \curlyvee uparrow |
| | \shortdown arrow | | \downdown arrows | | \rightleft harpoons | | \curlyvee downarrow |
| | \shortleft arrow | | \leftleft arrows | | \leftright arrows | | \curlywedge uparrow |
| | \shortright arrow | | \rightright arrows | | \rightleft arrows | | \curlywedge downarrow |
| | \nleftarrow | | \Lsh | | \twohead leftarrow | | \Rrightarrow |
| | \nrightarrow | | \Rsh | | \twohead rightarrow | | \Lleftarrow |
| | \nLeftarrow | | \looparrowleft | | \rightsquig arrow | | \leftright arrowtriangle |
| | \nRightarrow | | \looparrowright | | \leftright squigarrow | | \leftarrow triangle |
| | \nleftright arrow | | \leftarrowtail | | \leftright arroweq | | \rightarrow triangle |
| | \nLeftright arrow | | \rightarrowtail | | | | \multimap |

## Expandable Delimiters



From left to right (read column-by-column):

| | | | |
|---|---|---|---|
| \lbrack | \lsqbrack | \rrbracket | \Downarrow |
| \rbrack | \rsqbrack | \vert | \Updownarrow |
| \lbrace | \lceil | \Vert | \lgroup |
| \rbrace | \rceil | \uparrow | \rgroup |
| \langle | \lfloor | \downarrow | \lmoustache |
| \rangle | \rfloor | \updownarrow | \rmoustache |
| | \llbracket | \Uparrow | |

## Open & Closing Delimiter

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ( | \lbrack | ) | \rbrack | [ | \lsqbrack | ] | \rsqbrack |
| { | \lbrace | } | \rbrace | ⟨ | \langle | ⟩ | \rangle |
| ⌈ | \lceil | ⌉ | \rceil | ⌊ | \lfloor | ⌋ | \rfloor |
| ⟮ | \lgroup | ⟯ | \rgroup | ⟅ | \lmoustache | ⟆ | \rmoustache |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ⟅ | \lbag | ⟆ | \rbag | ⦇ | \Lbag | ⦈ | \Rbag |
| ⟦ | \llbracket | ⟧ | \rrbracket | ⦅ | \llparenthesis | ⦆ | \rrparenthesis |
| ⟬ | \llfloor | ⟭ | \rrfloor | ⟮ | \llceil | ⟯ | \rrceil |

## Large Operator

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ∫ | \int | ⨍ | \varint | ∬ | \iint | ∭ | \iiint |
| ∮ | \oint | ∲ | \varoint | ∯ | \oiint | ⫼ | \bigparallel |
| ∑ | \sum | ∏ | \prod | ∐ | \coprod | ⫼ | \biginterleave |
| ⋃ | \bigcup | ⋂ | \bigcap | ⨁ | \bigoplus | ☐ | \bigbox |
| ⨆ | \bigsqcup | ⨅ | \bigsqcap | ⨂ | \bigotimes | ▽ | \big triangledown |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ⨄ | \biguplus | ⨇ | \bignplus | ⨀ | \bigodot | △ | \big triangleup |
| ⋀ | \bigwedge<br>\bigland | ⋁ | \bigvee<br>\biglor | ⋏ | \bigcurlyvee | ⋎ | \bigcurlywedge |

## Accent

These accents can be applied after a digit or symbol (widehat and widetilde can support more than one character as their base.

IMPORTANT: Always put accents in a braces inside (eg: {e\acute})

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ´ | \acute | ~ | \tilde | ˇ | \check | ˙ | \dot |
| ` | \grave | ¯ | \bar | ^ | \hat | → | \vec |
| ˝ | \floatquote | ⏜ | \floatband | ° | \Dot | ⃛ | \ddot |
| | | | | ⏠ | \widehat | ⃜ | \widetilde |
| | | ˘ | \breve | | | | |

## Preserved Characters

These character defines char map data that included in the preference.

| Char | Defined As | Char | Defined As | Char | Defined As | Char | Defined As |
|---|---|---|---|---|---|---|---|
| + | \plus | [ | \lsqbrack | ; | \semicolon | ? | \question |
| - | \minus | ] | \rsqbrack | : | \colon | ! | \ldotp |
| * | \ast | < | \lt | ` | \vert | @ | \commercialat |
| / | \slash | > | \gt | ~ | \question | # | \numbersign |
| = | \equals | \| | \vert | ‘ | \faculty | $ | \dollar |
| ( | \lbrack | . | \ldot | “ | \ampersand | % | \percent |
| ) | \rbrack | , | \comma | \^ | -- | & | \ampersand |
| \{ | \lbrace | \} | \rbrace | _ | -- | \\ | \backslash |