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Word Processing

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Content

- Create documents, research papers, resumes using Microsoft Word
- Open, Print, and Save in Microsoft Word
- Format the contents of Microsoft Word documents
- Identify and correct errors using Spell check and other features

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Why should you learn Microsoft Office?

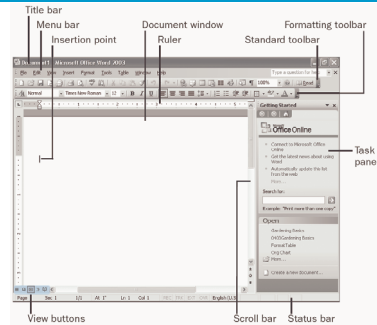
- Microsoft Office is the dominant suite of application software in use today.
- It is estimated that Microsoft Office has over a 90% share of the application suite market.
- Still it is not the only solution: Open Office



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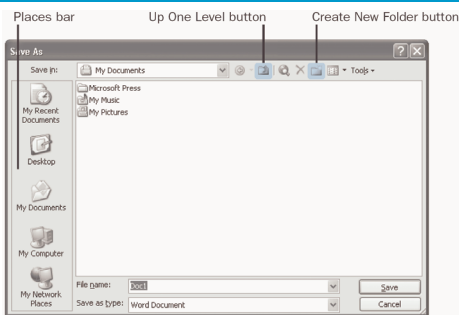
Working with Documents



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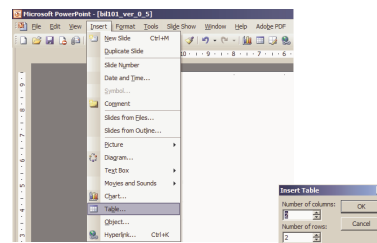
Saving Document



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Presenting Information in Tables and Columns



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Presenting Information in Tables and Columns

Order Amount Shipping/Handling Fee

\$15.00 and under	\$3.95
\$15.01 to \$30.00	\$4.95
\$30.01 to \$50.00	\$7.50
\$50.01 to \$75.00	\$10.95
\$75.01 to \$100.00	\$13.50
\$100.01 and up	\$15.95

Standard delivery is 5 to 7 business days.

Standard Delivery	Fee
First day	\$20.00
Each day	\$15.00
Up to 3 business days	\$10.00

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What is L^AT_EX?

- ▶ A powerful typesetting system designed for scientific documents
- ▶ Example: A trivial TEX document

Hello! \end

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What is L^AT_EX?

- ▶ Every sequence of the type $\backslash x$ where x is a string of letters a-z A-Z is a single unit.
- ▶ Every other symbol is a command or a syntax constructor.
- ▶ $\backslash x$ can be either
 - a *primitive command*
 - a *predefined* or *user-defined macro*
 - a *name of a variable*

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Advantages of L^AT_EX

- ▶ *Flexibility*
- ▶ *Full-power programming language allows:*
 - higher level of abstraction
 - automation of typesetting
- ▶ *Nicer output*
- ▶ *Easy global changes*
- ▶ *Free*

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Advantages of L^AT_EX

- ▶ *Well-programmed*
 - Produces nice paragraphs, formulas, tables, ...
- ▶ *Architecture independent*
 - works the same on any hardware/OS
- ▶ *Can use any PostScript font*
- ▶ *Can incorporate PostScript code to add fancy graphics and effects, e.g. rotating and scaling text, including graphic objects*

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Disadvantages of $LAT_E X$

- ▶ $T_E X$ is not WYSIWYG
- ▶ Designed for traditional typesetting
 - fancy typesetting might get complicated & cumbersome.
- ▶ Not easy to learn
 - needs to memorize many commands but a lot of good documentation is available.

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What is $LAT_E X$?

- ▶ A set of $T_E X$ macros to make typesetting easier
- ▶ $T_E X$ has 300 primitive commands
- ▶ So-called *Plain $T_E X$* defines 600 basic macros
- ▶ $LAT_E X$ is much larger, containing:
 - different structuring macros for typesetting different types of documents: *letter*, *article*, *report*, *book*, ...

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$LAT_E X 2\epsilon$

- ▶ Many incompatible $LAT_E X$ formats were developed.
- ▶ This caused problems for system maintainers (who had to keep several software packages running).
- ▶ It wasn't always clear what package a source file had been written for.
- ▶ $LAT_E X 2\epsilon$ is an attempt at standardization.
- ▶ It is easy to spot a $LAT_E X 2\epsilon$ document: it starts with `\documentclass` – not `\documentstyle`.

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What is $LAT_E X$?

$LAT_E X$ also contains:

- ▶ Automatic production of a table of contents, list of figures, list of tables, footnotes, header, title page, bibliography
- ▶ Font management macros, e.g. `\textit`, `\large`, `\textsc`
- ▶ Easy table creation macros
- ▶ Easy macros for complex mathematical formulas
- ▶ Cross-referencing macros

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Developing a $LAT_E X$ Document

- ▶ **Step 1:** Prepare an input file for LATEX using your favorite editor.
- ▶ The input file should be plain text, with `.tex` as its extension, for example: `test1.tex`

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Developing a $LAT_E X$ Document

- ▶ **Step 2:** Run LATEX under Unix with your input file as the argument to the command, `$latex test1.tex`
- ▶ If errors are reported, return to *Step 1* and correct them; otherwise:
- ▶ LATEX will have produced an output file with the extension `.dvi`, for example `test1.dvi`

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Developing a $L^A_T E^X$ Document

- **Step 3:** Convert the .dvi output into a form suitable for viewing or driving a PostScript printer, for instance using the translator:
 $\$x\text{dvi test1.dvi}$
- dvips will produce an PostScript file with the extension ps, for example test1.ps
or $\$d\text{vipdf test1.dvi}$
- **Step 4:** Print the PostScript file on your chosen printer
 $\$l\text{pr test1.ps}$

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A Simple $L^A_T E^X$ Document # 1

```

\documentclass[12pt]{article}
% Use PS palatino fonts
\usepackage{palatino}
\begin{document}
Hello!
\end{document}

```



- **Compulsory** arguments of macros are enclosed in **{ }**
- **Optional** arguments are enclosed in **[]**

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A Simple $L^A_T E^X$ Document # 2

- Commands can have a number of optional arguments.
- At most *one* compulsory argument is allowed for each command and follows optional arguments.
- The macro $\backslash\text{documentclass}\{ \}$ is the first thing you have to write. Its only mandatory argument is the type of document. Its optional argument is a list of comma-separated options
- e.g. a4paper, 10pt, 11pt, 12pt, landscape,...

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A Simple $L^A_T E^X$ Document # 3

- The macro $\backslash\text{usepackage}\{ <\text{package-name}> \}$ loads additional macros from the file:
 $<\text{package-name}>.sty$
- Watch out for *reserved characters*. These have to be represented by:

#	\#	\$	\\$
%	\%	&	\&
-	_	\	\backslash

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A Simple $L^A_T E^X$ Article # 1

```

\documentclass[12pt]{article}
% The document preamble
\usepackage{times} % Use PS times fonts
% Details of the titlepage
\title{Adaptive  $\lambda$ -tau Space Representation}
\author{\texttt{B. Kurt and H.T. Demiral}}
\date{\today} % Use the system date

```



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A Simple $L^A_T E^X$ Article # 2

```

\begin{document}
\maketitle
\section{Introduction}
This is the first paragraph. Paragraphs must end with an
empty line this like this. This is another paragraph.
Let's force a line break: \\
Now, we would like to continue with this paragraph.

```



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A Simple $LAT_E X$ Article # 3

paragraph.

`\subsection{Aim of this lecture}`

Blah, `\dots` makes 3 nice dots

A footnote looks

this `\footnote{I'm a footnote.}`

`\section{Conclusion}`

This is it! Easy!!!

`\end{document}`



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Output

Adaptive λ -Space Representation

B. Kurt and H.T. Demiral
October 26, 2005

1 Introduction

This is the first paragraph. Paragraphs must end with an empty line like this.
This is another paragraph. Let's force a line break.
Now, we would like to continue with this paragraph. paragraph.

1.1 Aim of this lecture

Blah, ... A footnote looks this!

2 Conclusion

This is it! Easy!!!

```

\documentclass[12pt]{article}
% The document preamble
\usepackage{times} % Use PS times fonts
% Details of the titlepage
\title{Adaptive  $\lambda$ -Space Representation}
\author{\textit{B. Kurt and H.T. Demiral}}
\date{\today} % Use the system date
\begin{document}
\maketitle
\section{Introduction}
This is the first paragraph. Paragraphs must
end with an empty line this like this. This is
another paragraph.
Let's force a line break: \\
Now, we would like to continue with this
paragraph. paragraph.
\subsection{Aim of this lecture}
Blah, \dots \textit{'} makes 3 nice dots
A footnote looks this \footnote{I'm a footnote.}
\section{Conclusion}
This is it! Easy!!!
\end{document}

```

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$LAT_E X$ Tables # 1

- ▶ Each table begins with:
`\begin{tabular}{<table-specification>}`
- ▶ Table specification “lcr” means:
 - 3 columns
 - 1st column: left justified
 - 2nd column: centred
 - 3rd column: right justified
- ▶ Column entries separated by “&” and lines ended by “\\”

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$LAT_E X$ Tables # 2

- ▶ % A Simple Table

```

\begin{tabular}{lcr}
Date & : & \today \\
Time & : & 10 a.m. \\
Venue & : & Computer Engineering \\
\end{tabular}

```



Date	:	October 26, 2005
Time	:	10 a.m.
Venue	:	Computer Engineering

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$LAT_E X$ Tables # 3

- ▶ The table specification in the following example uses “|” to separate each column by a vertical line
`\begin{tabular}{|c|p{8cm}|}`
- The first column is centered.
- The second column is justified and is 8 cm wide.
- ▶ Horizontal lines in the table are specified by adding `\hline` after the line ending command “\\”.

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$LAT_E X$ Tables # 4

```

% A table with border and
% fixed column width
\begin{tabular}{|c|p{8cm}|}\hline
\textbf{Phrasal Verb} & \textbf{Meaning} \\
\hline
fish for & If you \textbf{fish for}
information or praise, you try
and get it from someone in an
indirect way. \\
\hline
% one entry omitted from slide
\end{tabular}

```



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Output

Phrasal Verb	Meaning
fish for	If you fish for information or praise, you try and get it from someone in an indirect way.

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Including Figures # 1

► The first thing is, of course, to have a figure to insert.

```

\begin{figure} [hbpt]
\begin{verbatim}
procedure CreateEntry (NextTerm :
TermPtr;
CopyEntry : EntryRec);
end; {of CreateEntry}
\end{verbatim}
\caption{Pascal algorithm}
\label{pascal_alg}
\end{figure}
```

 figure1.tex

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Output

```

procedure CreateEntry (NextTerm : TermPtr; CopyEntry : EntryRec);
end; {of CreateEntry}
```



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Including Figures # 2

```

\begin{figure} [hbpt]
```

► The following text is a figure.

- h: place here if there is room
- b: place at the bottom of a text page
- p: place on a “page of floats”
- t: place at top of next text page

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Including Figures # 3

```

\caption{Pascal algorithm}
\label{pascal_alg}
```

► The text that will appear with the figure. Note, you don’t have to include (eg) “Figure 2”

► A label by which we can refer to this figure within the document.

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Including Figures # 4

► We are sure to want to refer to figures from within our text, but:

- we may add more figures or remove figures
- we may move the order of figures around

► To avoid manually renumbering figures, we use in the text:

```

...given in Figure~\ref{pascal_alg}.
```

► This automatically adds (usually) a number into the text.

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Adding a Postscript Figure # 1

- ▶ Adding a PostScript file is only a little more complicated than adding a normal figure.
- ▶ Step 1: *Prepare* a graphic using your favorite package e.g. XFig or PhotoShop (or simply download one from the course web page)
- ▶ Step 2: *Save* your graphic in *Encapsulated PostScript* format **sample1.eps**

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What is Postscript?

- ▶ The **PostScript(TM)** is a popular language used to create complex documents.
- ▶ Postscript printers and postscript display software use an interpreter to convert the page description into the displayed graphics.
- ▶ Postscript files are (generally) plain text files and as such they can easily be generated by hand or as the output of user written programs.
- ▶ Postscript uses a stack to store programs and data.
- ▶ A postscript interpreter places the postscript program on the stack and executes it, instructions that require data will read that data from the stack.

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What is Postscript?

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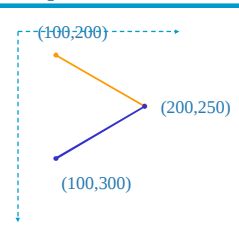
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Example

```

newpath
100 200 moveto
200 250 lineto
100 300 lineto
2 setlinewidth
stroke

```



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What is EPS?

- ▶ EPS (Encapsulated PostScript) is normal postscript with a few restrictions and a few comments in a specified format that provides more information about the postscript that follows.
- ▶ It was design to make it easier for applications to include postscript generated elsewhere within their own pages.

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Adding a Postscript Figure # 2

- ▶ In the preamble, add the following:
`\usepackage{epsfig}`
- ▶ Then the illustration can be added to your text by using `\begin{figure}` as before:
`\begin{figure}`
`\epsfig{file=sample1.eps}`
`\caption{EPS diagram}`
`\label{eps_diagram}`
`\end{figure}`


figure2.tex
sample1.eps

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Output

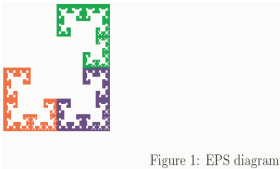


Figure 1: EPS diagram

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Spaces

- ▶ For those use to WYSIWYG, spaces in LATEX are confusing.
- ▶ Space, tab and end-of-line are treated “end of word”.
- ▶ Lots of space = one space.
- ▶ Space after “\...” commands is ignored - hence use `\LaTeX{}` likes

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Introduction to the “Math Mode”

$$\frac{x^n - 1}{x - 1} = \sum_{k=0}^{n-1} x^k$$

`$$`
`\frac{x^n-1}{x-1} =`
`\sum_{k=0}^{n-1} x^k`
`$$`

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Greek Letters

α is <code>\alpha</code>	λ is <code>\lambda</code>	υ is <code>\upsilon</code>	Ξ is <code>\Xi</code>
β is <code>\beta</code>	μ is <code>\mu</code>	ϕ is <code>\phi</code>	Π is <code>\Pi</code>
γ is <code>\gamma</code>	ν is <code>\nu</code>	φ is <code>\varphi</code>	Σ is <code>\Sigma</code>
δ is <code>\delta</code>	ξ is <code>\xi</code>	χ is <code>\chi</code>	Υ is <code>\Upsilon</code>
ϵ is <code>\epsilon</code>	$\omicron$ is <code>\omicron</code>	ψ is <code>\psi</code>	Φ is <code>\Phi</code>
ε is <code>\varepsilon</code>	π is <code>\pi</code>	ω is <code>\omega</code>	Ψ is <code>\Psi</code>
ζ is <code>\zeta</code>	ϖ is <code>\varpi</code>	Γ is <code>\Gamma</code>	Ω is <code>\Omega</code>
η is <code>\eta</code>	ρ is <code>\rho</code>	Δ is <code>\Delta</code>	
θ is <code>\theta</code>	ϱ is <code>\varrho</code>	Θ is <code>\Theta</code>	
ϑ is <code>\vartheta</code>	σ is <code>\sigma</code>	Λ is <code>\Lambda</code>	
ι is <code>\iota</code>	ς is <code>\varsigma</code>		
κ is <code>\kappa</code>	τ is <code>\tau</code>		

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Exponents and Subscripts

`$x^2$` produces x^2

`$x^{21} \neq x_{21}$` produces $x^{21} \neq x_{21}$

`$x_2 1 \neq x_{21}$` produces $x_2 1 \neq x_{21}$

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Above and Below

`$$`
`\left(`
`\begin{array}{c}`
`m+n\\`
`m`
`\end{array}`
`\right)`
`= \frac{(m+n)!}{m!n!}`
`= \frac{\overbrace{(m+n)(m+n-1)\cdots(n+1)}^{m \text{ factors}}}{\underbrace{m(m-1)\cdots 1}_{m \text{ factors}}}`
`$$`

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Above and Below

`\overline{x+\overline{y}} = \overline{x+y}`

$$\overline{x + \overline{y}} = \overline{x} + y$$

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Fractions

Fractions can be written in two ways:

- with a diagonal fraction bar
`$a/b$`

$$\frac{x}{y}$$

- horizontal one
`$$\frac{a/b-c/d}{e/f-g/h}$$`

$$\frac{\frac{a}{b} - \frac{c}{d}}{\frac{e}{f} - \frac{g}{h}}$$

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Functions

- LaTeX uses italics in math mode for variables to make them stand out, but Roman (non-italic) for function names.
- How is LaTeX to know the difference between “sin” as function name and “sin” as the product of the variables s, i, and n?
- Use a backslash in front of “sin” and other function names to let LaTeX know that you want the function, not the product of variables.

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Functions

Here is a list of function names:

`\arccos \arcsin \arctan \arg \cos \cosh \cot`
`\coth \csc \deg \det \dim \exp \gcd`
`\hom \inf \ker \lg \lim \liminf \limsup`
`\ln \log \max \min \Pr \sec \sin`
`\sinh \sup \tan \tanh`

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Sums, Integrals, and Limits

`$$\sum_{k=0}^{\infty} \frac{(-1)^k}{k+1} = \int_0^1 \frac{dx}{1+x}$$`

$$\sum_{k=0}^{\infty} \frac{(-1)^k}{k+1} = \int_0^1 \frac{dx}{1+x}$$

`$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$`

$$\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$$

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Roots

`$$\sqrt{\frac{a}{b}}$`

$$\sqrt{\frac{a}{b}}$$

`$$\sqrt[10]{\frac{a}{b}}$`

$$\sqrt[10]{\frac{a}{b}}$$

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Text in Math Displays

$$\int_0^{2\pi} \cos(mx) dx = 0 \quad \text{if and only if} \quad m \neq 0$$

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Operators

Operator	Command	Operator	Command
$\pm$	<code>\pm</code>	$\times$	<code>\times</code>
$\mp$	<code>\mp</code>	$\div$	<code>\div</code>
$\cdot$	<code>\cdot</code>	$*$	<code>\ast</code>
$\dagger$	<code>\dagger</code>	$\ddagger$	<code>\dagger</code>
$\cap$	<code>\cap</code>	$\amalg$	<code>\amalg</code>
$\cup$	<code>\cup</code>	$\sqcup$	<code>\sqcup</code>
$\oplus$	<code>\oplus</code>	$\vee$	<code>\vee</code>
$\ominus$	<code>\ominus</code>	$\otimes$	<code>\otimes</code>
$\oslash$	<code>\oslash</code>	$\bullet$	<code>\bullet</code>
$\diamond$	<code>\diamond</code>	$\circ$	<code>\circ</code>
$\triangle$	<code>\triangle</code>	$\bigcirc$	<code>\bigcirc</code>
$\triangleleft$	<code>\triangleleft</code>	$\triangleright$	<code>\triangleright</code>
$\trianglelefteq$	<code>\trianglelefteq</code>	$\trianglerighteq$	<code>\trianglerighteq</code>
$\backslash$	<code>\backslash</code>	$\wr$	<code>\wr</code>

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Relations

Relation	Command	Relation	Command
$\leq$	<code>\leq</code>	$\geq$	<code>\geq</code>
$\neq$	<code>\neq</code>	$\sim$	<code>\sim</code>
$\ll$	<code>\ll</code>	$\gg$	<code>\gg</code>
$\doteq$	<code>\doteq</code>	$\simeq$	<code>\simeq</code>
$\subseteq$	<code>\subseteq</code>	$\supseteq$	<code>\supseteq</code>
$\approx$	<code>\approx</code>	$\asymp$	<code>\asymp</code>
$\subseteqeq$	<code>\subseteqeq</code>	$\supseteqeq$	<code>\supseteqeq</code>
$\cong$	<code>\cong</code>	$\smile$	<code>\smile</code>
$\equiv$	<code>\equiv</code>	$\frown$	<code>\frown</code>
$\sqsubseteqeq$	<code>\sqsubseteqeq</code>	$\sqsupseteqeq$	<code>\sqsupseteqeq</code>
$\propto$	<code>\propto</code>	$\bowtie$	<code>\bowtie</code>
$\in$	<code>\in</code>	$\ni$	<code>\ni</code>
$\prec$	<code>\prec</code>	$\succ$	<code>\succ</code>
$\vdash$	<code>\vdash</code>	$\dashv$	<code>\dashv</code>
$\preceq$	<code>\preceq</code>	$\succeq$	<code>\succeq</code>
$\models$	<code>\models</code>	$\perp$	<code>\perp</code>
$\parallel$	<code>\parallel</code>	$\mid$	<code>\mid</code>

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Negated Symbols

Operator	Command	Operator	Command
$\nless$	<code>\nless</code>	$\ngtr$	<code>\ngtr</code>
$\nleq$	<code>\nleq</code>	$\ngeq$	<code>\ngeq</code>
$\nneq$	<code>\nneq</code>	$\nequiv$	<code>\nequiv</code>
$\nprec$	<code>\nprec</code>	$\nsucc$	<code>\nsucc</code>
$\npreceq$	<code>\npreceq</code>	$\nsucceq$	<code>\nsucceq</code>
$\nsmile$	<code>\nsmile</code>	$\nsimeq$	<code>\nsimeq</code>
$\nsubset$	<code>\nsubset</code>	$\nsupset$	<code>\nsupset</code>
$\nsubseteqeq$	<code>\nsubseteqeq</code>	$\nsupseteqeq$	<code>\nsupseteqeq</code>
$\napprox$	<code>\napprox</code>	$\ncong$	<code>\ncong</code>
$\nsubseteqeq$	<code>\nsubseteqeq</code>	$\nsqsupseteqeq$	<code>\nsqsupseteqeq</code>
$\nasymp$	<code>\nasymp</code>	$\nmid$	<code>\nmid</code>

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More Symbols

Symbol	Command
$\aleph$	<code>\aleph</code>
$\emptyset$	<code>\emptyset</code>
∇	<code>\nabla</code>
∂	<code>\partial</code>
$\forall$	<code>\forall</code>
$\exists$	<code>\exists</code>
$\neg$	<code>\neg</code>
$\angle$	<code>\angle</code>
$\therefore$	<code>\therefore</code>
$\mathbb{N}$	<code>\mathbb{N}</code>
$\mathbb{Q}$	<code>\mathbb{Q}</code>
$\mathbb{R}$	<code>\mathbb{R}</code>
$\mathbb{Z}$	<code>\mathbb{Z}</code>

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