

# Learning L<sup>A</sup>T<sub>E</sub>X

Eugenio J. Wu

February 5, 2025

## **Abstract**

Hello! This is my first L<sup>A</sup>T<sub>E</sub>X document.

A rectangle has side lengths of  $(x + 1)$  and  $(x + 3)$ . The equation  $A(x) = x^2 + 4x + 3$  gives the area of the rectangle.

# Contents

|          |   |          |
|----------|---|----------|
| <b>1</b> | <b>Math Expressions</b>                 | <b>3</b> |
| 1.1      | Common Mathematical Notations . . . . . | 3        |
| 1.2      | Brackets, Tables, and Arrays . . . . .  | 4        |
| <b>2</b> | <b>Lists</b>                            | <b>6</b> |
| <b>3</b> | <b>Text Document Formatting</b>         | <b>7</b> |
| 3.1      | Text Formatting . . . . .               | 7        |
| 3.2      | Document Formatting . . . . .           | 8        |

# 1 Math Expressions

## 1.1 Common Mathematical Notations

Superscripts:

$$2x^2$$

$$2x^n$$

$$69x^{420}$$

Subscripts:

$$\pi_1$$

$$f(1) = 0$$

$$x_1 = 100$$

Trigonometric Functions:

$$\sin x' = \cos x$$

$$\cos x' = -\sin x$$

$$\tan^2 x = \sec^2 x - 1$$

Logarithmic Functions:

$$\log_b x = n$$

$$\ln x' = \frac{1}{x}$$

$$\int \frac{1}{x} = \ln x + C$$

Roots:

$$\begin{aligned}\sqrt{4} &= 2 \\ \sqrt[3]{27} &= 3 \\ \sqrt[3]{x^2} &= x^{\frac{2}{3}} \\ \sqrt{\sqrt[3]{x}}\end{aligned}$$

Fractions:

About  $\frac{2}{3}$  of the cup is full.

About  $\frac{2}{3}$  of the cup is full.

$$\frac{1}{100}$$

## 1.2 Brackets, Tables, and Arrays

Brackets:

(Normal parentheses, no need to escape), [Squared brackets, no need to escape], {Curly brackets, you do need to escape}, >You can type pointy brackets like with `\textgreater` or `\textless`

Brackets in Math Mode:

You can also write brackets in a more math-like aesthetic manner with functions

$$\begin{aligned}&(\text{parenthesis}) \\ &\left(\frac{99}{100}\right) \\ &\langle \text{Dynamic pointy bracket} \rangle\end{aligned}$$

Tables:

| Names  | Will | Quandus | Luther |
|--------|------|---------|--------|
| Ham    | 5    | 8       | 69     |
| Cheese | 1    | 2       | 5      |

| Names  | Will | Quandus | Luther |
|--------|------|---------|--------|
| Ham    | 5    | 8       | 69     |
| Cheese | 1    | 2       | 5      |

Table 1: People and Food

| Names  | The names of people participating in this chart | Will | Quandus | Luther |
|--------|---|------|---------|--------|
| Ham    | Ham is very tasty                               | 5    | 8       | 69     |
| Cheese | Cheese is very cheesy                           | 1    | 2       | 5      |

Table 2: People, Food, and Descriptions

Arrays:

$$5x^2 \tag{1}$$

$$5x^2 \text{ is an equation} \tag{2}$$

$$5^2 = 25 \tag{3}$$

$$500 = 500 \tag{4}$$

## 2 Lists

Lists:

1. Item 1
2. Item 2
  - (a) Item a
  - (b) Item b
    - i. Item i

- Item 1
- Item 2
  - Item a
  - Item b
    - \* Item i

A. Item A

B. Item B

i) Item i

ii) Item ii

3. Item 3

4. Item 4

## 3 Text Document Formatting

### 3.1 Text Formatting

- This will produce *italicized* text.
- This will produce **boldfaced** text.
- This will produce emphasized text.
- This will produce SMALL CAPS text.
- This will produce monospace text.
- This will produce UPPERCASED text.
- This will produce lowercased text.
- This will produce underlined text.
- This will produce double underlined text.
- This will produce wavy-underlined text.
- This will produce ~~striketroughed~~ text.
- This will produce ~~hatched~~ text.
- This will produce dash-underlined text.
- This will produce dot-underlined text.
- This will produce a full link: <https://github.com/aier9500/aierFedoraNix>
- This will produce a hyperlink: my Home Manager configs.

Different Sized Texts:

- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.

- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.
- The quick brown fox jumps over the lazy dog.

Line Alignments:

This line is centered.

This line is flushed left.

This line is flushed right.

## **3.2 Document Formatting**

### **This is a Section**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.

#### **This is a Subsection**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.



### **This is a SubsubSection**

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.

**This is a Paragraph** Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.

**This is a subparagraph** Lorem ipsum dolor sit amet, consectetur adipiscing elit. Aenean commodo ligula eget dolor.

---

^above is a pagewidth line

---

^above is a textwidth line

---

^above is a 3 inch line

---

^above is a thin (0.4pt) line

---

^above is a thick(2pt) line