1 Sections and Subsections

This is a section

1.1 Subsection

This is a subsection

1.1.1 Subsubsection

This is a subsubsection

2 Lists

This is a list without numbering.

- This
- is
- a list
- without numbering

This is a list with numbering.

1. This
2. is
3. a list
4. with numbering
   (a) and
   (b) you can
   (c) nest it

For both you can nest them.

3 Math Mode

In your text, you can use math mode in this way: $a + b = c$.

A formula starting from a new line is like:

$$\sqrt{a_1 + a_2} = b^{x+y}$$

A long formula with aligned symbols is like:

$$\begin{aligned} (a+b)^2 &= (a+b) \times (a+b) && (1)\\ &= a^2 + ab + ba + b^2 && (2)\\ &= a^2 + 2ab + b^2 && (3) \end{aligned}$$

This	is	a	table
you	can	add	more

Table 1: A Table

Figure 1: This is a Figure

You can reference the numbers in this way: Equation 1, 2 and 3.

You can use Greek letters:

$$\alpha, \beta, \sigma, \theta, \ldots, \Sigma, \Theta, \Phi, \ldots$$

You can use other symbols like:

$$\cup, \cap, \leftarrow, \rightarrow, \Leftarrow, \Rightarrow, \cdot, \pm, \log n, \max, \leq, \geq, \nleq, \ngeq, \neq, \in, \subset, \subseteq, \nsubseteq, \notin, \int$$

$$\sum_{i=1}^{n} \frac{1}{i}, \prod_{i=1}^{n} 2^i, \left(\frac{1+x}{x^3+5x}\right)$$

$$\hat{a}, \tilde{a}, \bar{a}$$

$$f(x) = \begin{cases} x+1, & \text{if } x < 10 \\ x+5, & \text{if } 10 \leq x \leq 20 \\ 4x, & \text{otherwise.} \end{cases}$$

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} e \\ f \end{bmatrix}$$

4 Inserting a Table

This is how you insert a tabular in-place:

This	is	a	table
you	can	add	more

Table 1 shows you how to insert a table in the document somewhere else. It will be lablled, and LaTeX will decide where to put it.

5 Inserting a Figure

Figure 1 shows how to insert a picture.

6 Verbatim

```
you can write anything here
%$@%#!%R$^%$#^$!%$^%@%#!$#$#!%#$^%$&^%#
It will be shown directly.
\begin{figure}
\end{table}
LaTex will not compile the commands inside verbatim.
```

7 Insert an Algorithm

Algorithm 1 shows an example of inserting an algorithm.

Algorithm 1: Compute something

Input: This is the input
Output: This is the output

do something **while** *something* **do**
  do something
end
while *something* **do**
  do something
end
for *i from 0 to n* **do**
  do something
  do more things
end
for *i from 0 to n* **do** do something ;
if *something is true* **then**
  do A
end
else
  do B
end
if *something is true* **then** do A;
else do B;
do something `// this is some short comment`

```
/* this is a long comment, which can be very, very, very, very, very, very, very,
   very, very, very, very, very, very, very, very, very, very, very, very, very,
   very, very, very, very, very, very, very, very, very, very, very, very, very,
   very, very, very, long.                                                    */
```

$a \leftarrow b + c$
return *your return value*

8 Use Citations

I got the conclusion from here [1] and here [2, 3].

References

[1] Cormen, Leiserson, Rivest, and Stein Introduction to algorithms (CLRS). Third Edition Section 16.4, Lemma 16.7

[2] Edsger W. Dijkstra. A note on two problems in connexion with graphs. *Numerische mathematik*, 1(1), 1959.

[3] Robert Clay Prim. Shortest connection networks and some generalizations. *The Bell System Technical Journal*, 36(6):1389–1401, 1957.