

Практикум по научному письму

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Лабораторная работа 3

Изучение LaTeX

The screenshot shows a LaTeX editor window with the following code:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 A sentence with inline mathematics: $y = mx +
5 A second sentence with inline mathematics:
6 $$^2=3^2+4^2$.
7 A second paragraph containing display math.
8 \[
9 y = mx + c
10 \]
11 See how the paragraph continues after the
display.
12 \end{document}
13
```

The rendered output on the right side of the editor shows:

A sentence with inline mathematics: $y = mx + c$. A second sentence with inline mathematics: $5^2 = 3^2 + 4^2$. A second paragraph containing display math:

$$y = mx + c$$

See how the paragraph continues after the display.

Рис. 1: LaTeX



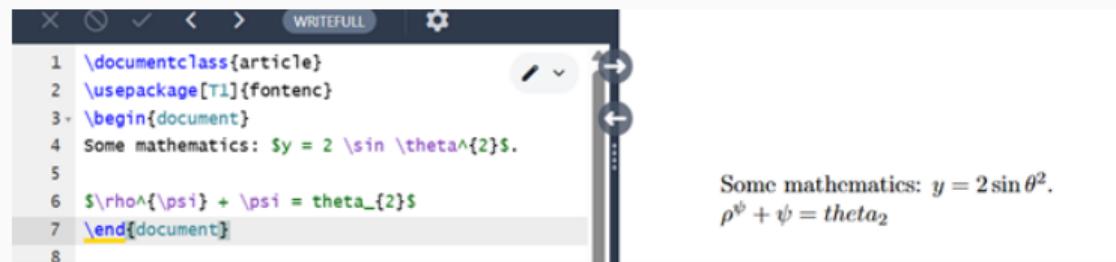
The image shows a screenshot of a LaTeX editor interface. On the left, a code editor displays the following LaTeX document:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 Superscripts  $a^b$  and subscripts  $a_b$ .
5 \end{document}
6
7
8
```

The code editor has a dark theme with syntax highlighting for commands like `\documentclass`, `\usepackage`, and `\begin{document}`. Lines 4 and 5 are highlighted in green. The right side of the interface features a preview pane showing the rendered output: "Superscripts a^b and subscripts a_b ".

Рис. 2: LaTeX

Изучение программы



A screenshot of a LaTeX editor interface. The top bar includes standard window controls (X, circle with a dot, checkmark) and tabs labeled "WRITEMODE" and "SETTINGS". Below the editor area, the LaTeX code is displayed:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 Some mathematics: $y = 2 \sin \theta^2$.
5
6 $\rho^\psi + \psi = \theta_2$
7 \end{document}
```

The code uses standard LaTeX syntax for document class, font encoding, and mathematical expressions. The editor highlights certain tokens like "document", "math", and "end". To the right of the code, there is a preview pane showing the rendered output:

Some mathematics: $y = 2 \sin \theta^2$.
 $\rho^\psi + \psi = \theta_2$

Рис. 3: LaTeX

Изучение программы



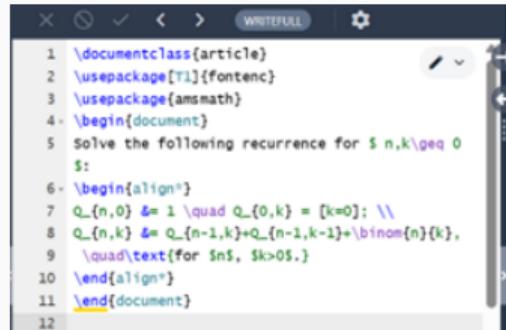
The screenshot shows a LaTeX editor interface. On the left, the code editor displays the following LaTeX document:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 A paragraph about a larger equation
5 [
6 \int_{-\infty}^{+\infty} e^{-x^2} dx
7 ]
8 \end{document}
9
```

The code editor has a toolbar at the top with icons for close, minimize, maximize, and save. Below the toolbar is a status bar with "WRITEFULL" and a gear icon. To the right of the code editor is a preview window. The preview window contains the text "A paragraph about a larger equation" followed by the mathematical integral expression $\int_{-\infty}^{+\infty} e^{-x^2} dx$.

Рис. 4: LaTeX

Изучение программы



The screenshot shows a LaTeX editor window titled "WRITERFULL". The code in the editor is:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \usepackage{amsmath}
4 \begin{document}
5 Solve the following recurrence for $ n,k\geq 0 $:
6 \begin{align*}
7 Q_{n,0} &= 1 \quad Q_{n,k} = [k=0]; \\
8 Q_{n,k} &\triangleq Q_{n-1,k} + Q_{n-1,k-1} + \binom{n}{k}, \\
9 \quad \text{\textbackslash quad\textbackslash text\{for \$n\$, \$k>0\$.\}} \\
10 \end{align*}
11 \end{document}
```

Solve the following recurrence for $n, k \geq 0$:

$$Q_{n,0} = 1 \quad Q_{0,k} = [k = 0];$$

$$Q_{n,k} = Q_{n-1,k} + Q_{n-1,k-1} + \binom{n}{k}, \quad \text{for } n, k > 0.$$

Рис. 5: LaTeX

Изучение программы

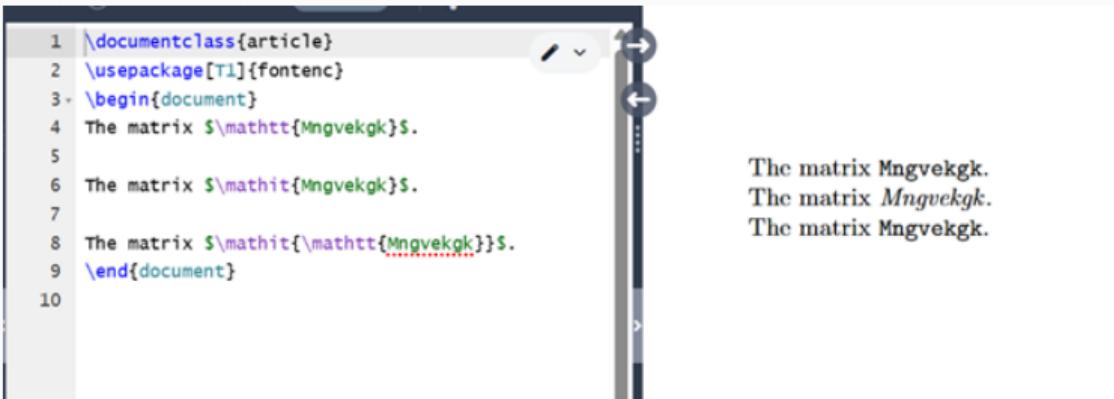
The screenshot shows a LaTeX editor window with the following content:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \usepackage{amsmath}
4 \begin{document}
5 AMS matrices.
6 \\
7 \begin{matrix}
8 a & b & c \\
9 d & e & f
10 \end{matrix}
11 \quad
12 \begin{pmatrix}
13 a & b & c \\
14 d & e & f
15 \end{pmatrix}
16 \quad
17 \begin{bmatrix}
18 a & b & c \\
19 d & e & f
20 \end{bmatrix}
21 \\
22 \end{document}
```

To the right of the code, the text "AMS matrices." is displayed above the generated mathematical expressions. The first expression is a standard matrix with horizontal lines separating rows and vertical lines separating columns. The second expression is a pmatrix (pmatrix) with diagonal lines from top-left to bottom-right. The third expression is a bmatrix (bmatrix) with diagonal lines from top-right to bottom-left.

Рис. 6: LaTeX

Изучение программы



The screenshot shows a LaTeX editor interface. On the left, a code editor displays the following LaTeX document:

```
1 \documentclass{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 The matrix $\mathtt{Mngvekgk}$.
5
6 The matrix $\mathit{Mngvekgk}$.
7
8 The matrix $\mathit{\mathtt{Mngvekgk}}$.
9 \end{document}
10
```

The code editor has a vertical scrollbar on the right. To the right of the editor is a preview area containing three lines of text:

The matrix `Mngvekgk`.
The matrix *Mngvekgk*.
The matrix `Mngvekgk`.

Рис. 7: LaTeX

Изучение программы

The screenshot shows a LaTeX editor interface. On the left, the code is displayed in a monospaced font:

```
1 \documentclass[a4paper]{article}
2 \usepackage[T1]{fontenc}
3 \usepackage{amsmath}
4 \begin{document}
5 \begin{gather}
6 \begin{aligned}
7 P(x) = & ax^5 + bx^4 + cx^3 + dx^2 + ex + f \\
8 x^5 + & bx^4 + cx^3 + dx^2 + ex + f \\
9 \end{aligned}
10 \end{gather}
11 \begin{multline}
12 (a+b+c+d)x^5 + (b+c+d+e)x^4 + \\
13 +(c+d+e+f)x^3 + (d+e+f+a)x^2 + (e+f+a+b)x + \\
14 +(f+a+b+c) \\
15 \end{multline}
16 \end{document}
```

On the right, the rendered output is shown in two parts:

Gather

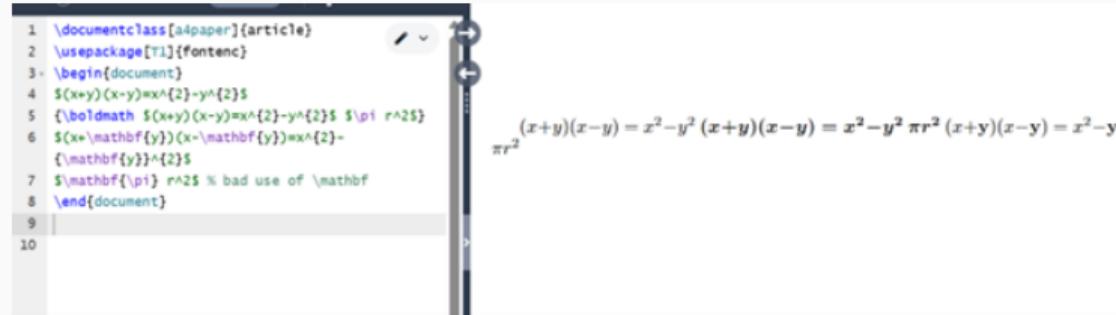
$$P(x) = ax^5 + bx^4 + cx^3 + dx^2 + ex + f \quad (1)$$
$$x^2 + x = 10 \quad (2)$$

Multline

$$(a + b + c + d)x^5 + (b + c + d + e)x^4 + (c + d + e + f)x^3 + (d + c + f + a)x^2 + (e + f + a + b)x + (f + a + b + c)$$

Рис. 8: LaTeX

Изучение программы



The screenshot shows a LaTeX editor interface. On the left, there is a code editor window containing the following LaTeX code:

```
1 \documentclass[a4paper]{article}
2 \usepackage[T1]{fontenc}
3 \begin{document}
4 $(x+y)(x-y)=x^2-y^2$ $\pi r^2$
5 {\boldmath $(x+y)(x-y)=x^2-y^2$ $}\pi r^2$%
6 $(x\mathbf{y})(x-\mathbf{y})=x^2-y^2$%
7 {\mathbf{y}}^2% bad use of \mathbf
8 \end{document}
9
10
```

On the right, there is a preview window showing the rendered mathematical expressions:

$$(x+y)(x-y) = x^2 - y^2$$
$$(x+y)(x-y) = x^2 - y^2$$
$$\pi r^2$$

The rendered output shows two identical equations: $(x+y)(x-y) = x^2 - y^2$ and πr^2 .

Рис. 9: LaTeX

Изучение программы



The screenshot shows a LaTeX editor interface with the following code in the left pane:

```
1 \documentclass[a4paper]{article}
2 \usepackage[T1]{fontenc}
3 \usepackage{mathtools}
4 \begin{document}
5 [
6 \begin{pmatrix*}[l]
7 10&11\\
8 1&2\\
9 -5&-6
10 \end{pmatrix*}
11 ]
12 \end{document}
```

The right pane displays the resulting mathematical matrix:

$$\begin{pmatrix} 10 & 11 \\ 1 & 2 \\ -5 & -6 \end{pmatrix}$$

Рис. 10: LaTeX

Изучение программы

```
1 \documentclass[a4paper]{article}
2 \usepackage{unicode-math}
3 \setmainfont{TeX Gyre Pagella}
4 \setmathfont{TeX Gyre Pagella Math}
5 \begin{document}
6 One two three
7 [
8 ]
9 ]
10 Un
11 [
12 ]
13 \end{document}
```

11 [A + \symfrak{A}+ \symbf{A}+ \symcal{A} +
 \symscr{A}+



Выводы

- Познакомилась с LaTeX
- Продолжила изучение языка.

Спасибо за внимание!