_____ enclose math symbols by

[**tex**]. . . . . . . . . [**/tex**].

For instance `[tex]x^2\sqrt{x}[\tex]` will produce "$x^2\sqrt{x}$ ".

**If you want to find out how a math formula was input by another user, click on the message's "quote" button!**

For those of you who know LATEX: [tex]. . . [/tex] is equivalent to `$...$`. Thus you cannot use `$, $$, \[, \]`. Avoid `\begin{...}...\end{...}`, etc. All mathematical symbols, but only a small subset of LATEX-commands will work on our CyberBoard.

## A LATEX crash-course.

**Special characters.** The following symbols have special meaning in LATEX: `# $ % _ { } ~ ^ \`
You can print the first seven of these by using `\# \$ \% \_ \{ \}` .

**Lines and Text.** `\\` starts a new line, `\` includes a space, `\mbox{...}` includes text.

**Sub- and Superscripts.** `x^2` produces $x^2$, `x_{2n}` produces $x_{2n}$. Here is another example: `\log_{5} 25=2`
gives $\log_5 25 = 2$.

**Fractions.** Use `\frac` to display fractions. Example: `\frac{\pi^2}{6}` gives $\frac{\pi^2}{6}$.

**Roots.** Use `\sqrt`. For instance, `\sqrt{a^2+b^2}` produces $\sqrt{a^2+b^2}$. You can also get "other" roots: `\sqrt[3]{2}` yields $\sqrt[3]{2}$.

**Delimiters.** The inputs `( ) [ ] \{ \}` yield the outputs ( ) [ ] { } .

**Greek letters.**

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

**Functions.**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| log | `\log` | lg | `\lg` | ln | `\ln` | exp | `\exp` |
| sin | `\sin` | cos | `\cos` | tan | `\tan` | cot | `\cot` |
| sec | `\sec` | csc | `\csc` | arcsin | `\arcsin` | arccos | `\arccos` |
| arctan | `\arctan` | deg | `\deg` | arg | `\arg` | inf | `\inf` |
| sup | `\sup` | min | `\min` | max | `\max` | lim | `\lim` |
| lim inf | `\liminf` | lim sup | `\limsup` | det | `\det` | dim | `\dim` |
| ker | `\ker` | gcd | `\gcd` | mod | `\bmod` | | |

**Miscellaneous Symbols.**

| | | | | | |
|---|---|---|---|---|---|
| ℵ | \aleph | ′ | \prime | ∀ | \forall |
| ℏ | \hbar | ∅ | \emptyset | ∃ | \exists |
| ı | \imath | ∇ | \nabla | ¬ | \neg |
| ȷ | \jmath | √ | \surd | ♭ | \flat |
| ℓ | \ell | ⊤ | \top | ♮ | \natural |
| ℘ | \wp | ⊥ | \bot | ♯ | \sharp |
| ℜ | \Re | ∥ | \| | ♣ | \clubsuit |
| ℑ | \Im | ∠ | \angle | ♢ | \diamondsuit |
| ∂ | \partial | △ | \triangle | ♡ | \heartsuit |
| ∞ | \infty | \ | \backslash | ♠ | \spadesuit |

**"Large" Operators.**

| | | | | | |
|---|---|---|---|---|---|
| ∑ | \sum | ∩ | \bigcap | ⊙ | \bigodot |
| ∏ | \prod | ∪ | \bigcup | ⊗ | \bigotimes |
| ∐ | \coprod | ⊔ | \bigsqcup | ⊕ | \bigoplus |
| ∫ | \int | ∨ | \bigvee | ⊎ | \biguplus |
| ∮ | \oint | ∧ | \bigwedge | | |

**Binary Operations.**

| | | | | | |
|---|---|---|---|---|---|
| ± | \pm | ∩ | \cap | ∨ | \vee |
| ∓ | \mp | ∪ | \cup | ∧ | \wedge |
| \ | \setminus | ⊎ | \uplus | ⊕ | \oplus |
| · | \cdot | ⊓ | \sqcap | ⊖ | \ominus |
| × | \times | ⊔ | \sqcup | ⊗ | \otimes |
| ∗ | \ast | ◁ | \triangleleft | ⊘ | \oslash |
| ⋆ | \star | ▷ | \triangleright | ⊙ | \odot |
| ⋄ | \diamond | ≀ | \wr | † | \dagger |
| ∘ | \circ | ◯ | \bigcirc | ‡ | \ddagger |
| • | \bullet | △ | \bigtriangleup | ⨿ | \amalg |
| ÷ | \div | ▽ | \bigtriangledown | | |

**Relations.**

| | | | | | |
|---|---|---|---|---|---|
| $\leq$ | \leq | $\geq$ | \geq | $\equiv$ | \equiv |
| $\prec$ | \prec | $\succ$ | \succ | $\sim$ | \sim |
| $\preceq$ | \preceq | $\succeq$ | \succeq | $\simeq$ | \simeq |
| $\ll$ | \ll | $\gg$ | \gg | $\asymp$ | \asymp |
| $\subset$ | \subset | $\supset$ | \supset | $\approx$ | \approx |
| $\subseteq$ | \subseteq | $\supseteq$ | \supseteq | $\cong$ | \cong |
| $\sqsubseteq$ | \sqsubseteq | $\sqsupseteq$ | \sqsupseteq | $\bowtie$ | \bowtie |
| $\in$ | \in | $\ni$ | \ni | $\propto$ | \propto |
| $\vdash$ | \vdash | $\dashv$ | \dashv | $\models$ | \models |
| $\smile$ | \smile | $\mid$ | \mid | $\doteq$ | \doteq |
| $\frown$ | \frown | $\parallel$ | \parallel | $\perp$ | \perp |

**Arrows.**

| | | | |
|---|---|---|---|
| $\leftarrow$ | \leftarrow | $\rightarrow$ | \rightarrow |
| $\longleftarrow$ | \longleftarrow | $\longrightarrow$ | \longrightarrow |
| $\Leftarrow$ | \Leftarrow | $\Rightarrow$ | \Rightarrow |
| $\Longleftarrow$ | \Longleftarrow | $\Longrightarrow$ | \Longrightarrow |
| $\leftrightarrow$ | \leftrightarrow | $\Leftrightarrow$ | \Leftrightarrow |
| $\longleftrightarrow$ | \longleftrightarrow | $\Longleftrightarrow$ | \Longleftrightarrow |
| $\hookleftarrow$ | \hookleftarrow | $\hookrightarrow$ | \hookrightarrow |
| $\leftharpoonup$ | \leftharpoonup | $\rightharpoonup$ | \rightharpoonup |
| $\leftharpoondown$ | \leftharpoondown | $\rightharpoondown$ | \rightharpoondown |
| $\uparrow$ | \uparrow | $\downarrow$ | \downarrow |
| $\Uparrow$ | \Uparrow | $\Downarrow$ | \Downarrow |
| $\updownarrow$ | \updownarrow | $\Updownarrow$ | \Updownarrow |
| $\nearrow$ | \nearrow | $\nwarrow$ | \nwarrow |
| $\searrow$ | \searrow | $\swarrow$ | \swarrow |
| $\mapsto$ | \mapsto | $\longmapsto$ | \longmapsto |
| $\rightleftharpoons$ | \rightleftharpoons | | |

**Matrices, arrays, etc.** \begin{array}{cc}1&0\\0&1\end{array} produces $\begin{array}{cc}1&0\\0&1\end{array}$. You can produce big delimiters by prefacing with \left and closing with \right. Example:

\left(\begin{array}{cc}1&0\\0&1\end{array}\right) produces $\left(\begin{array}{cc}1&0\\0&1\end{array}\right)$.

\right. matches a \left... and is necessary to "close" the \left tag, but does not produce any output. Example:

f(x)=\left\{\begin{array}{cc}0,&\mbox{ if }
x\leq 0\\1, & \mbox{ if } x>0\end{array}\right.

produces $f(x) = \left\{ \begin{array}{cc} 0, & \mbox{if } x \leq 0 \\ 1, & \mbox{if } x > 0 \end{array} \right.$

`{cc}` after the `\begin{array}` command means that the array has two centered columns. Other alignment options are `r` and `l`. Use `|` to insert a vertical line. `\hline` inserts a horizontal line. Example:

`\begin{array}{l|cr|}4&1&2\\-4&-1&-2\\\hline\end{array}`

yields $\begin{array}{l|cr|} 4 & 1 & 2 \\ -4 & -1 & -2 \\ \hline \end{array}$

**Over- and underlining.** `\underline{\overline{x^2}+1}` yields $\underline{\overline{x^2}+1}$,

`\underbrace{\overbrace{x^2}+1}` produces $\underbrace{\overbrace{x^2}+1}$. There are also `\hat`, `\tilde` and `\widehat`

and `\widetilde`. Example: $\tilde{x}, \sqrt{\widehat{x^2-1}}$. Other accents: `\check, \bar, \vec, \dot, \ddot`: $\check{a}, \bar{a}, \vec{a}, \dot{x}, \ddot{x}$.

**Font size.** Use `\displaystyle` to make formulas bigger;

compare `\frac{1}{2}` to `\displaystyle{\frac{1}{2}}`: $\frac{1}{2}$ versus $\displaystyle\frac{1}{2}$.

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