

GSNS L^AT_EX course

T_EXniCie

7 September 2021

Schedule

- Introduction
 - Text formatting
 - Structure of a document
 - ⟨Exercises!⟩
 - Images
 - Formulas
 - ⟨Exercises!⟩
 - Good to know

LAT_EX vs Word

My document

Lorem ipsum

Etiam ipsum dolor sit amet, consecetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim.

Donec pede justo
Fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis vitae
justo.

Nullam dictum felis eu pede mollis pretium. Integer tincidunt.

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2}$$

Cras dapibus. Vivamus elementum semper nisi. Aenean vulputate eleifend tellus. Aenean leo ligula, porttitor eu, consequat vitae, eleifend ac, enim. Aliquam lorem ante, dapibus in, viverra quis, feugiat a, tellus.



Figure 1: Bengaalse tijger

My document

Vincent Kuhlmann

3 May 2021

1. Lorem ipsum

Consectetuer adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penitibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, scelerisque eu, nisl tristique, sem. Nulla consequat massa enim.

1.1. Donas pede justa

Fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo.

Nullam dictum felis eu pede mollis pretium. Interac tincidunt.

$$f(x) = \frac{1}{\sqrt{\alpha_m}} e^{-\frac{1}{2} \left(\frac{x-\mu}{\sigma} \right)^2} \quad (1)$$

Cras dapibus. Vivamus elementum semper nisi. Aenean vulputate eleifend tellus. Aenean leo ligula, porttitor eu, consequat vitae, eleifend ac, enim. Aliquam lorem ante, dapibus in, viverra quis, feugiat a, tellus.



Figure 1: Bengaalse tijger

LAT_EX vs Word

Inner workings: big difference.

Word: Edit visually

LATEX: Edit code (text)

```
\title{My document}
\author{Vincent Kuhlmann}
\date{3 May 2021}

\begin{document}
\maketitle
\section{Lorem ipsum}
Lorem ipsum dolor sit amet, consectetur

\begin{align}
f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{(x-\mu)^2}{2\sigma^2}}
\end{align}
\end{document}
```

My document

Vincent Kuhlmann

3 May 2021

1 Lorem ipsum

...lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor. Aenean massa. Cum sociis natoque penitibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim.

1.1 Donec pede justo

Fringilla vel, aliquet nec, vulputate eget, arcu. In enim justo, rhoncus ut, imperdiet a, venenatis vitae, justo.

Nullam dictum felis eu pede mollis pretium. Integer tincidunt.

$$f(x) = \frac{1}{\sigma\sqrt{2\pi}} e^{-\frac{1}{2}\left(\frac{x-\mu}{\sigma}\right)^2} \quad (1)$$

Cras dapibus. Vivamus elementum semper nisi. Aenean vulputate eleifend tellus. Aenean leo ligula, porttitor eu, consequat vitae, eleifend ac, enim. Aliquam lorem ante, dapibus in, viverra quis, feugiat a, tellus.



Figuur 1: Bengaalse tijger

Code vs Visual

The screenshot shows a web page with a blue header bar containing a search bar and a button labeled "Bekijk hele assortiment". Below the header, there are two green checkmark icons: one for delivery by 23.59 tomorrow and one for free returns. The main content area has a light gray background. At the top, there's a navigation bar with categories like "Extern geheugen", "WD", "LaCie", "Seagate", "Toshiba", and "Top". A breadcrumb trail shows the user is in the "Geheugen & opslag" section. The main heading is "Externe harde schijven (HDD)". A list of products includes "1 TB externe harde schijven", "2 TB externe harde schijven", "4TB externe harde schijven", "Externe HDD bundels", and "Externe harde schijven voor Windows". A "Bekijk meer" button is at the bottom of this list. To the right, there's a large image of a stack of external hard drives and some descriptive text about external hard drives.

- Websites & Apps
Complex

Code vs Visual

```
\begin{lemma}
    Lorem ipsum dolor sit
    ... eget dolor.

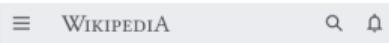
    \begin{proof}
        Aenean massa. Cum
        ... quis enim.
    \end{proof}
\end{lemma}
```

Lemma 1.9. *Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.*

Proof. Aenean massa. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Donec quam felis, ultricies nec, pellentesque eu, pretium quis, sem. Nulla consequat massa quis enim. □

Code vs Visual

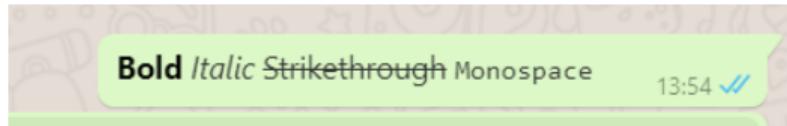
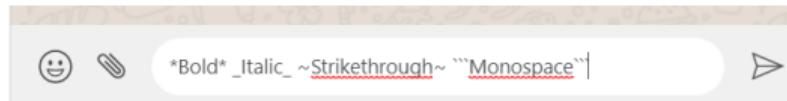
- Websites & Apps
Complex
- Wikipedia
Consistent



Length	15 km
Height (source)	420 m

Code vs Visual

- Websites & Apps
Complex
- Wikipedia
Consistent
- WhatsApp
Expandable



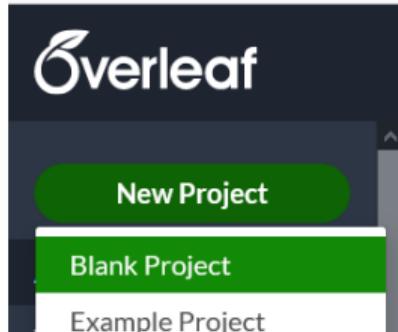
Overleaf

LaTeX is the programming language.

Overleaf is a website where you can write and compile LaTeX.

Visual Studio Code is a desktop app where you can write and compile LaTeX.

MiKTeX does compilation for Visual Studio code.



For now: Overleaf.

Want VS Code? Instructions at
vkuhlmann.com/latex/installation

Simple document

```
\documentclass{article}
\usepackage [utf8]{inputenc}

\title{My document}
\author{Vincent Kuhlmann}
\date{1 May 2021}

\begin{document}
\maketitle
\section{Introduction}

Hello everyone!

\end{document}
```

My document

Vincent Kuhlmann

7 September 2021

1 Introduction

Hello everyone!

Text effects

Result	Code
Text	
<i>Text</i>	
TEXT	
<u>Text</u>	

Result	Code
Text	
Text	
Text	
Text	

Text effects

Result	Code
Text	<code>\textbf{Text}</code>
<i>Text</i>	
TEXT	
<u>Text</u>	

Result	Code
Text	
Text	
Text	
Text	

bf = **boldface** | **it** = **italics** | **sc** = **smallcaps** | **tt** = **teletype** (a.k.a. monospace)

Text effects

Result	Code	Result	Code
Text	<code>\textbf{Text}</code>	Text	<code>\texttt{Text}</code>
<i>Text</i>	<code>\textit{Text}</code>	Text	<code>{\tiny Text}</code>
TEXT	<code>\textsc{Text}</code>	<big>Text</big>	<code>{\LARGE Text}</code>
<u>Text</u>	<code>\underline{Text}</code>	Text	<code>\textcolor{red}{Text}</code> ¹

Huge, huge, LARGE, Large, large, normalsize, small,
footnotesize, scriptsize, tiny

¹`\usepackage{xcolor}`

\textbf{\{}}

 Lorem ipsum **\tiny** dolor sit amet, consectetur adipiscing elit. Phasellus elementum, lacus quis tempus scelerisque, elit diam vulputate ex, semper elementum massa odio in ante.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus elementum, lacus quis tempus scelerisque, elit diam vulputate ex, semper elementum massa odio in ante.

\textbf{\{}}

```
 Lorem \{ipsum \tiny dolor sit amet, consectetur  
adipiscing elit. Phasellus \{elementum\}, lacus quis  
tempus scelerisque, \{elit diam vulputate ex, semper\}  
elementum massa odio in ante.
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus elementum,
lacus quis tempus scelerisque, elit diam vulputate ex, semper elementum
massa odio in ante.

Paragraphs

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.  
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet. In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Paragraphs

Text in a box:

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.  
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

Text in a box:

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.  
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

Text outside boxes:

```
 Lorem ipsum dolor sit amet, consectetur adipiscing elit.  
 Integer id erat leo. Suspendisse sit amet ligula turpis. Duis  
congue turpis odio, non ornare elit ornare sit amet. In  
ipsum ante, sollicitudin at euismod vitae, tincidunt vitae  
massa. Aenean metus lectus, porta at tempor at, dapibus  
sit amet augue.
```

Paragraphs

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.  
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.  
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet. In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet.

In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Paragraphs

```
...
\usepackage{parskip}
\begin{document}
Lorem ipsum dolor sit amet,
... ornare sit amet.

In ipsum ante, sollicitudin
... sit amet augue.
\end{document}
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet.

In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Paragraphs

```
\noindent Lorem ipsum dolor  
sit amet, ... ornare sit  
amet.
```

```
In ipsum ante, sollicitudin  
... sit amet augue.
```

Paragraphs

```
\noindent Lorem ipsum dolor  
sit amet, ... ornare sit  
amet.
```

```
In ipsum ante, sollicitudin  
... sit amet augue.
```

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet.

In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Paragraphs

```
 Lorem ipsum dolor sit amet,  
 ... ornare sit amet.
```

```
\vspace{1cm}
```

```
 In ipsum ante, sollicitudin  
 ... sit amet augue.
```

(From now on, always parskip)

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer id erat leo. Suspendisse sit amet ligula turpis. Duis congue turpis odio, non ornare elit ornare sit amet.

In ipsum ante, sollicitudin at euismod vitae, tincidunt vitae massa. Aenean metus lectus, porta at tempor at, dapibus sit amet augue.

Lists

These are the ingredients:

```
These are the ingredients:  
\begin{enumerate}  
    \item Carrots  
    \item Onions  
  
    Lipsum dolor sit amet.  
    \item Potatoes  
\end{enumerate}
```

1. Carrots

2. Onions

Lipsum dolor sit amet.

3. Potatoes

Lists

These are the ingredients:

```
\begin{enumerate}
    \item Carrots
    \begin{enumerate}
        \item Buy
        \item Peel
        \item Chop
    \end{enumerate}
    \item Onions

    Lipsum dolor sit amet.
    \item Potatoes
\end{enumerate}
```

These are the ingredients:

1. Carrots
 - (a) Buy
 - (b) Peel
 - (c) Chop
2. Onions
- Lipsum dolor sit amet.
3. Potatoes

Lists

These are the ingredients:

```
\begin{itemize}
    \item Carrots
    \begin{enumerate}
        \item Buy
        \item Peel
        \item Chop
    \end{enumerate}
    \item Onions

    Lipsum dolor sit amet.
    \item Potatoes
\end{itemize}
```

These are the ingredients:

- Carrots
 1. Buy
 2. Peel
 3. Chop
- Onions

Lipsum dolor sit amet.
- Potatoes

Lists

These are the ingredients:

```
\begin{itemize}
    \item Carrots
    \begin{itemize}
        \item Buy
        \item Peel
        \item Chop
    \end{itemize}
    \item Onions

    Lipsum dolor sit amet.
    \item Potatoes
\end{itemize}
```

These are the ingredients:

- Carrots
 - Buy
 - Peel
 - Chop
- Onions
 - Lipsum dolor sit amet.
- Potatoes

Special characters

Code	Result	Code	Result
\{	{	{	Begin group
\}	}	}	End group
\%	%	%	Comment
_	-	-	Used in maths
\textasciicircum	^	^	Used in maths
\\$	\$	\$	Math mode
\textbackslash	\	\	Command
\&	&	&	Column separation
\#	#	#	Parameter
\textgreater	>	>	i
\textless	<	<	j

Special characters

Code	Result	Code	Result
\{	{	{	Begin group
\}	}	}	End group
\%	%	%	Comment
_	-	-	Used in maths
\textasciicircum	[^]	[^]	Used in maths
\\$	\$	\$	Math mode
\textbackslash	\	\	Command
\&	&	&	Column separation
\#	#	#	Parameter
\textgreater	>	>	i
\textless	<	<	j

Comments

```
% Make soul package work in beamer presentations
% Source: https://tex.stackexchange.com/...
\let\UL\ul
\makeatletter
\renewcommand\ul{
    \let\set@color\beamerorig@set@color
    \let\reset@color\beamerorig@reset@color
    \UL
}
...
```

Comments

```
% TODO Translate to english
\section{Nonsense}

Lorem ipsum dolor sit amet,
\textbf{ornare} sit amet.

\subsection{About  $\sqrt{2}$ }
```

Error! Undefined control sequence

Comments

```
% TODO Translate to english
\section{Nonsense}

%Lorem ipsum dolor sit amet,
%\textfb{ornare} sit amet.
%
%\subsection{About $ \sqrt{2} $}
```

1 Nonsense

Comments

```
% TODO Translate to english
\section{Nonsense}

Lorem ipsum dolor sit amet,
\textfb{ornare} sit amet.

%\subsection{About $ \sqrt{2} $}
```

Error! Undefined control sequence

Comments

```
% TODO Translate to english
\section{Nonsense}

Lorem ipsum dolor sit amet,
\textbf{ornare} sit amet.

\subsection{About  $\sqrt{2}$ }
```

1 Nonsense

Lorem ipsum dolor sit amet,
ornare sit amet.

1.1 About $\sqrt{2}$

Quotes

'LaTeX' : 'LaTeX'

`LaTeX' : 'LaTeX'

``LaTeX'': "LaTeX"

Whitespace

- a...b..c

a b c.

Whitespace

- a_____b_c
- a___b_c

a b c.

a b c.

Whitespace

- abc a b c.
- a______bc a b c.
- a\quad b c\,,d\;;e a b c d e
- a\hspace{2cm}b a b

Whitespace

- a_c b_c a b c.
- a______b_c a b c.
- a\quad b c\,,d\;;e a b c d e
- a\hspace{2cm}b a b
- \LaTeX is cool! \LaTeX is cool!
- Vincent is a member of the \TeX niCie. Vincent is a member of the TeXniCie.

Whitespace

- a_c b_c a b c.
- a______b_c a b c.
- a\quad b c\,,d\;;e a b c d e
- a\hspace{2cm}b a b
- \LaTeX is cool! \LaTeX is cool!
- Vincent is a member of the \TeX niCie. Vincent is a member of the TeXniCie.
- \LaTeX{} is cool! \LaTeX is cool!

Whitespace

- abc a b c.
- a_____b__c a b c.
- a\quad b c\,,d\;;e a b c d e
- a\hspace{2cm}b a b
- \LaTeX is cool! \LaTeX is cool!
- Vincent is a member of the \TeX niCie. Vincent is a member of the TeXniCie.
- \LaTeX{} is cool! \LaTeX is cool!
- ---

Hello , my name
is \textellipsis . Hello, my name is ...
- ---

Hello , my name%
is \textellipsis . Hello, my name is ...

Simple document

```
\documentclass{article}

\usepackage [utf8]{inputenc}

\title{My document}
\author{Vincent Kuhlmann}
\date{1 May 2021}
```

Preamble

My document

Vincent Kuhlmann

1 May 2021

```
\begin{document}
\maketitle
\section{Introduction}

Hello everyone!
\end{document}
```

1 Introduction

Hallo iedereen!

Document

Page margins

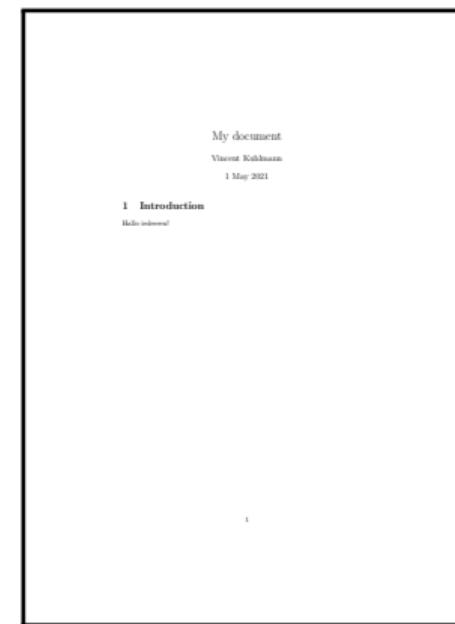
```
\documentclass{article}
\usepackage[utf8]{inputenc}

\title{My document}
\author{Vincent Kuhlmann}
\date{1 May 2021}

\begin{document}
    \maketitle
    \section{Introduction}

    Hello everyone!

\end{document}
```



Page margins

```
\documentclass[a4paper]{article}
\usepackage[utf8]{inputenc}
\usepackage[margin=2.54cm]{geometry}

\title{My document}
\author{Vincent Kuhlmann}
\date{1 May 2021}

\begin{document}
    \maketitle
    \section{Introduction}

    Hello everyone!

\end{document}
```



Page margins

```
\documentclass[a4paper]{article}
\usepackage[utf8]{inputenc}
\usepackage[margin=2.54cm, left=-0.5cm]
{geometry}

\title{My document}
\author{Vincent Kuhlmann}
\date{1 May 2021}

\begin{document}
    \maketitle
    \section{Introduction}

    Hello everyone!

\end{document}
```



Section commands

```
\section{AA}
```

```
  Lorem ipsum dolor sit amet,  
  consectetur adipiscing elit.
```

```
\section{BB}
```

```
\subsection{CC}
```

```
\subsubsection{DD}
```

```
\subsection{EE}
```

```
  Nullam a risus at arcu  
  lobortis viverra vel  
  volutpat diam.
```

```
\section{FF}
```

```
\subsubsection{GG}
```

1 AA

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

2 BB

2.1 CC

2.1.1 DD

2.2 EE

 Nullam a risus at arcu lobortis viverra vel volutpat diam.

3 FF

3.0.1 GG

Contents

```
\begin{document}
    \maketitle
    \tableofcontents

    \section{AA}
    ...
\end{document}
```

Contents

1	AA	1
2	BB	2
2.1	CC	2
2.1.1	DD	2
2.2	EE	2
3	FF	2
3.0.1	GG	2

1 AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

Contents

```
\begin{document}
    \maketitle
    \tableofcontents
    \newpage

    \section{AA}
    ...
\end{document}
```

Contents

1	AA	2
2	BB	2
2.1	CC	2
2.1.1	DD	2
2.2	EE	2
3	FF	2
3.0.1	GG	2

Contents

```
...
\usepackage[dutch]{babel}

\begin{document}
    \maketitle
    \tableofcontents
    \newpage

    \section{AA}
    ...

\end{document}
```

Inhoudsopgave

1	AA	2
2	BB	2
2.1	CC	2
2.1.1	DD	2
2.2	EE	2
3	FF	2
3.0.1	GG	2

Partial numbering

```
\setcounter{secnumdepth}{3}
\section{AA}
Lorem ipsum dolor sit amet,
consectetur adipiscing elit.

\section{BB}
\subsection{CC}
\subsubsection{DD}
\subsection{EE}
Nullam a risus at arcu
lobortis viverra vel
volutpat diam.

\section{FF}
\subsubsection{GG}
```

1 AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

2 BB

2.1 CC

2.1.1 DD

2.2 EE

Nullam a risus at arcu lobortis viverra vel volutpat diam.

3 FF

3.0.1 GG

Partial numbering

```
\setcounter{secnumdepth}{2}
\section{AA}
Lorem ipsum dolor sit amet,
consectetur adipiscing elit.

\section{BB}
\subsection{CC}
\subsubsection{DD}
\subsection{EE}
Nullam a risus at arcu
lobortis viverra vel
volutpat diam.

\section{FF}
\subsubsection{GG}
```

1 AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

2 BB

2.1 CC

DD

2.2 EE

Nullam a risus at arcu lobortis viverra vel volutpat diam.

3 FF

GG

Partial numbering

```
\setcounter{secnumdepth}{1}
\section{AA}
Lorem ipsum dolor sit amet,
consectetur adipiscing elit.

\section{BB}
\subsection{CC}
\subsubsection{DD}
\subsection{EE}

Nullam a risus at arcu
lobortis viverra vel
volutpat diam.

\section{FF}
\subsubsection{GG}
```

1 AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

2 BB

CC

DD

EE

Nullam a risus at arcu lobortis viverra vel volutpat diam.

3 FF

GG

Partial numbering

```
\setcounter{secnumdepth}{0}
\section{AA}
Lorem ipsum dolor sit amet,
consectetur adipiscing elit.

\section{BB}
\subsection{CC}
\subsubsection{DD}
\subsection{EE}

Nullam a risus at arcu
lobortis viverra vel
volutpat diam.

\section{FF}
\subsubsection{GG}
```

AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

BB

CC

DD

EE

Nullam a risus at arcu lobortis viverra vel volutpat diam.

FF

GG

Partial numbering

```
\section{AA}
```

```
    Lorem ipsum dolor sit amet,  
    consectetur adipiscing elit.
```

```
\section*{BB}
```

```
\subsection*{CC}
```

```
\subsubsection{DD}
```

```
\subsection*{EE}
```

```
    Nullam a risus at arcu  
    lobortis viverra vel  
    volutpat diam.
```

```
\section{FF}
```

```
\subsubsection{GG}
```

1 AA

Lorem ipsum dolor sit amet, consectetur adipiscing elit.

BB

CC

1.0.1 DD

EE

Nullam a risus at arcu lobortis viverra vel volutpat diam.

2 FF

2.0.1 GG

My favorite package: \usepackage[bookmarksnumbered]{hyperref}

The screenshot shows a LaTeX editor interface. On the left, a table of contents is displayed with sections like Preface, Introduction, and various chapters on sets and models. A specific section under '2.2 Languages of First-Order Logic' is highlighted. The main document area shows a mathematical proof involving quantifier-free formulas and simple formulas. It includes a diagram of two sets of tuples and a lemma statement.

69 (83 of 151)

- + 150% ↻

and $a = a_1, \dots, a_n$ and $b = b_1, \dots, b_n$ tuples of elements of M and N , respectively

Write $\vec{a} \equiv_{\Gamma} \vec{b}$ if for every formula $\phi(x_1, \dots, x_n)$ from Γ we have:

$$M \models \phi(a_1, \dots, a_n) \Leftrightarrow N \models \phi(b_1, \dots, b_n).$$

We shall apply this for Γ the set of quantifier-free L -formulas and for 1 simple L -formulas; in which case we write $\vec{a} \equiv_{\text{qf}} \vec{b}$, $\vec{a} \equiv_{\text{simple}} \vec{b}$, respect

Lemma 2.7.4 Let L be an arbitrary language. Suppose that an L -theor following property:

Whenever M and N are models of T , and $\vec{a} = a_1, \dots, a_n, \vec{b} = b_1, \dots, b_n$ tuples of elements of M and N , respectively, then $\vec{a} \equiv_{\text{qf}} \vec{b}$ implies $\vec{a} \equiv_{\text{simple}} \vec{b}$.

Then T has quantifier elimination.

Proof. Assume that T has the property in the statement of the Lemma 2.7.2 we have to show that every simple L -formula is T -equivalent to a quantifier-free formula in the same free variables. So, let $\exists v\phi(v, \vec{w})$ be a simple L -formula, with $\vec{w} = w_1, \dots, w_n$ the free variables. Let $\vec{c} = c_1, \dots, c_n$ be constants; we write $L_{\vec{c}}$ for $L \cup \{c_1, \dots, c_n\}$.

Let Γ be the set of all quantifier-free L -formulas $\psi(\vec{w})$ such that

$$T \models (\exists v\phi(v, \vec{c})) \rightarrow \psi(\vec{c})$$

```
\documentclass[a4paper]{article}

\usepackage[margin=2.54cm]{geometry}
\usepackage{parskip}
\usepackage{xcolor}
\usepackage{hyperref}
```

```
\setcounter{secnumdepth}{1}

\section{AA}
\subsection{BB}
\subsubsection{CC}
\subsection*{BB}
\tableofcontents
\newpage
```

Lorem \textbf{ipsum} \\ \underline{dolor} \emph{sit} amet.

Fusce \textcolor{red}{red} {ac risus} ...

\includegraphics

\includegraphics

Here you see a penguin:

\includegraphics [height=2cm]{penguin.jpg}

Photo by Sue Flood.

\includegraphics

\includegraphics

Here you see a penguin:

\includegraphics [height=2cm]{penguin.jpg}

Photo by Sue Flood.



Here you see a penguin:

Photo by Sue Flood.

<https://www.pinterest.co.kr/pin/645844402812554993/>

\includegraphics

Here you see a penguin:

```
\includegraphics [height=2cm]{penguin.jpg}
```

Photo by Sue Flood.

Here you see a penguin:



Photo by Sue Flood.

\includegraphics

| as paragraph

| center

\includegraphics

Here you see a penguin:

```
\begin{center}
    \includegraphics [height=2cm]{penguin.jpg}
\end{center}
Photo by Sue Flood.
```

Here you see a penguin:



Photo by Sue Flood.

\includegraphics

| as paragraph

| center

| figure

\includegraphics

You can see a penguin in Figure~\ref{fig:penguin}.

```
\begin{figure}[h]
    \centering
    \includegraphics[height=2cm]{penguin.jpg}
    \caption{A cute penguin. Photo by Sue Flood.}
    \label{fig:penguin}
\end{figure}
```

You can see a penguin in Figure 1.



Figure 1: A cute penguin. Photo by Sue Flood.

Figure placement

- h (HERE): Figure can come here.
- t (TOP): Figure can come at the top of the page.
- b (BOTTOM): Figure can come at the bottom of the page
- p (PAGE): Figure can come on a special page for figures.
- H (HERE): No floating, always here. (`\usepackage{float}`)

Figure appearing too late? Try placing `figure` to a point earlier in the code.

Figure placement

- h (HERE): Figure can come here.
- t (TOP): Figure can come at the top of the page.
- b (BOTTOM): Figure can come at the bottom of the page
- p (PAGE): Figure can come on a special page for figures.
- H (HERE): No floating, always here. (`\usepackage{float}`)

Figure appearing too late? Try placing `figure` to a point earlier in the code.

When working with images: `\usepackage{graphicx}`

\includegraphics

as paragraph

center

figure

htbp

Dimensions

- Full linewidth

```
\includegraphics[width=\linewidth]{assets/pinguin.jpg}
```

- 90% linewidth

```
\includegraphics[width=0.9\linewidth]{assets/pinguin.jpg}
```

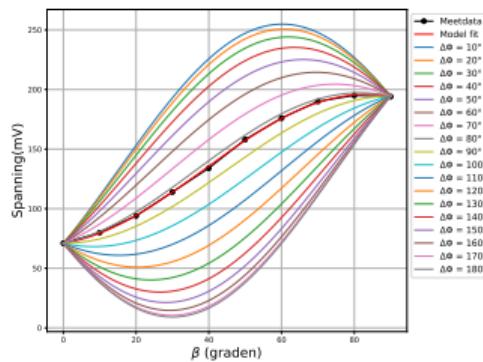
- Width maximally 90% linewidth and height maximally 5 cm

```
\includegraphics[  
    width=0.9\linewidth, height=5cm, keepaspectratio  
]{assets/penguin.jpg}
```

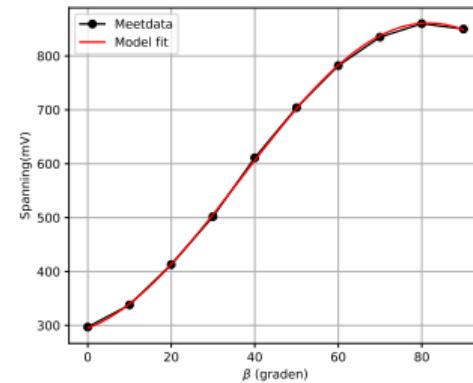
Subfigure (\usepackage{subcaption})

```
\begin{figure}[htbp]
    \centering
    \begin{subfigure}[b]{0.45\textwidth}
        \includegraphics[width=\textwidth]{AA}
        \caption{BB}
        \label{fig:dphiExample}
    \end{subfigure}\quad
    \begin{subfigure}[b]{0.45\textwidth}
        \includegraphics[width=\textwidth]{CC}
        \caption{CC}
        \label{fig:fitExample}
    \end{subfigure}
    \caption{Multiple images next to each other!}
\end{figure}
```

Subfigure (\usepackage{subcaption})



(a) BB



(b) CC

Figuur 1: Multiple images next to eachother!

Formulas

The trigonometric identity is $\sin^2(\theta) + \cos^2(\theta) = 1$.

Formulas

The trigonometric identity is $\sin^2(\theta) + \cos^2(\theta) = 1$.

The trigonometric identity
is $\$ \sin^2(\theta) + \cos^2(\theta) = 1 \$.$

Formulas

The trigonometric identity is $\sin^2(\theta) + \cos^2(\theta) = 1$.

The trigonometric identity
is $\sin^2(\theta) + \cos^2(\theta) = 1$.

```
\usepackage{amsmath, amssymb}
\usepackage{commath, mathtools}
```

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	\$	$\sqrt[3]{8}$	\$
$\frac{2}{3}$	\$	x_1	\$
$6 \geq 3$	\$	x_1^2	\$
$a^2 + b^2$	\$	a^{2+b^2}	\$

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$</code>
$\frac{2}{3}$	<code>\$</code>	x_1	<code>\$</code>
$6 \geq 3$	<code>\$</code>	x_1^2	<code>\$</code>
$a^2 + b^2$	<code>\$</code>	a^{2+b^2}	<code>\$</code>

Formulas: The basics

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$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$</code>
$6 \geq 3$	<code>\$</code>	x_1^2	<code>\$</code>
$a^2 + b^2$	<code>\$</code>	a^{2+b^2}	<code>\$</code>

Formulas: The basics

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$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$</code>
$a^2 + b^2$	<code>\$</code>	a^{2+b^2}	<code>\$</code>

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$</code>

Formulas: The basics

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$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ \$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$ \$</code>

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ x_1 \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ x_1^2 \$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$ a^{2+b^2} \$</code>

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ x_1 \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ x_1^2 \$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$</code>

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ x_1 \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ x_1^2 \$</code>
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Formulas: The basics

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$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ x_1 \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ x_1^2 \$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$ a^{2+b^2} \$</code>
<hr/>			
x^{22}	<code>\$ x^{22} \$</code> : x^{22}		

Formulas: The basics

Formula	Code	Formula	Code
$\sqrt{2}$	<code>\$ \sqrt{2} \$</code>	$\sqrt[3]{8}$	<code>\$ \sqrt[3]{8} \$</code>
$\frac{2}{3}$	<code>\$ \frac{2}{3} \$</code>	x_1	<code>\$ x_1 \$</code>
$6 \geq 3$	<code>\$ 6\geq 3 \$</code>	x_1^2	<code>\$ x_1^2 \$</code>
$a^2 + b^2$	<code>\$ a^2 + b^2 \$</code>	a^{2+b^2}	<code>\$ a^{2+b^2} \$</code>

`$ x^22 $`: x^22 | `$ x^{22} $`: x^{22}

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	\$	$5 \cdot 6$	\$
α, β, γ	\$	A, B, Γ	\$
ϵ, ε	\$	\mathcal{P}	\$
ϕ, φ	\$	\mathbb{P}	\$

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$ 5 \cdot 6 \$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$ A, B, \Gamma \$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$ \mathcal{P} \$</code>
ϕ, φ	<code>\$ \phi, \varphi \$</code>	\mathbb{P}	<code>\$ \mathbb{P} \$</code>

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	$\$ x_1, \backslash dots, x_n \$$	$5 \cdot 6$	$\$$
α, β, γ	$\$ \backslash alpha, \backslash beta, \backslash gamma \$$	A, B, Γ	$\$$
ϵ, ε	$\$$	\mathcal{P}	$\$$
ϕ, φ	$\$$	\mathbb{P}	$\$$

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$</code>
ϕ, φ	<code>\$</code>	\mathbb{P}	<code>\$</code>

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	$\$ x_1, \dots, x_n \$$	$5 \cdot 6$	$\$ \cdot \$$
α, β, γ	$\$ \alpha, \beta, \gamma \$$	A, B, Γ	$\$, \$$
ϵ, ε	$\$ \epsilon, \varepsilon \$$	\mathcal{P}	$\$ \mathcal{P} \$$
ϕ, φ	$\$ \phi, \varphi \$$	\mathbb{P}	$\$ \mathbb{P} \$$

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$ 5 \cdot 6 \$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$ A, B, \Gamma \$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$ \mathcal{P} \$</code>
ϕ, φ	<code>\$ \phi, \varphi \$</code>	\mathbb{P}	<code>\$ \mathbb{P} \$</code>

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$ 5\cdot 6 \$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$ A, B, \Gamma \$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$ \mathcal{P} \$</code>
ϕ, φ	<code>\$ \phi, \varphi \$</code>	\mathbb{P}	<code>\$ \mathbb{P} \$</code>

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$ 5\cdot 6 \$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$ A, B, \Gamma \$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$ \mathcal{P} \$</code>
ϕ, φ	<code>\$ \phi, \varphi \$</code>	\mathbb{P}	<code>\$ \mathbb{P} \$</code>

Formulas: Symbols

Formula	Code	Formula	Code
x_1, \dots, x_n	<code>\$ x_1, \dots, x_n \$</code>	$5 \cdot 6$	<code>\$ 5\cdot 6 \$</code>
α, β, γ	<code>\$ \alpha, \beta, \gamma \$</code>	A, B, Γ	<code>\$ A, B, \Gamma \$</code>
ϵ, ε	<code>\$ \epsilon, \varepsilon \$</code>	\mathcal{P}	<code>\$ \mathcal{P} \$</code>
ϕ, φ	<code>\$ \phi, \varphi \$</code>	\mathbb{P}	<code>\$ \mathbb{P} \$</code>

Formulas: Vectors

Formule	Code	Formule	Code
\vec{x}	<code>\$ \vec{x} \$</code>	\vec{F}_{tot}	<code>\$ \vec{F}_{\text{tot}} \$</code>
\mathbf{x}	<code>\$ \mathbf{x} \$</code>	$\hat{i} + 6\hat{k}$	<code>\$ \hat{i} + 6\hat{k} \$</code>
$\ \vec{x}\ $	<code>\$ \ \vec{x}\ \$</code>	$\nabla \times \mathbf{A}$	<code>\$ \nabla \times \mathbf{A} \$</code>

$$\vec{F}_{\text{tot}}, \vec{F}_{\text{tot}}$$

Formulas: Calculus

```
\usepackage{commath}

\dot{\sin(x)}{x}, \partial{f(x,y)}{x}, \partial_x f

\int_0^{+\infty} e^{-x} \mathrm{d}x = 1
```

$$\frac{\mathrm{d} \sin(x)}{\mathrm{d}x}, \frac{\partial f(x,y)}{\partial x}, \partial_x f$$

$$\int_0^{\infty} e^{-x} \mathrm{d}x = 1$$

Formulas: Mathematical relations

Formula	Code	Formula	Code
$a \leq b$	<code>\$ a \leq b \$</code>	$a \geq b$	<code>\$ a \geq b \$</code>
$a < b$	<code>\$ a < b \$</code>	$a > b$	<code>\$ a > b \$</code>
$a \ll b$	<code>\$ a \ll b \$</code>	$a \gg b$	<code>\$ a \gg b \$</code>
$a = b$	<code>\$ a = b \$</code>	$a \simeq b$	<code>\$ a \simeq b \$</code>
$a \neq b$	<code>\$ a \neq b \$</code>	$a \approx b$	<code>\$ a \approx b \$</code>
$a \sim b$	<code>\$ a \sim b \$</code>	$a \stackrel{*}{=} b$	<code>\$ a \stackrel{*}{=} b \$</code>

Formulas: Arrows and operators

```
\DeclareMathOperator{\Image}{Image}
```

```
a \iff b, a\implies b, a\mapsto b  
\lim_{x\rightarrow 0}\frac{\sin(x)}{x} = 1  
\Image(f) = \mathbb{R}_{\geq 0}
```

$$a \iff b, a \implies b, a \mapsto b$$

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

$$\Image(f) = \mathbb{R}_{\geq 0}$$

So many! And there are lots more :-)

CTAN symbol list:

[http://mirrors.ctan.org/info/symbols/comprehensive/
symbols-a4.pdf](http://mirrors.ctan.org/info/symbols/comprehensive/symbols-a4.pdf)

Detexify:

<http://detexify.kirelabs.org/classify.html>

Equation

The trigonometric identity is
 $\sin^2(\theta) + \cos^2(\theta) = 1$.

The trigonometric identity is
`\begin{equation}
 \sin^2(\theta) + \cos^2(\theta) = 1.
\end{equation}`

De trigonometric identity is $\sin^2(\theta) + \cos^2(\theta) = 1$.

De trigonometric identity is

$$\sin^2(\theta) + \cos^2(\theta) = 1. \tag{1}$$

Align

The double-angle formula can now be rewritten as

```
\begin{align}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\
    &= 2\cos^2(\theta) - 1.
\end{align}
```

The double-angle formula can now be rewritten as

$$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta) \tag{1}$$

$$= 2\cos^2(\theta) - 1. \tag{2}$$

Align

The double-angle formula can now be rewritten as

```
\begin{align}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\
    &= 2\cos^2(\theta) - 1.
\end{align}
```

The double-angle formula can now be rewritten as

$$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta) \tag{1}$$

$$= 2\cos^2(\theta) - 1. \tag{2}$$

Align

The double-angle formula can now be rewritten as

```
\begin{align}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\
    &\nonumber\\
    &\quad \&= 2\cos^2(\theta)-1.
\end{align}
```

The double-angle formula can now be rewritten as

$$\begin{aligned} \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\ &= 2\cos^2(\theta) - 1. \end{aligned} \tag{1}$$

Align

The double-angle formula can now be rewritten as

```
\begin{align*}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\
    &\equiv 2\cos^2(\theta) - 1.
\end{align*}
```

The double-angle formula can now be rewritten as

$$\begin{aligned} \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\ &= 2\cos^2(\theta) - 1. \end{aligned}$$

Align

The double-angle formula can now be rewritten as

```
\begin{align*}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\
    &\equiv 2\cos^2(\theta) - 1. \tag{$*$}
\end{align*}
```

The double-angle formula can now be rewritten as

$$\begin{aligned} \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta) \\ &= 2\cos^2(\theta) - 1. \end{aligned} \tag{*}$$

Align

We do this with the double-angle formula

```
\begin{align*}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta),
\end{align*}
```

which we can rewrite as

```
\begin{align*}
&= \cos^2(\theta) - (1 - \cos^2(\theta)) \\
&= 2\cos^2(\theta) - 1.
\end{align*}
```

We do this with the double-angle formula

$$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta),$$

which we can rewrite as

$$\begin{aligned}
&= \cos^2(\theta) - (1 - \cos^2(\theta)) \\
&= 2\cos^2(\theta) - 1.
\end{aligned}$$

Align

We do this with the double-angle formula

```
\begin{align*}
    \cos(2\theta) &= \cos^2(\theta) - \sin^2(\theta),
\intertext{which we can rewrite as}
&= \cos^2(\theta) - (1 - \cos^2(\theta)) \\
&= 2\cos^2(\theta) - 1.
\end{align*}
```

We do this with the double-angle formula

$$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta),$$

which we can rewrite as

$$\begin{aligned}
&= \cos^2(\theta) - (1 - \cos^2(\theta)) \\
&= 2\cos^2(\theta) - 1.
\end{aligned}$$

Also in use

```
AA \(\sqrt{2}\)
BB [\sqrt{3}]
CC $$ \sqrt{4} $$
```

$$\begin{array}{c} AA \sqrt{2} BB \\ \\ \sqrt{3} \\ CC \\ \sqrt{4} \end{array}$$

Left-right

```
\begin{align*}
& f(\sum_{i=1}^n x_i) \\
& f\left(\sum_{i=1}^n x_i\right)
\end{align*}
```

$$f\left(\sum_{i=1}^n x_i\right)$$

Delimiter point

```
\begin{align*}
    \left. \left. x^2 \right. \right|_{x=0}^{x=2} = 4
\end{align*}
```

$$\left. \left. x^2 \right. \right|_{x=0}^{x=2} = 4,$$

\nonumber | align* | \tag | \intertext | \left[\dots \right]

```
\begin{aligned}
R(\theta) &= \begin{pmatrix} \cos(\theta) & -\sin(\theta) \\ \sin(\theta) & \cos(\theta) \end{pmatrix}, \\
|x| &= \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}
\end{aligned}
```

$$R(\theta) = \begin{pmatrix} \cos(\theta) & -\sin(\theta) \\ \sin(\theta) & \cos(\theta) \end{pmatrix}, \quad |x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

Installation

vkuhlmann.com/latex/installation

The screenshot shows a Visual Studio Code window with a LaTeX project open. On the left, the sidebar displays the project structure, including a 'COMMANDS' section with options like 'Build LaTeX project', 'View LaTeX PDF', and 'Navigate, select, and edit'. Below that is a 'STRUCTURE' section with a single item: '1 Introductie'. Under 'SNIPPET VIEW', there are tabs for 'Symbols' and 'TikZ'. A search bar is also present in this section. The main editor area shows a LaTeX document named 'scratch1.tex' with the following code:

```
\documentclass[a6paper]{article}
\usepackage[margin=2.5cm]{geometry}
\usepackage[dutch]{babel}
\usepackage{parskip}
\usepackage{amsmath,amssymb}
\usepackage{graphicx}
\usepackage{hyperref}

\begin{document}
\section{Introductie}
Hallo!
\begin{align*}
x = \sqrt{2} + 3
\end{align*}
\end{document}
```

To the right of the editor, a preview window shows the generated PDF titled 'scratch1.pdf'. The PDF contains the text '1 Introductie' and 'Hallo!', followed by a mathematical equation $x = \sqrt{2} + 3$.

On installed versions you might need to compile multiple times.

The end

Questions?

Stuck? Mail us at
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