

# UNIP - Matemática e Estatística - Anotações de Aula

Curso de Análise de Sistemas - 2025

Professor Miguel Suez Xve Penteado

2025-02-17



# Contents

<b>Tópicos</b>	<b>5</b>
0.1 Usage . . . . .	5
0.2 Render book . . . . .	5
0.3 Preview book . . . . .	6
<b>Introdução</b>	<b>7</b>
0.4 Expressões Algébricas . . . . .	7
<b>1 Agenda das Aulas</b>	<b>9</b>
<b>2 Matemática Básica - Revisão</b>	<b>11</b>
2.1 Expressões Algébricas . . . . .	11
2.2 Porcentagem e Regra de Três . . . . .	11
<b>3 Teoria dos Conjuntos</b>	<b>13</b>
<b>4 Funções AFIN</b>	<b>15</b>
4.1 Footnotes . . . . .	15
4.2 Citations . . . . .	15
<b>5 Funções Quadráticas</b>	<b>17</b>
5.1 Equations . . . . .	17
5.2 Theorems and proofs . . . . .	17
5.3 Callout blocks . . . . .	17

<b>6</b>	<b>Exponenciais e Logarítmos</b>	<b>19</b>
6.1	Publishing . . . . .	19
6.2	404 pages . . . . .	19
6.3	Metadata for sharing . . . . .	19
<b>7</b>	<b>Matrizes e Determinantes</b>	<b>21</b>
7.1	Publishing . . . . .	21
7.2	404 pages . . . . .	21
7.3	Metadata for sharing . . . . .	21
<b>8</b>	<b>Estatística Descritiva</b>	<b>23</b>
8.1	Publishing . . . . .	23
8.2	404 pages . . . . .	23
8.3	Metadata for sharing . . . . .	23
<b>9</b>	<b>Estatística - Medidas de Tendência Centrais e Dispersões</b>	<b>25</b>
9.1	Publishing . . . . .	25
9.2	404 pages . . . . .	25
9.3	Metadata for sharing . . . . .	25

# Tópicos

This is a *sample* book written in **Markdown**. You can use anything that Pandoc’s Markdown supports; for example, a math equation  $a^2 + b^2 = c^2$ .

## 0.1 Usage

Each **bookdown** chapter is an .Rmd file, and each .Rmd file can contain one (and only one) chapter. A chapter *must* start with a first-level heading: **# A good chapter**, and can contain one (and only one) first-level heading.

Use second-level and higher headings within chapters like: **## A short section** or **### An even shorter section**.

The **index.Rmd** file is required, and is also your first book chapter. It will be the homepage when you render the book.

## 0.2 Render book

You can render the HTML version of this example book without changing anything:

1. Find the **Build** pane in the RStudio IDE, and
2. Click on **Build Book**, then select your output format, or select “All formats” if you’d like to use multiple formats from the same book source files.

Or build the book from the R console:

```
bookdown::render_book()
```

To render this example to PDF as a **bookdown::pdf\_book**, you’ll need to install XeLaTeX. You are recommended to install TinyTeX (which includes XeLaTeX): <https://yihui.org/tinytex/>.

## 0.3 Preview book

As you work, you may start a local server to live preview this HTML book. This preview will update as you edit the book when you save individual .Rmd files. You can start the server in a work session by using the RStudio add-in “Preview book”, or from the R console:

```
bookdown::serve_book()
```

# Introdução

Embora a matemática acompanhe a humanidade desde os primórdios da civilização, o advento da computação levou o emprego da matemática a um nível de sem precedente na história graças ao aparecimento do Software. Ela é a linguagem universal que criou o mundo digital. É a ferramenta que permite aos programadores dar vida aos **algoritmos**, as *receitas que ditam o comportamento dos computadores*.

Todas as linguagens de programação, em especial as fortemente tipadas, como **FORTRAN**, **C**, **JAVA**, **PASCAL**, **Python** e mesmo **SQL** usam conceitos matemáticos para criar estruturas abstratas dentro dos computadores, os chamados **SOFTWARES**.

Esta disciplina tem o objetivo de demonstrar a utilidade dos conceitos matemáticos, já conhecidos em sua maioria, no mundo da computação.

## 0.4 Expressões Algébricas

All chapter sections start with a second-level (##) or higher heading followed by your section title, like the sections above and below here. You can have as many as you want within a chapter.

### An unnumbered section

Chapters and sections are numbered by default. To un-number a heading, add a `{.unnumbered}` or the shorter `{-}` at the end of the heading, like in this section.





# Chapter 1

## Agenda das Aulas

### Fevereiro 2025

No.	fevereiro 2025	Semana	conteúdo
01	17/02/2025	Segunda-feira	Expressões algébricas e proporção: conceitos e aplicações.
02	24/02/2025	Segunda-feira	

### Março 2025

No.	Março 2025	Semana	conteúdo
03	03/03/2025	Segunda-feira	
04	10/03/2025	Segunda-feira	
05	17/03/2025	Segunda-feira	
06	24/03/2025	Segunda-feira	
07	31/03/2025	Segunda-feira	

### Abril 2025

No.	Março 2025	Semana	conteúdo
08	07/04/2025	Segunda-feira	
09	14/04/2025	Segunda-feira	
10	21/04/2025	Segunda-feira	
11	28/04/2025	Segunda-feira	

**maio 2025**

No.	Maio 2025	Semana	conteúdo
12	05/05/2025	Segunda-feira	
13	12/05/2025	Segunda-feira	
14	19/05/2025	Segunda-feira	
15	26/05/2025	Segunda-feira	

**junho 2025**

No.	Junho 2025	Semana	conteúdo
12	02/06/2025	Segunda-feira	
13	09/06/2025	Segunda-feira	
14	16/06/2025	Segunda-feira	
15	23/06/2025	Segunda-feira	

## Chapter 2

# Matemática Básica - Revisão

Cross-references make it easier for your readers to find and link to elements in your book.

### 2.1 Expressões Algébricas

São denominadas **expressões algébricas** as expressões matemáticas que possuem apenas letras ou números e letras.

A	B
A	B

### 2.2 Porcentagem e Regra de Três

```
knitr::kable(  
  head(pressure, 10), caption = 'Here is a nice table!',  
  booktabs = TRUE  
)
```

Table 2.1: Here is a nice table!

temperature	pressure
0	0.0002
20	0.0012
40	0.0060
60	0.0300
80	0.0900
100	0.2700
120	0.7500
140	1.8500
160	4.2000
180	8.8000

## Chapter 3

# Teoria dos Conjuntos

You can add parts to organize one or more book chapters together. Parts can be inserted at the top of an .Rmd file, before the first-level chapter heading in that same file.

Add a numbered part: `# (PART) Act one {-}` (followed by `# A chapter`)

Add an unnumbered part: `# (PART\*) Act one {-}` (followed by `# A chapter`)

Add an appendix as a special kind of un-numbered part: `# (APPENDIX) Other stuff {-}` (followed by `# A chapter`). Chapters in an appendix are prepended with letters instead of numbers.



## Chapter 4

# Funções AFIN

### 4.1 Footnotes

Footnotes are put inside the square brackets after a caret `^[]`. Like this one <sup>1</sup>.

### 4.2 Citations

Reference items in your bibliography file(s) using `@key`.

For example, we are using the **bookdown** package [Xie, 2025] (check out the last code chunk in `index.Rmd` to see how this citation key was added) in this sample book, which was built on top of R Markdown and **knitr** [Penteadó, 2025] (this citation was added manually in an external file `book.bib`). Note that the `.bib` files need to be listed in the `index.Rmd` with the YAML `bibliography` key.

The RStudio Visual Markdown Editor can also make it easier to insert citations: <https://rstudio.github.io/visual-markdown-editing/#/citations>

---

<sup>1</sup>This is a footnote.





## Chapter 5

# Funções Quadráticas

### 5.1 Equations

Here is an equation.

$$f(k) = \binom{n}{k} p^k (1-p)^{n-k} \quad (5.1)$$

You may refer to using `\@ref{eq:binom}`, like see Equation (5.1).

### 5.2 Theorems and proofs

Labeled theorems can be referenced in text using `\@ref{thm:tri}`, for example, check out this smart theorem 5.1.

**Theorem 5.1.** *For a right triangle, if  $c$  denotes the length of the hypotenuse and  $a$  and  $b$  denote the lengths of the **other** two sides, we have*

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

Read more here <https://bookdown.org/yihui/bookdown/markdown-extensions-by-bookdown.html>.

### 5.3 Callout blocks

The R Markdown Cookbook provides more help on how to use custom blocks to design your own callouts: <https://bookdown.org/yihui/rmarkdown-cookbook/custom-blocks.html>



## Chapter 6

# Exponenciais e Logarítmos

### 6.1 Publishing

HTML books can be published online, see: <https://bookdown.org/yihui/bookdown/publishing.html>

### 6.2 404 pages

By default, users will be directed to a 404 page if they try to access a webpage that cannot be found. If you'd like to customize your 404 page instead of using the default, you may add either a `_404.Rmd` or `_404.md` file to your project root and use code and/or Markdown syntax.

### 6.3 Metadata for sharing

Bookdown HTML books will provide HTML metadata for social sharing on platforms like Twitter, Facebook, and LinkedIn, using information you provide in the `index.Rmd` YAML. To setup, set the `url` for your book and the path to your `cover-image` file. Your book's `title` and `description` are also used.

This `gitbook` uses the same social sharing data across all chapters in your book—all links shared will look the same.

Specify your book's source repository on GitHub using the `edit` key under the configuration options in the `_output.yml` file, which allows users to suggest an edit by linking to a chapter's source file.

Read more about the features of this output format here:

<https://pkgs.rstudio.com/bookdown/reference/gitbook.html>

Or use:

```
?bookdown::gitbook
```

## Chapter 7

# Matrizes e Determinantes

### 7.1 Publishing

HTML books can be published online, see: <https://bookdown.org/yihui/bookdown/publishing.html>

### 7.2 404 pages

By default, users will be directed to a 404 page if they try to access a webpage that cannot be found. If you'd like to customize your 404 page instead of using the default, you may add either a `_404.Rmd` or `_404.md` file to your project root and use code and/or Markdown syntax.

### 7.3 Metadata for sharing

Bookdown HTML books will provide HTML metadata for social sharing on platforms like Twitter, Facebook, and LinkedIn, using information you provide in the `index.Rmd` YAML. To setup, set the `url` for your book and the path to your `cover-image` file. Your book's `title` and `description` are also used.

This `gitbook` uses the same social sharing data across all chapters in your book—all links shared will look the same.

Specify your book's source repository on GitHub using the `edit` key under the configuration options in the `_output.yml` file, which allows users to suggest an edit by linking to a chapter's source file.

Read more about the features of this output format here:

<https://pkgs.rstudio.com/bookdown/reference/gitbook.html>

Or use:

```
?bookdown::gitbook
```

## Chapter 8

# Estatística Descritiva

### 8.1 Publishing

HTML books can be published online, see: <https://bookdown.org/yihui/bookdown/publishing.html>

### 8.2 404 pages

By default, users will be directed to a 404 page if they try to access a webpage that cannot be found. If you'd like to customize your 404 page instead of using the default, you may add either a `_404.Rmd` or `_404.md` file to your project root and use code and/or Markdown syntax.

### 8.3 Metadata for sharing

Bookdown HTML books will provide HTML metadata for social sharing on platforms like Twitter, Facebook, and LinkedIn, using information you provide in the `index.Rmd` YAML. To setup, set the `url` for your book and the path to your `cover-image` file. Your book's `title` and `description` are also used.

This `gitbook` uses the same social sharing data across all chapters in your book—all links shared will look the same.

Specify your book's source repository on GitHub using the `edit` key under the configuration options in the `_output.yml` file, which allows users to suggest an edit by linking to a chapter's source file.

Read more about the features of this output format here:

<https://pkgs.rstudio.com/bookdown/reference/gitbook.html>

Or use:

```
?bookdown::gitbook
```



## Chapter 9

# Estatística - Medidas de Tendência Centrais e Dispersões

### 9.1 Publishing

HTML books can be published online, see: <https://bookdown.org/yihui/bookdown/publishing.html>

### 9.2 404 pages

By default, users will be directed to a 404 page if they try to access a webpage that cannot be found. If you'd like to customize your 404 page instead of using the default, you may add either a `_404.Rmd` or `_404.md` file to your project root and use code and/or Markdown syntax.

### 9.3 Metadata for sharing

Bookdown HTML books will provide HTML metadata for social sharing on platforms like Twitter, Facebook, and LinkedIn, using information you provide in the `index.Rmd` YAML. To setup, set the `url` for your book and the path to your `cover-image` file. Your book's `title` and `description` are also used.

This `gitbook` uses the same social sharing data across all chapters in your book- all links shared will look the same.

Specify your book's source repository on GitHub using the `edit` key under the configuration options in the `_output.yml` file, which allows users to suggest an edit by linking to a chapter's source file.

Read more about the features of this output format here:

<https://pkgs.rstudio.com/bookdown/reference/gitbook.html>

Or use:

```
?bookdown::gitbook
```

# Bibliography

Professor MsC Miguel Suez Xve Penteadó. *Disciplina de Matemática e Estatística - EDS 2025*. Penteadó, Miguel - 2025, UNIP- Iniversidade Paulista, 1st edition, 2025. URL <http://github.com/miguel7penteadó/>. ISBN 000-0000000000.

Yihui Xie. *bookdown: Authoring Books and Technical Documents with R Markdown*, 2025. URL <https://github.com/rstudio/bookdown>. R package version 0.42.