

# LaTeX

MikTeX

TeXnic Center  
TeX Studio

Sublime

Standard document template:

```
\documentclass{article}
```

```
\begin{document}
```

```
\end{document}
```

Math Mode

$\$ x^2 + 3x + 2 \$$  - inline

$\left[ x^2 + 3x + 2 \right]$  - display mode

Basic Math Symbols

$\backslash sin$	$\backslash cos$	$\backslash tan$	$\backslash ln$	$\backslash log$	$\backslash lim$
$\backslash alpha$	$\backslash beta$	$\backslash gamma$		$\backslash Gamma$	
$\int$	$\partial$	$\nabla$	$\infty$		
$\backslash int$	$\backslash partial$	$\backslash nabl$	$\backslash infty$		
$e$	$\subset$	$\subseteq$	$\cap$	$\cup$	$\{$
$\backslash in$	$\backslash subset$	$\backslash subseteq$	$\backslash cap$	$\backslash cup$	$\}$
$\surd$	$\wedge$	$\approx$	$\pm$		
$\backslash vee$	$\backslash wedge$	$\backslash approx$	$\backslash pm$		

# Superscripts and Subscripts

$x^2$

$x^{\wedge}2$

$x_2$

$x_{-}2$

$x^{12}$

$x^{\wedge}\{12\}$

otherwise  
 $x'^2$

$x^{\wedge}|2$

$\lim_{x \rightarrow \infty}$

$\backslash\lim_{-}\{x \to \infty\}$

$\sum_{n=0}^{10}$

$\backslash\sum_{-}\{n=0\}^{\wedge}\{10\}$

$\prod_{n=1}^5$

$\backslash\prod_{-}\{n=0\}^{\wedge}5$

$$\sum_{n=1}^4 a_n = a_1 + a_2 + a_3 + a_4$$

$$\backslash\sum_{-}\{n=1\}^{\wedge}4 a_{-}n = a_{-}1 + a_{-}2 + a_{-}3 + a_{-}4$$

$$\int_a^b f(x) dx$$

$$\backslash\int_{-}^{\wedge} a \wedge b f(x) dx$$

↑  
small space

## Commands with arguments

$$\sqrt[4]{3}$$

$$\backslash\sqrt[\wedge]{3}$$

$$\backslash\sqrt[\wedge][4]{3}$$

↑  
optional

$$\frac{1}{2}$$

$$\backslash\frac{\{1\}}{\{2\}}$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\boxed{x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$$

Environments in LaTeX

`\begin{ }`  
`...`

`\end{ }`

- array, figure, enumerate

Matrices

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$$

`\left(`  
`\begin{array}{ccc}`  
`1 & 2 & 3`  
`4 & 5 & 6`  
`7 & 8 & 9`  
`\end{array}`

3 center justified columns

`&` = column separator

`||` = end row

`\right)` correct sized ( )'s

Aligned equations

$$f'(x) = x^2 - 1 \\ = (x-1)(x+1)$$

`\usepackage{amsmath}` ← goes after `\documentclass{}`

`\begin{align*}` ← no numbering

$$f'(x) = x^2 - 1$$

$$= (x-1)(x+1)$$

`\end{align*}`

Ⓝ ← optional

No need for math mode!  
AMS modes provide it.

Quiz Creation

Creating space: `\vspace{4 in}`  
`\vspace{10 cm}`

Creating lists: enumerate environment  
start each item with `\item`

`\begin{enumerate}`

`\item` Find the solutions of  $x^2 - 1 = 0$

`\vspace{1 in}`

`\item` Let  $f(x) = x^2 + 3x - 8$

`\begin{enumerate}`

`\item` Find  $f'$

`\item` Find  $f''$

`\end{enumerate}`

`\end{enumerate}`