1 模板

https://www.overleaf.com/latex/templates/
https://www.latexstudio.net/
http://www.latextemplates.com/
https://github.com/DeathKing/LaTeX-Template-Cn

2 Test

Hello this is a document content
中文测试

满纸荒唐言
一把辛酸泪
都云作者痴
谁解其中味

3 排版

1. Several spaces equal one. Front spaces are ignored. An empty line starts a new paragraph.

A `\par` command also starts a new line.

2. # $ % & { } _ ^ ~ \

3. 连字

It's difficult to find ….

It's difficult to find ….

4. 标点

"Please press the 'x' key."

daughter-in-law, X-rated

pages 13–67

yes—or no?

one, two, three, …one hundred

5. 西文

Hôtel, naïve, élève,

smørrebrød, ¡Se norita!,

Schönbrunner Schloß

Straße

6. 其他符号

¶ § † ‡ © £ ∗ · • ® ™

7. 强调

An underlined text.

An example of some long and underlined words.

Some *emphasized words, including* double-emphasized *words*, are shown here.

8. 单词间距和断行

Fig. 2a. ~ 不断行空格

Donale E. Knuth

9. 手动断词

You can find some long text break new line. I think this is: supercalifragilisticexpialidocious.

4 文档元素

1. 标题

\chapter{title} \section{title} \subsection{title} \subsubsection{title} \paragraph{title} \subparagraph{title}

2. 引用

A reference to this subsection looks like: “see section 4 on page 4.”

3. 脚注

“天地玄黄，宇宙洪荒。日月盈昃，辰宿列张。”[1]

“天地玄黄，宇宙洪荒。日月盈昃，辰宿列张。”[2]

4. 列表

边注较窄，不要写过多文字，最好设置较小的字号。

1. An item.
   (a) A nested item.
      * A starred item.
2. Reference(1a).

- An item.
  - A nested item.
  + A ‘plus’ item.
  - Another item.
- Go back to upper level.

Enumerate Numbered list.

Itemize Non-numbered list.

[1]出自《千字文》。

[2]表格里的名句出自《千字文》。

‡ First item

† Subitem

† Subitem

‡ Second item

A First item

B Second item

5. 对齐环境

Centered text using a `center` environment.

Left-aligned text using a `flushleft` environment.

Right-aligned text using a `flushright` environment.

6. 引用环境

Francis Bacon says:

> Knowledge is power.

《木兰诗》：

> 万里赴戎机，关山度若飞。朔气传金柝，寒光照铁衣。将军百战死，壮士十年归。归来见天子，天子坐明堂。策勋十二转，赏赐百千强。……

Rabindranath Tagore's short poem:

> Beauty is truth's smile when she beholds her own face in a perfect mirror.

7. 代码环境

```
#include <iostream>
int main()
{
std::cout << "Hello, world!"
<< std::endl;
return 0;
}
```

```
for␣(int␣i=0;␣i<4;␣++i)
printf("Number␣%d\n",i);
```

\LaTeX

```
(a || b) (a␣||␣b)
```

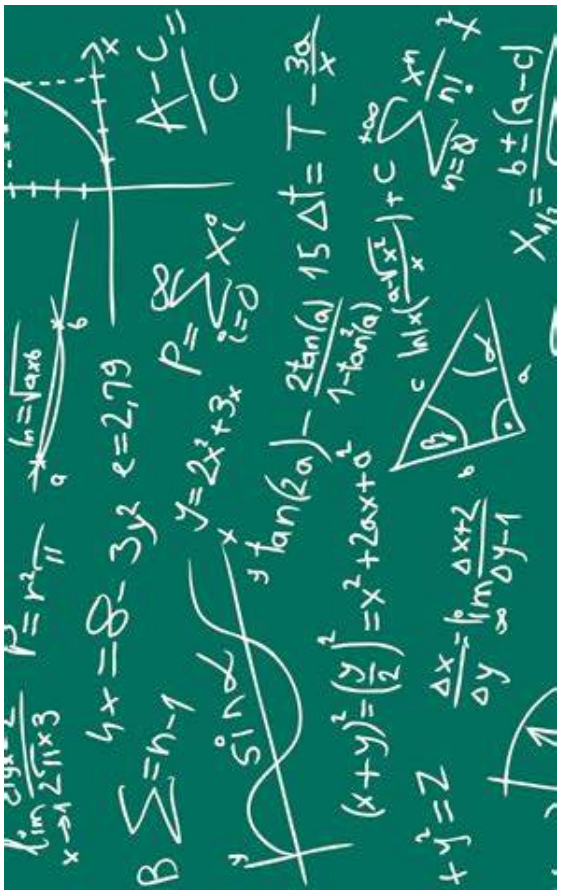
8. 表格

center-aligned	top-aligned	bottom-aligned

tabulars.

left	center	right	par box with fixed width
L	C	R	P
1:1	one		
11:3	eleven		

9. 图片



10. 盒子

|Test some words.|

| Test some words. |

|Test some words. |

| Test some words.|

|Test some words.|

Test some words.

Test some words.

Test box

Test box

垂直盒子：

天地玄黄
宇宙洪荒

三字经：人之初　千字文：
性本善
性相近
习相远

这是一个垂直盒子的测试。[a]

[a]脚注来自 minipage。

标尺：

Black ▬ box. Upper ▀ and lower ▄ box. A _____ line.

11. 浮动体

5 排版数学公式

1. 行内和行间公式

The Pythagorean theorem is $a^2 + b^2 = c^2$.

The Pythagorean theorem is:

$$a^2 + b^2 = c^2 \tag{1}$$

Equation (1) is called 'Gougu theorem' in Chinese.

It's wrong to say

$$1 + 1 = 3 \tag{dumb}$$

or

$$1 + 1 = 4$$

$$a^2 + b^2 = c^2$$

For short:

$$a^2 + b^2 = c^2$$

Or if you like the long one:

$$a^2 + b^2 = c^2$$

In text: $\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6}$. In display:

$$\lim_{n\to\infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6}$$

$x^2 \geq 0$ for **all** $x \in \mathbb{R}$

5.1 数学符号

5.1.1 一般符号

$\alpha\ \beta\ \Gamma\ \Delta\ \epsilon\ \varepsilon\ \zeta\ \eta\ \theta\ \vartheta\ \Theta\ \iota\ \kappa\ \lambda\ \mu\ \xi\ \pi\ \rho\ \varrho\ \sigma\ \tau\ \upsilon\ \phi\ \varphi\ \chi\ \psi$

$a_1, a_2, \ldots, a_n$

$a_1 + a_2 + \cdots + a_n$

5.1.2 指数、上下标和导数

p_{ij}^{3} m_{Knuth} $\sum_{k=1}^{3} k$

$a^x + y \neq a^{x+y}$ $e^{x^2} \neq e^{x2}$

$f(x) = x^2$ $f'(x) = 2x$ $f''^2(x) = 4$

5.1.3 分式和根式

1. 分式

In display style:

$3/8$ $\frac{3}{8}$ $\frac{3}{8}$

In text style: $1\frac{1}{2}$ hours $1\frac{1}{2}$ hours

2. 根式

$\sqrt{x} \Leftrightarrow x^{1/2} \quad \sqrt[3]{2} \quad \sqrt{x^2+\sqrt{y}}$

3. 特殊

Pascal's rule is

$$\binom{n}{k} = \binom{n-1}{k} + \binom{n-1}{k-1}$$

5.1.4 关系符

$\neq \doteq \propto <>$

$$f_n(x) \overset{*}{\approx} 1$$

5.1.5 算符

$\times \div \cdot \pm \mp \nabla \partial$

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

$a \bmod b, x \equiv a \pmod{b}$

5.1.6 巨算符

In text: $\sum_{i=1}^{n} \quad \int_0^{\frac{\pi}{2}} \quad \oint_0^{\frac{\pi}{2}} \quad \prod_{\epsilon}$

In display:

$$\sum_{i=1}^{n} \quad \int_0^{\frac{\pi}{2}} \quad \oint_0^{\frac{\pi}{2}} \quad \prod_{\epsilon}$$

In text: $\sum\limits_{i=1}^{n} \quad \int\limits_{0}^{\frac{\pi}{2}} \quad \prod\limits_{\epsilon}$

In display:

$$\sum_{i=1}^{n} \quad \int_{0}^{\frac{\pi}{2}} \quad \prod_{\epsilon}$$

$$\sum_{\substack{0\leq i\leq n\\ j\in\mathbb{R}}} P(i,j)=Q(n)$$

$$\sum_{\substack{0\leqslant i\leqslant n\\ j\in\mathbb{R}}} P(i,j)=Q(n)$$

5.1.7 数学重音和上下括号

$\bar{x_0}$ $\bar{x}_0$

$\vec{x_0}$ $\vec{x}_0$

$\hat{\mathbf{e}_x}$ $\hat{\mathbf{e}}_x$

$0.\overline{3} = \underline{\underline{1/3}}$

$\hat{XY}$ $\widehat{XY}$

$\vec{AB}$ $\overrightarrow{AB}$

$$\underbrace{\overbrace{(a+b+c)}^{6}\cdot\overbrace{(d+e+f)}^{7}}_{\text{meaning of life}}=42$$

5.1.8 箭头

$$a \xleftarrow{x+y+z} b$$

$$c \xrightarrow[x<y]{a*b*c} d$$

5.1.9 括号和定界符

$a, b, c \neq \{a, b, c\}$

$$1+\left(\frac{1}{1-x^2}\right)^3 \qquad \left.\frac{\partial f}{\partial t}\right|_{t=0}$$

$$\Big((x+1)(x-1)\Big)^2$$

$$\Big(\Big(\Big(\Big\{\Big\}\Big\}\Big\} \Big\|\Big\|\Big\| \Big\Downarrow\Big\Downarrow\Big\Downarrow\Big\Downarrow$$

5.2 多行公式

5.2.1 长公式折行

$$\begin{aligned} a+b+c+d+e+f+g+h+i & \\ &= j+k+l+m+n \\ &= o+p+q+r+s \\ &= t+u+v+x+z \end{aligned} \tag{2}$$

5.2.2 多行公式

$$a = b+c \tag{3}$$
$$= d+e \tag{4}$$

$$a = b+c \tag{5}$$
$$= d+e+f+g+h+i+j+k+l \tag{6}$$
$$+ m+n+o$$
$$= p+q+r+s \tag{7}$$

$$a=1 \qquad b=2 \qquad c=3 \tag{8}$$
$$d=-1 \qquad e=-2 \qquad f=-5 \tag{9}$$

$$a = b + c \tag{10}$$

$$d = e + f + g \tag{11}$$

$$h + i = j + k$$

$$l + m = n \tag{12}$$

5.2.3 公用编号的多行公式

$$\begin{aligned} a &= b + c \\ d &= e + f + g \\ h + i &= j + k \\ l + m &= n \end{aligned} \tag{13}$$

5.3 数组和矩阵

$$\mathbf{X} = \begin{pmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \dots & x_{nn} \end{pmatrix}$$

$$|x| = \begin{cases} -x & \text{if } x < 0, \\ 0 & \text{if } x = 0, \\ x & \text{if } x > 0. \end{cases}$$

$$|x| = \begin{cases} -x & \text{if } x < 0, \\ 0 & \text{if } x = 0, \\ x & \text{if } x > 0. \end{cases}$$

$$\begin{matrix} 1 & 2 \\ 3 & 4 \end{matrix} \qquad \begin{bmatrix} x_{11} & x_{12} & \dots & x_{1n} \\ x_{21} & x_{22} & \dots & x_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ x_{n1} & x_{n2} & \dots & x_{nn} \end{bmatrix}$$

$$\mathbf{H} = \begin{bmatrix} \dfrac{\partial^2 f}{\partial x^2} & \dfrac{\partial^2 f}{\partial x \partial y} \\ \dfrac{\partial^2 f}{\partial x \partial y} & \dfrac{\partial^2 f}{\partial y^2} \end{bmatrix}$$

5.4 公式中的间距

$$\int_a^b f(x)\mathrm{d}x \qquad \int_a^b f(x)\,\mathrm{d}x$$

$$\iint f(x)g(y)\,\mathrm{d}x\,\mathrm{d}y$$
$$\iint f(x)g(y)\,\mathrm{d}x\,\mathrm{d}y$$
$$\iint f(x)g(y)\,\mathrm{d}x\,\mathrm{d}y$$
$$\iint \quad \iiint \quad \int \cdots \int$$

5.5 数学符号的字体控制

5.5.1 数学字母字体

$\mathcal{R}$ $\mathfrak{R}$ $\mathbb{R}$

$$\mathcal{L} = -\frac{1}{4} F_{\mu\nu} F^{\mu\nu}$$

$\mathfrak{su}(2)$ and $\mathfrak{so}(3)$ Lie algebra

5.5.2 数学符号的尺寸

$$P = \frac{\sum_{i=1}^{n}(x_i - x)(y_i - y)}{\left[\sum_{i=1}^{n}(x_i - x)^2 \sum_{i=1}^{n}(y_i - y)^2\right]^{1/2}}$$

5.5.3 加粗的数学符号

μ, M $\mu, \mathbf{M}$ $\boldsymbol{\mu}, \boldsymbol{M}$

5.6 定理环境

5.6.1 原始的定理环境

My Theorem 5.1. *The light speed in vacuum is* $299,792,458\,\mathrm{m/s}$.

My Theorem 5.2 (Energy-momentum relation)**.** *The relationship of energy, momentum and mass is*

$$E^2 = m_0^2 c^4 + p^2 c^2$$

where c is the light speed described in theorem 5.1.

5.6.2 amsthm 宏包

5.6.3 证明环境和证毕符号

证明. For simplicity, we use

$$E = mc^2$$

That's it. □

证明. For simplicity, we use

$$E = mc^2$$

□

证明. Assuming $\gamma = 1/\sqrt{1 - v^2/c^2}$, then

$$E = \gamma m_0 c^2$$
$$p = \gamma m_0 v$$ □

证明. For simplicity, we use

$$E = mc^2. \tag{14}$$

□

证明. For simplicity, we use

$$E = mc^2$$ ∎

5.7 符号表

6 排版样式设定

6.1 字体和字号

The small and **bold** Romans ruled all of great big *Italy*.

6.1.1 字体样式

6.1.2 字号

He likes large and small letters.

6.2 段落格式和间距

6.2.1 行距

The baseline skip is set to be twice the normal baseline skip. Pay attention to the `\par` command at the end.

In comparison, after the curly brace has been closed, everything is back to normal.

Don't read this! It is not true. You can believe me! This is not true either. But remember I am a liar.

6.2.2 段落格式

In comparison, after the curly brace has been closed, everything is back to normal.

6.2.3 水平间距

This is a space of 1.5 cm.

x x x x

big y

big y

nor mal

nor mal

tin y

tin y

6.2.4 垂直间距

A paragraph.

Another paragraph.

Use command `\vspace{12pt}` to add some spaces between lines in a paragraph. Or you can use `\\[12pt]` to

add vertical space, but it also breaks the paragraph.

TeX TeX TeX TeX
TeX TeX TeX TeX

6.3 页面和分栏

6.3.1 利用 geometry 宏包设置页面参数

6.4 页眉页脚

7 特色工具和功能

7.1 参考文献和 BIBTEX 工具

7.2 索引和 makeindex 工具

7.3 使用颜色

7.3.1 颜色的表达方式 (color,xcolor)

60% 灰色
青色
红色
蓝色
40% 红色
蓝色 蓝黑 黑色
红色的互补色

7.3.2 带颜色的文本和盒子

文字用红色强调

浅灰色背景

蓝色边框 + 文字，黄色背景

7.4 使用超链接

7.4.1 hyperref

`http://wikipedia.org`
Wiki

7.4.2 PDF 书签

质能公式 $E = mc^2$

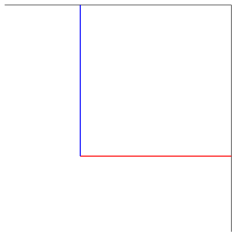
8 绘图功能

8.1 TikZ 绘图语言

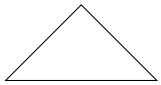
8.1.1 TikZ 坐标和路径

1.

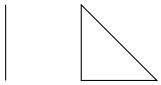
2.



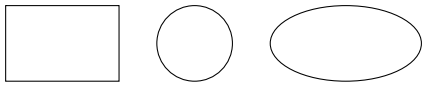
3.



4.



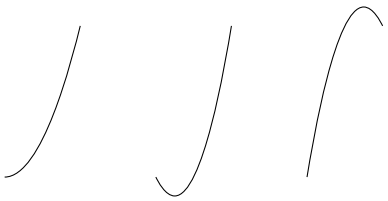
5.



6.

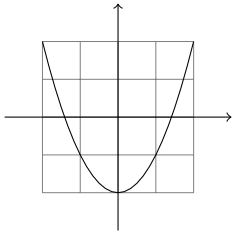
7.

8.



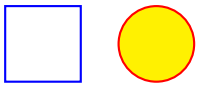
9.

10.

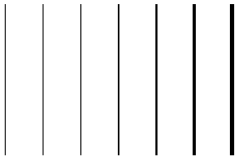


8.1.2 TikZ 绘图命令和参数

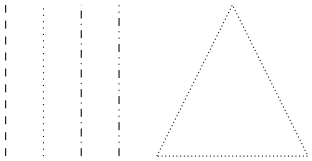
1.



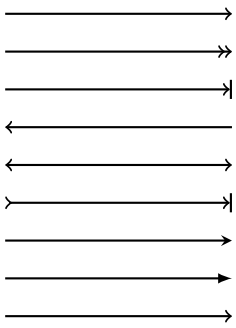
2.



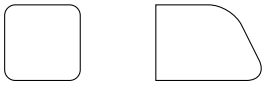
3.



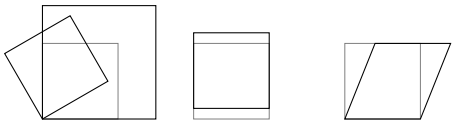
4.



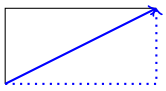
5.



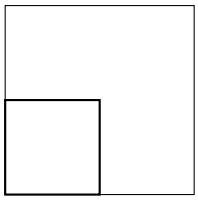
6.



7.

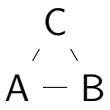


8.

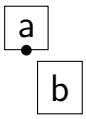


8.1.3 TikZ 文字结点

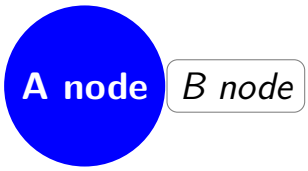
1.



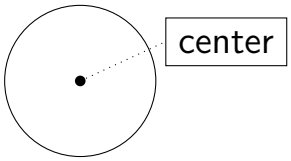
2.



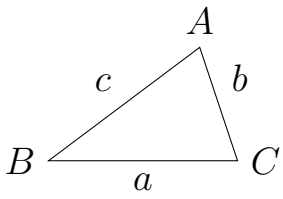
3.



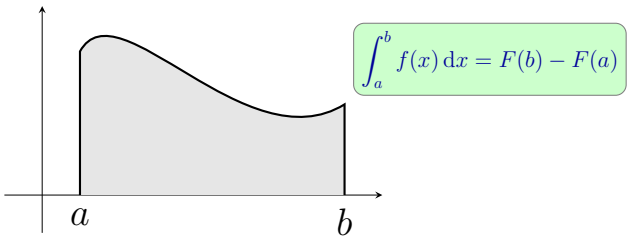
4.



5.



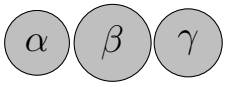
6.



8.1.4 在 TikZ 中使用循环

1.

2.



9 自定义 LATEX 命令和功能

9.1 自定义命令和环境

9.1.1 定义新命令

1.

This is "The not so Short Introduction to LaTeX 2_ε" ... "The not so Short Introduction to LaTeX 2_ε"

1.

‡ This is the *not so* Short Introduction to LaTeX 2_ε

‡ This is the *very* Short Introduction to LaTeX 2_ε

9.1.2 定义环境

■ My humble subjects ... ■

9.2 编写自己的宏包和文档类

9.2.1 编写简单的宏包

9.2.2 在宏包中调用其它宏包

9.2.3 编写自己的文档类

9.3 计数器

9.3.1 定义和修改计数器

9.3.2 计数器的输出格式