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## Основи на ЫТЕХ

проф. дфн Хассан Шамати

ИФТТ-БАН chamati@issp.bas.bg

12 февруари 2014 г.

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## Основи на РТЕХ

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12 февруари 2014 г.

Координатор: Виктория Атанасова

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## How to produce a pdf file?

Producing pdf files

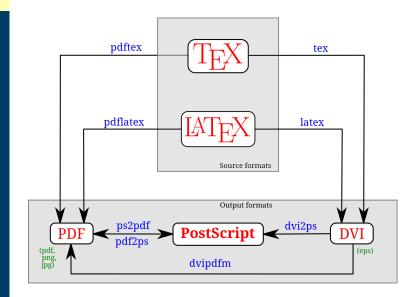
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## Some file extensions in LTEX

- .tex LaTeX or TeX input file. It can be compiled with latex.
- .sty LaTeX Macro package.
- .cls Class files define what your document looks like.
- .aux Auxiliary file that transports information from one compiler run to the next.
- .log Detailed information during the last compiler run.
- .toc Table of contents.
- .lof List of figures.
- .lot List of tables.
- .dvi Device Independent File.
- .pdf Portable Document Format.

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\documentclass { article }

\begin { document }

In elementary algebra, a quadratic equation (from the Latin quadratus for "square") is any equation having the form

\begin{equation}\label{quadraticeq}  $ax^{2}+bx+c=0$ 

% General expression

\end{equation}

where \$x\$ represents an unknown, and \$a\$, \$b\$, and \$c\$ are constants with a not equal to \$0\$. If \$a = 0\$, then the equation is linear, not quadratic. The constants \$a\$, \$b\$, and \$c\$ are called, respectively, the quadratic coefficient, the linear coefficient and the constant or free term.

Because the quadratic equation (\ref{quadraticeq}) involves only one unknown, it is called "univariate". The quadratic equation only contains powers of \$x\$ that are non-negative integers, and therefore it is a polynomial equation, and in particular it is a second degree polynomial equation since the greatest power is two. \end{document}

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Because the quadratic equation (\ref{quadraticeq}) involves only one unknown, it is called 'univariate''. The quadratic equation only contains powers of \$\\$X\\$ that are non-negative integers, and therefore it is a polynomial equation, and in particular it is a second degree polynomial equation since the greatest power is two. \end{document}

In elementary algebra, a quadratic equation (from the Latin quadratus for "square") is any equation having the form

$$ax^2 + bx + c = 0 \tag{1}$$

where x represents an unknown, and a, b, and c are constants with a not equal to 0. If a=0, then the equation is linear, not quadratic. The constants a, b, and c are called, respectively, the quadratic coefficient, the linear coefficient and the constant or free term.

Because the quadratic equation (1) involves only one unknown, it is called "univariate". The quadratic equation only contains powers of x that are non-negative integers, and therefore it is a polynomial equation, and in particular it is a second degree polynomial equation since the greatest power is two.

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1 \documentclass[a&paper]{article}   2 \hat{hegin(document)}   3 \land   1 \documentclass[a&paper]{article}   2 \hat{hegin(document)}   3 \land   1 \land
1 \documentclass[a4paper]{article} 2 \begin{arrival}
2 \ \text{legin(document}\)  3 In elementary algebra, a quadratic equation (from the Latin 4 quadratus for 'square') is any equation having the form 5 \ \text{legin(equation)} \text{lobe}(quadraticeq)\) 6 ax^{2}\text{lobe}(x+c=0) 7 \ \text{lead} \text{lobe}(x+c=0) 8 \ \text{lobe}(x+c=0) 9 are constants with a not equal to s95. If \$a = 95, then 10 the equation is linear, not quadratic. The constants 11 the equation is linear, not quadratic. The constants 12 coefficient, the linear coefficient and the constant or 13 free term. 14 15 Because the quadratic equation (\text{ref}(quadraticeq)) involves 16 only one unknown, it is called 'univariate''. The quadratic
3 In elementary algebra, a quadratic equation (from the Latin 4 quadratus for 'square') is any equation having the form 5   Neegin[equation] \label{quadraticeq} 6 ax^2(2+bx<=0 7 \end(equation) 8 where sxx represents an unknown, and sas, sbs, and scs 9 are constants with a not equal to 98s. If sa = 0s, then 10 the equation is linear, not equadratic. The constants 11 sas, sbs, and scs are called, respectively, the quadratic 12 coefficient, the linear coefficient and the constant or 13 free term. 14 15 Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called 'univariate''. The quadratic
4 quadratus for "square") is any equation having the form 5 heepin(equation) 6 ax^(2)+bx-tea 7 \text{And Sequation} \text{And And Sequation} And
5   Negin(equation)   New
6 ax (2)-bx-ce0 7 \text{condequation} 7 \text{condequation} 1 \text{condequation} 1 \text{condequation} 2 \text{defun} 3 \text{defun} 4 \text{defun} 5 \text{defun} 5 \text{defun} 6 \text{defun} 7 \text{condequation} 7 \text{condequation} 10 \text{the equation is linear, not quadratic. The constants 11 \text{defun} 11 \text{defun} 12 \text{conficient} 11 \text{defun} 12 \text{defun} 13 \text{free term.} 14 15 \text{Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called 'univariate''. The quadratic
8 where \$x\$ represents an unknown, and \$a\$, \$b\$, and \$c\$ 9 are constants with a not equal to \$9\$. If \$a = 0\$, then 10 the equation is linear, not equalartic. The constants 11 \$a\$, \$b\$, and \$c\$ are called, respectively, the quadratic 12 coefficient, the linear coefficient and the constant or 13 free term. 14 15 Because the quadratic equation (\ref{quadraticcq}) involves 16 only one unknown, it is called 'univariate''. The quadratic
8 where sxs represents an unknown, and sas, sbs, and scs 9 are constants with a not equal to s9s. If sa = 0s, then 10 the equation is linear, not quadratic. The constants 11 sas, sbs, and scs are called, respectively, the quadratic 12 coefficient, the linear <u>coefficient</u> and the constant or 13 free term. 14 15 Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called 'univariate''. The quadratic
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13 free term.' 14 15 Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called `univariate''. The quadratic
14 15 Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called 'univariate''. The quadratic
15 Because the quadratic equation (\ref{quadraticeq}) involves 16 only one unknown, it is called ``univariate''. The quadratic
16 only one unknown, it is called ``univariate''. The quadratic
17 equation only contains powers of \$x\$ that are non-negative
18 integers, and therefore it is a polynomial equation, and
19 in particular it is a second degree polynomial equation
20 since the greatest power is two.
21 \end{document}
(5)(25.35)
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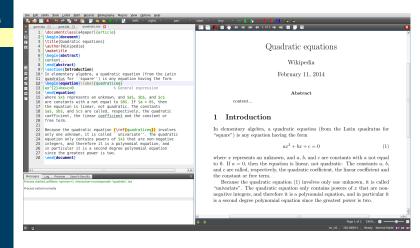
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## TEXstudio screenshot



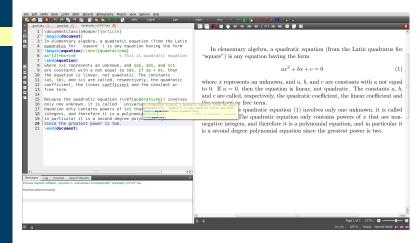
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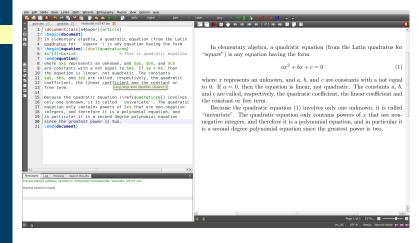
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#### Quadratic equations

#### Wikipedia

February 11, 2014

#### Abstract

content...

#### 1 Introduction

In elementary algebra, a quadratic equation (from the Latin quadratus for "square") is any equation having the form

$$ax^2 + bx + c = 0 \qquad (1)$$

where x represents an unknown, and a, b, and c are constants with a not equal to 0. If a=0, then the equation is linear, not quadratic. The constants a, b, and c are called, respectively, the quadratic coefficient, the linear coefficient and the constant or free term.

Because the quadratic equation (1) involves only one unknown, it is called "univariate". The quadratic equation only contains powers of x that are nonnegative integers, and therefore it is a polynomial equation, and in particular it is a second degree polynomial equation since the greatest power is two.

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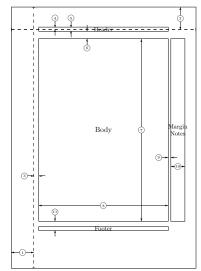
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- one inch + \hoffset
- \oddsidemargin = 17.3571pt \headheight = 12.0pt
- 7 \textheight = 591.5302pt 9 \marginparsep = 10.0pt
- 11 \footskip = 30.0pt  $\hoffset = 0.0pt$ \paperwidth = 597.50787pt
- 2 one inch + \voffset 4 \topmargin = -7.86334pt
- 6 \headsep = 25.0pt
- 8 \textwidth = 418.25368pt 10 \marginparwidth = 44.0pt
  - \marginparpush = 7.0pt (not shown)  $\voffset = 0.0pt$ \paperheight = 845.04684pt

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\documentclass[options]{ class}

- article
- **proc** proceedings
- minimal
- report small books, PhD theses, ...
- book books
- slides presentations

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• 10pt, 11pt, 12pt – main font size

- a4paper, letterpaper, ...
- **fleqn** left-aligned formula
- **leqno** equation numbering on the left
- titlepage, notitlepage
- onecolumn, twocolumn
- oneside,twoside
- landscape
- openright, openany make chapters begin on right only, on the next available page

\documentclass[options]{ class}

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\ scriptsize

\ tiny

\ footnotesize

\small \ normalsize

\ large

\Large **\LARGE** 

\huge

\Huge

sample text

sample text

sample text sample text

sample text

sample text sample text

sample text

sample text sample text Основи на LATEX

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## Font size

\tiny sample text
\scriptsize sample text

\ footnotesize sample text

\small sample text

\normalsize sample text

\large sample text \Large sample text

Large Sample text sample text

\huge sample text

NHuge sample text

\ fontsize {0.1cm}{0.1cm}\selectfont

\ fontsize { 1.0cm}{1.0cm}\selectfont

sample text

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## Font shapes

\textnormal {...} document font family

\emph{...} emphasis

\textrm {...} roman font family

\textsf {...} sans serif font family

\texttt {...} teletype font family

\textup {...} upright shape \textit {...} italic shape

\ textsl {...} slanted shape

\textbf {...} Bold face

\uppercase \{...\} UPPERCASE

\textmd {...} medium weight

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Article

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# Quadratic equations

The Author's name goes here

February 11, 2014

Abstract

This is the abstract ...

#### Section

#### Subsection

#### 1.1.1 Subsubsection

Paragraph

Subparagraph

```
\documentclass[12pt]{article}
\usepackage[a4paper]{geometry}
\begin{document}
\title{Quadratic equations}
\author{The Author's name goes here}
\date{\today}
\maketitle
\begin{abstract}
This is the abstract ...
\end{abstract}
\section{Section}
\subsection{Subsection}
\subsubsection{Subsubsection}
\paragraph{Paragraph}
\subparagraph{Subparagraph}
```

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```
\documentclass[12 pt] { book }
\usepackage[a4paper]{geometry}
\pagestyle { style }
                           style = plain, headings, empty
                           Roman numbering
\frontmatter
\begin { document }
\table of content
                           Table of content
\chapter { ... }
\section \ \ ... \
\ mainmatter
                           Arabic numbering
\chapter { ... }
\chapter { ... }
\chapter { ... }
\appendix
\ backmatter
\begin { bibliography }
\end{bibliography}
```

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## Flushleft, Flushtright, Center

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\begin{flushleft}
This text is \\ left-aligned.
\LaTeX{} is not trying to make each line the same length.
\end{flushleft}

This text is

left-aligned. LaTeX is not trying to make each line the same length.

\begin{flushright}
This text is right -\\aligned.
\LaTeX{} is not trying to make
each line the same length.
\end{flushright}

This text is rightaligned. LaTeX is not trying to make each line the same length.

\begin { center }
At the centre \\ of the earth \\ end { center }

At the centre of the earth

## Itemize and Enumerate

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\begin{enumerate} \item You can next the list environments to your taste: \begin{itemize} \item But it might start to look silly. \item[-] With a dash. \end{itemize} \item Therefore remember: \begin { itemize } \item[a] things will not become smart because they are in a list. \item[b] things, though, can be presented beautifully in a list. \end{itemize} \end{enumerate}

- You can next the list environments to your taste:
  - But it might start to look silly.
  - With a dash.
- 2 Therefore remember:
  - a things will not become smart because they are in a list.
  - b things, though, can be presented beautifully in a list.

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#### **Tabular**

```
\begin{tabular}{|r|1|}
\ hline
7C0
            & hexadecimal
                            11
3700
            & octal
                             11
\cline{2-2}
                             ١١
111110000000 & binary
\ hline
\ hline
            & decimal
                             ١١
1984
\ hline
\end{tabular}
```

7C0	hexadecimal
3700	octal
11111000000	binary
1984	decimal

```
\begin{tabular}{c r @{.} 1}
\hline
Pi expression &
\multicolumn {2}{c}{Value}
                                 11
\ hline
$\pi$
                    3&1416
                                 11
$\pi^{\pi}$
                    36&46
                                 11
$(\pi \ \pi \) \ \pi \}$
              & 80662&7
                                 11
\ hline
\end{tabular}
```

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hexadecimal octal	//
~	//
binary	//
decimal	//
	decimal

7C0	hexadecimal
3700	octal
11111000000	binary
1984	decimal

\begin{tabular}{c r @{.} l}			
Pi expression &			
\multicolumn{2}{c}{Value}	//		
\$\pi\$ & 3&1416	\\		
\$\pi^{\pi}\$ & 36&46 \$(\pi^{\pi})^{\pi}\$	//		
& 80662&7	\\		
\hline \end{tabular}			
(cha(tabalal)			

Pi expression	Value
$\pi$	3.1416
$\pi^{\pi}$	36.46
$(\pi^\pi)^\pi$	80662.7

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## **Cross references**

```
\verb|\label{marker}| and \verb|\label{marker}| an
```

## Usage

```
\chapter \ \...\label \ \thischapter \ \section \ \...\label \ \thissection \ \subsection \ \...\}
...
```

```
\begin{equation}\label{einstein}
E = mc^2
\end{equation}
...
The mass-energy relation (\ref{einstein}) ...
\label{thispage}
...
...
On page \pageref{thispage} we ...
```

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## Floats: Figure & Tables

```
\begin{table}[place specifier]
\caption{Some description ... \label{results}}
\begin{tabular}
\end{tabular}
\end{table}
```

- h right here
- t − top
- b bottom
- p special page with floats
- ! ignore LATEX internal parameters

Let's practice  $\LaTeX$ 

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