Quick Introduction to LaTeX

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Popular Tools for Document Preparation

- Microsoft Word

  -- What you write is what you get (WYWIWYG)

- LaTex for documents with math content.

  -- A typesetting system

  -- What you see is what you meant (WYSIWYM)

```
\documentclass[12pt]{article}

\begin{document}

\section{Introduction}
  This is a tutorial example
 See symbols in the reference.
\section{Key Theorem}

\begin{eqnarray}
 a^m+b^m=c^m. \label{Myequation}
\end{eqnarray}
 Now we prove
Eqn~(\ref{Myequation}).

\end{document}
```

Latex

1 Introduction

This is a tutorial example.
See symbols in the reference.

2 Key Theorem

$$a^m + b^m = c^m.$$

Now we prove the Eqn.

Popular Tools for Document Preparation

- Microsoft Word

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  -- Peg with Microsoft Windows

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  -- A typesetting system

  -- What you see is what you meant (WYSIWYM)

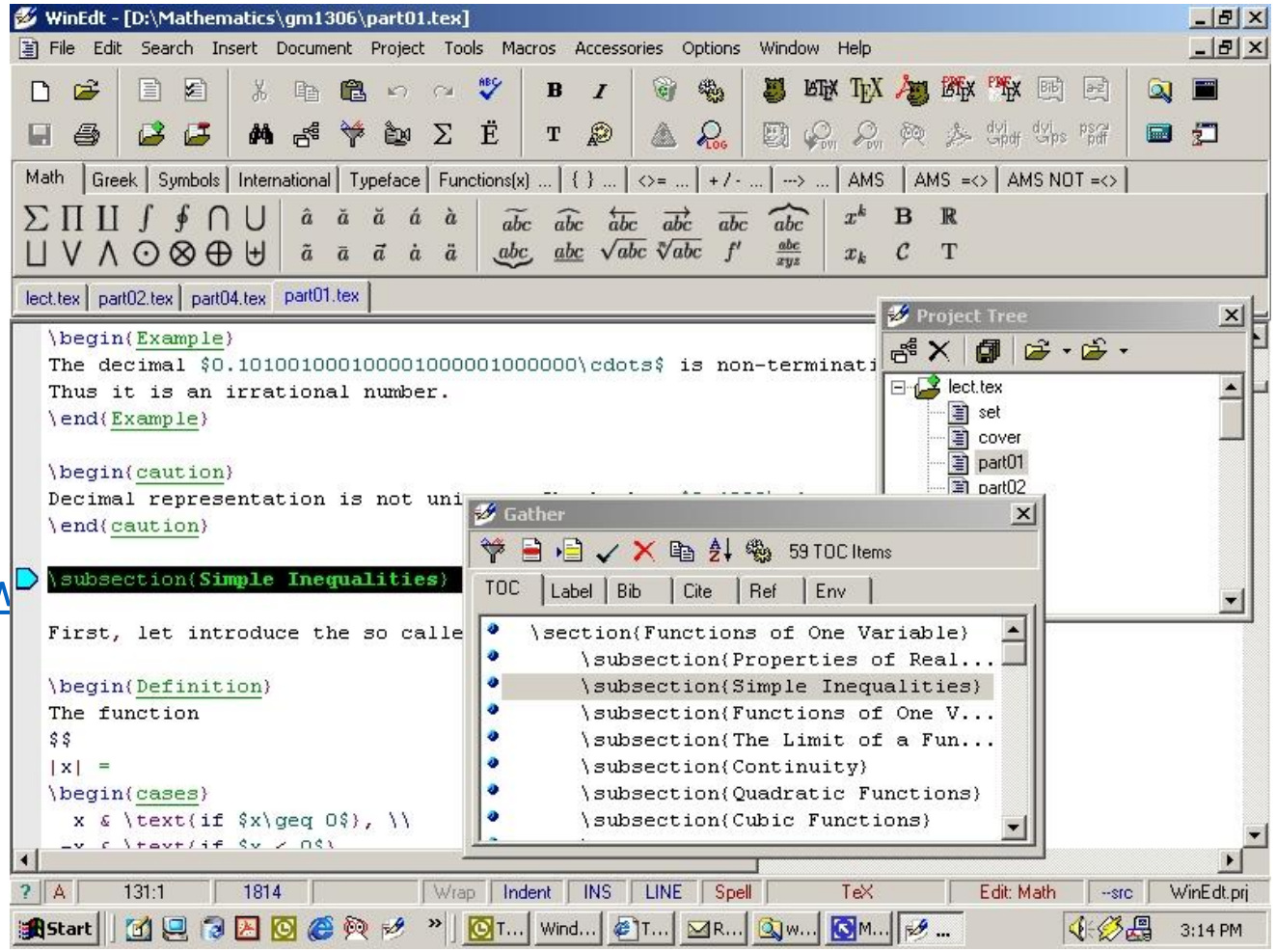
  -- A special editor interface is needed to run latex

Platform for Running Latex

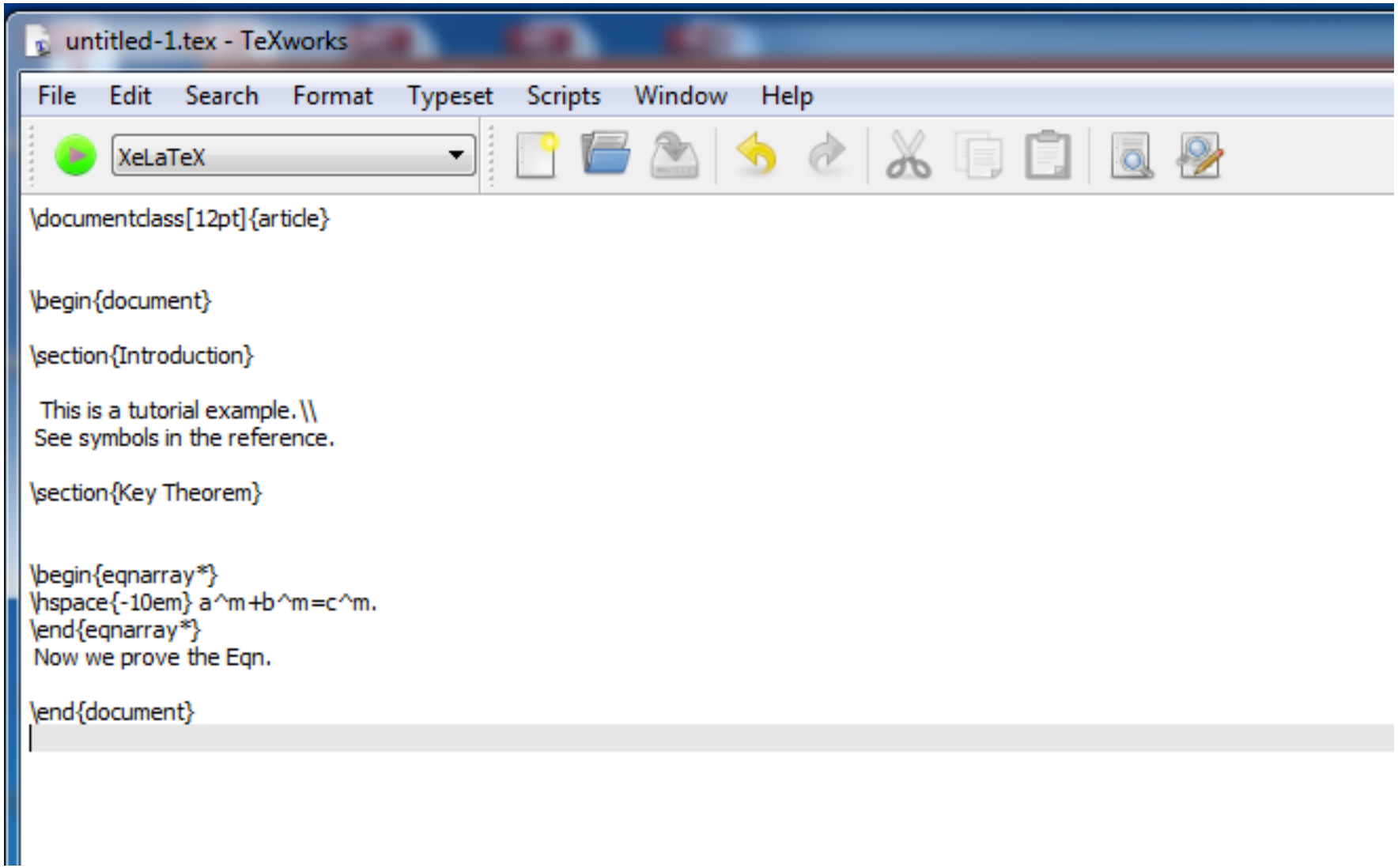
- MiKTeX version 2.2
  http://www.miktex.org/download
- Adobe Acrobat Reader
- WinEdt Version 5.3
  http://www.winedt.com/

or TeXworks

https://texworks.googlecode.com/files/TeXw
manual-r1029.pdf

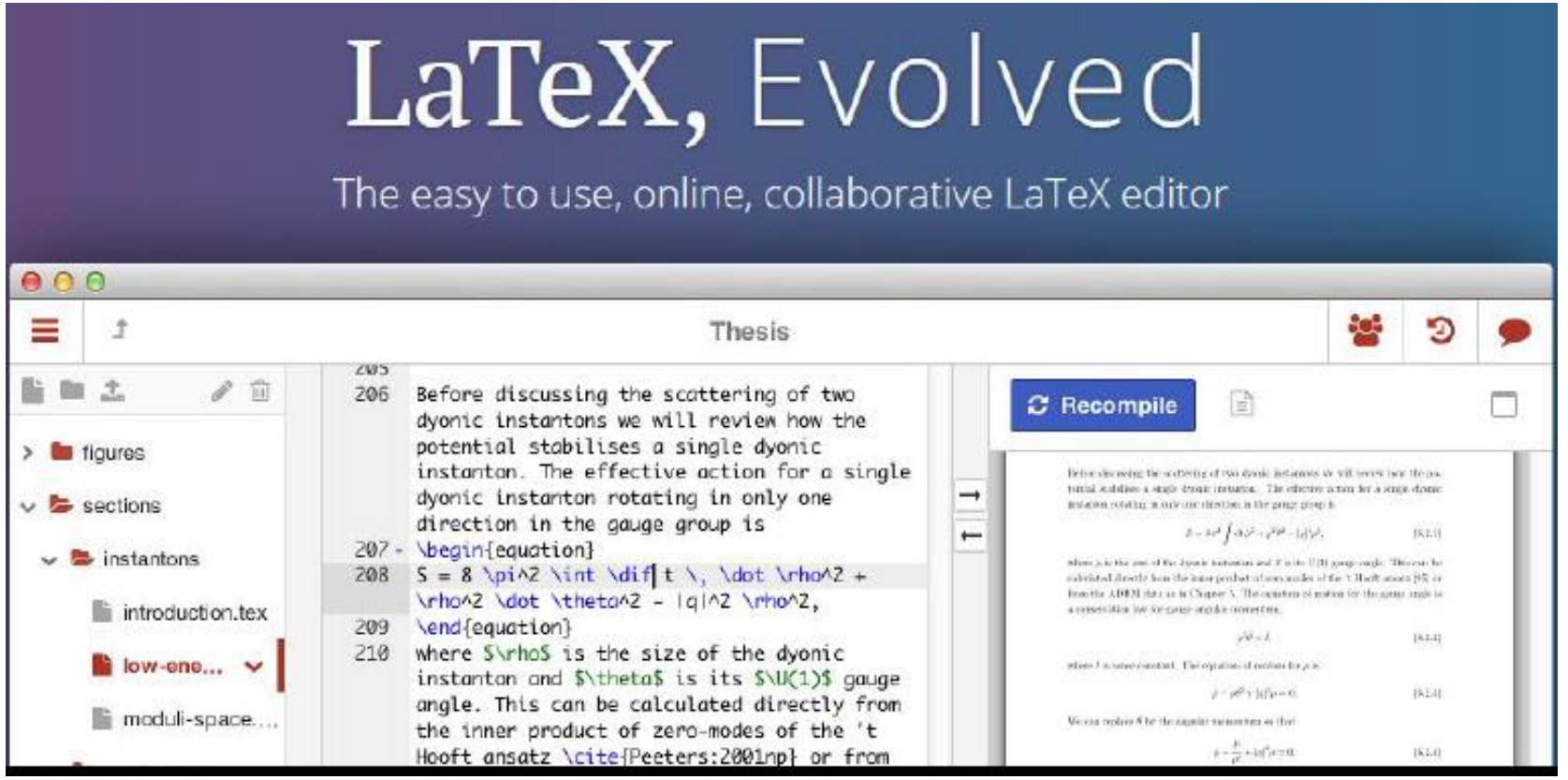


TeXworks


untitled-1.tex - TeXworks
File Edit Search Format Typeset Scripts Window Help
XeLaTeX
\documentclass[12pt]{article}
\begin{document}
\section{Introduction}
This is a tutorial example.\\
See symbols in the reference.
\section{Key Theorem}
\begin{eqnarray*}
\hspace{-10em} a^m+b^m=c^m.
\end{eqnarray*}
Now we prove the Eqn.
\end{document}

What if installations of these software are hard?

- Register an free account on shareLatex
- https://www.sharelatex.com/
- Use Latex online.



```
\documentclass[12pt]{article}

\setlength{\oddsidemargin}{0.0in}
\setlength{\textheight}{9in}
\setlength{\textwidth}{6.5in}
\setlength{\evensidemargin}{0.0in}
%

\begin{document}

\section{Introduction}

  This is a tutorial example
 See symbols in the reference.

\section{Key Theorem}

\begin{eqnarray}
 a^m+b^m=c^m. \label{Myequation}
\end{eqnarray}
 Now we prove
Eqn~(\ref{Myequation}).

\end{document}
```

- The first line: specify
  - -- the font size: 11pt, 12pt
  - -- style: article and book
- The preamble part
  - -- B/w line 1 and \begin{document}
  - -- Instructions used for formatting issues.
- The body part
  - -- text (of document) mixed with formatting commands, including references

Type and Number Math Formulas

```
\begin{eqnarray}
 f(x)=x e^{x} + \log x;
\label{definition_f} \\
   f’(x)=(x+1)e^{x}+ \frac{1}{x};
 \nonumber \\
f’’(x)=(x+2)e^{x}-\frac{1}{x^{2}}.
\label{derivative}
\end{eqnarray}
```

$$f(x) = xe^x + \log x; \qquad (1)$$

$$f(x) = (x+1)e^x + \frac{1}{x};$$

$$f(x) = (x+2)e^x - \frac{1}{x^2}. \qquad (2)$$

```
$f(x)$ is defined in Eqn.(\ref{definition_f}).
Its derivative is in Eqn.(\ref{derivative}).
```

$f(x)$ is defined in Eqn.(1).
Its derivative is in Eqn.(2).

Insert a figure and cite it

```
\usepackage{graphicx}
```

```
\begin{figure}
\includegraphics[width=3in]{fig1.pdf}
\caption{ The curve of the function f(x). \label{my_fig1} }
\end{figure}
```

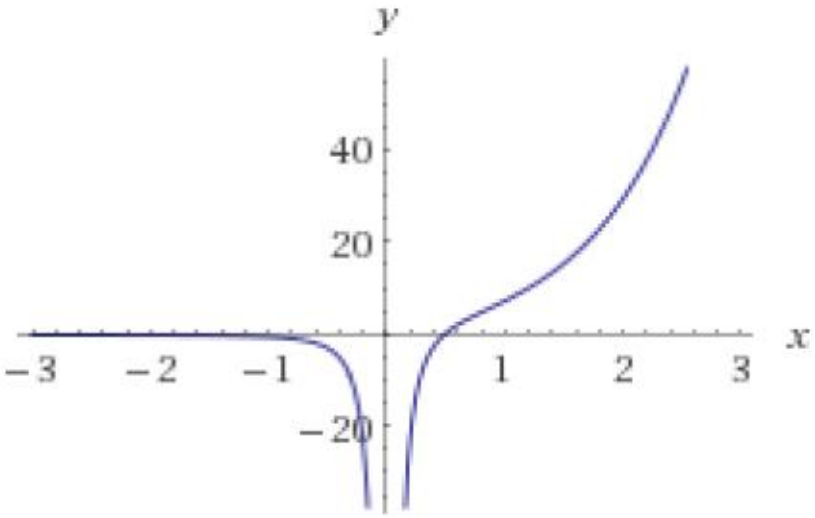


Figure 1: The curve of the function f(x).

```
The f(x) (see Fig.~\ref{my_fig1}) is defined here.
```

The f(x) (see Fig. 1) is defined here.

Insert a table and cite it

```
\begin{table}
\caption{The rule of binary product.
 \label{my_rule} }
 \begin{tabular}{|c|c|c|}
$\times$ & 0 & 1\\
 0        & 0 & 0\\
 1        & 0 & 1
\end{tabular}
\end{table}
```

Table 1: The rule of binary product.

$\times$	0	1
0	0	0
1	0	1

```
The product rule is given  in
\ref{my_rule}.
```

The product rule is given in Table 1.

Reference list and citation

```
\documentclass[12pt]{article}
\setlength{\oddsidemargin}{0.0in}
\setlength{\textheight}{9in}
\setlength{\textwidth}{6.5in}
\setlength{\evensidemargin}{0.0in}

\begin{document}
\section{Key Theorem}
\begin{eqnarray}
 a^m+b^m=c^m. \label{Myequation}
\end{eqnarray}
 Now we  see \cite{Zhang_book} for
Eqn~(\ref{Myequation}).

\begin{thebibliography}
\bibitem{Zhang_book}
LX Zhang, Primer to Bioinformatics,
High Eduction Press,
Beijing, 2016.
\end{thebibliography}

\end{document}
```

Now we see [1] for Eqn (1).
The f(x) (see Fig. 1) is defined here.

References

[1] LX Zhang, Primer to Bioinformatics, High Eduction Press, Beijing, 2016.

Thesis and book format

```
\documentclass[12pt]{book}

\begin{document}

\tableofcontents

\chapter{Introduction}
\section{definition}

  This is a tutorial example
 See symbols in the reference.

\section{Cyclic codes}

\chapter{Groups}
\section{Abel groups}
\begin{eqnarray}
 a^m+b^m=c^m. \label{Myequation}
\end{eqnarray}
 Now we prove
Eqn~(\ref{Myequation}).
\end{document}
```

Contents

Chapter 1

Introduction

1.1 definition

This is a tutorial example See symbols in the reference.

1.2 Cyclic codes