

Title of This Thesis:
Subtitle of This Thesis

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by

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Abstract

Put the abstract here. The abstract must have a (1) statement of the problem, (2) an exposition of methods and procedures, and (3) a summary of the findings.

The length may not exceed 350 words.

Acknowledgments

The acknowledgment is the place to thank the faculty, staff, family, and friends who have assisted you in preparing your thesis or dissertation. You may also acknowledge any support or special research materials given you.

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Use a Preface rather than Acknowledgments when the research is discussed, for example, “the motivation for the study, the background of the project, the scope of the research, and the purpose of the paper” (Turabian, 1996, p. 7-8).

(Note: The Acknowledgments section is optional.)

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Preface

This is the preface and it is created using a TeX field in a paragraph by itself. When the document is loaded, this appears in the edit window like a normal chapter, but it is actually an unnumbered chapter. The TeX field at the beginning of this paragraph sets the correct page heading for the Preface portion of the document. The preface does not appear in the table of contents..

Chapter 1

Sample Mathematics and Text

1.1 In-line and Displayed Mathematics

The expression $\sum_{i=1}^{\infty} a_i$ is in-line mathematics, while the numbered equation

$$\sum_{i=1}^{\infty} a_i \tag{1.1}$$

is displayed and automatically numbered as equation 1.1.

Let H be a Hilbert space, C be a closed bounded convex subset of H , T a non-expansive self map of C . Suppose that as $n \rightarrow \infty$, $a_{n,k} \rightarrow 0$ for each k , and $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^+ \rightarrow 0$. Then for each x in C , $A_n x = \sum_{k=0}^{\infty} a_{n,k} T^k x$ converges weakly to a fixed point of T .

Two sets of L^AT_EX parameters govern mathematical displays.¹ The spacing above and below a display depends on whether the lines above or below are short or long, as shown in the following examples.

A short line above:

$$x^2 + y^2 = z^2$$

and a short line below.

A long line above may depend on your margins

$$\sin^2 \theta + \cos^2 \theta = 1$$

¹ L^AT_EX automatically selects the spacing depending on the surrounding line lengths.

as will a long line below. This line is long enough to illustrate the spacing for mathematical displays, regardless of the margins.

1.2 Mathematics in Section Heads $\int_{\alpha}^{\beta} \ln t dt$

Mathematics can appear in section heads. Note that mathematics in section heads may cause difficulties in typesetting styles with running headers or table of contents entries.

1.3 Theorems, Lemmata, and Other Theorem-like Environments

A number of theorem-like environments is available. The following lemma is a well-known fact on differentiation of asymptotic expansions of analytic functions.

Lemma 1 Let $f(z)$ be an analytic function in \mathbb{C}_+ . If $f(z)$ admits the representation

$$f(z) = a_0 + \frac{a_1}{z} + o\left(\frac{1}{z}\right), \quad (1.2)$$

for $z \rightarrow \infty$ inside a cone $\Gamma_{\varepsilon} = \{z \in \mathbb{C}_+ : 0 < \varepsilon \leq \arg z \leq \pi - \varepsilon\}$ then

$$a_1 = -\lim_{z \rightarrow \infty, z \in \Gamma_{\varepsilon}} z^2 f'(z), \quad (1.3)$$

Proof Change z for $1/z$. Then $\Gamma_{\varepsilon} \rightarrow \bar{\Gamma}_{\varepsilon} = \{z \in \mathbb{C}_- : \bar{z} \in \Gamma_{\varepsilon}\}$ and

$$f(1/z) = a_0 + a_1 z + o(z). \quad (1.4)$$

Fix $z \in \bar{\Gamma}_\varepsilon$, and let $C_r(z) = \{\lambda \in \mathbb{C}_- : |\lambda - z| = r\}$ be a circle with radius $r = |z| \sin \varepsilon/2$.

It follows from (1.4) that

$$\frac{1}{2\pi i} \int_{C_r(z)} \frac{f(\lambda) d\lambda}{(\lambda - z)^2} = \sum_{m=0}^1 a_m \frac{1}{2\pi i} \int_{C_r(z)} \frac{(\lambda - z_0)^m d\lambda}{(\lambda - z)^2} + R(z), \quad (1.5)$$

where for the remainder $R(z)$ we have

$$\begin{aligned} |R(z)| &\leq r^{-1} \max_{\lambda \in C_r(z)} o(|z|) = r^{-1} \max_{\lambda \in C_r(z)} |\lambda| \cdot O(|z| + r) \\ &= \frac{|z| + r}{r} \cdot O(|z| + r) = \frac{1 + \sin \varepsilon}{\sin \varepsilon} \cdot O(|z|). \end{aligned}$$

Corollary 1 Therefore $R(z) \rightarrow 0$ as $z \rightarrow \infty$, $z \in \bar{\Gamma}_{\varepsilon/2}$, and hence by the Cauchy theorem (1.5) implies

$$\frac{d}{dz} f(1/z) = a_1 + R(z) \rightarrow a_1, \text{ as } z \rightarrow \infty, z \in \bar{\Gamma}_{\varepsilon/2},$$

that implies (1.3) by substituting $1/z$ back for z .

1.A Appendix to Chapter 1

This is some additional information for the chapter.

Chapter 2

Features of this Shell

2.1 Section Headings

Use the Section tag for major sections, and the Subsection tag for subsections.

2.1.1 Subsection

This is some harmless text under a subsection.

Subsubsection

This is some harmless text under a subsubsection.

2.2 Tags

You can apply the logical markup tag *Emphasized*.

You can apply the visual markup tags **Bold**, *Italics*, Roman, **Sans Serif**, *Slanted*, **SMALL CAPS**, and `Typewriter`.

You can apply the special, mathematics only, tags fraktur , **BLACKBOARD BOLD**, and *CALLIGRAPHIC*. Note that blackboard bold and calligraphic are correct only when applied to uppercase letters A through Z.

You can apply the size tags `tiny`, `scriptsize`, `footnotesize`, `small`, `normalsize`, `large`, **Large**, **LARGE**, **huge** and **Huge**.

This is a Body Math paragraph. Each time you press the Enter key, Scientific Work-Place switches to mathematics mode. This is convenient for carrying out “scratchpad” computations. Following is a group of paragraphs marked as Body Quote. This environment is appropriate for a short quotation or a sequence of short quotations.

The only thing we have to fear is fear itself. *Franklin D. Roosevelt*, Mar. 4, 1933
Ask not what your country can do for you; ask what you can do for your country.
John F. Kennedy, Jan. 20, 1961
There is nothing wrong with America that cannot be cured by what is right with America. *William J. “Bill” Clinton*, Jan. 21, 1993

2.3 List Environments

You can create numbered, bulleted, and description lists using the tag popup at the bottom left of the screen.

1. List item 1
2. List item 2

(a) A list item under a list item.

The typeset style for this level is different than the screen style. The screen shows a lower case alphabetic character followed by a period while the typeset style uses a lower case alphabetic character surrounded by parentheses.

(b) Just another list item under a list item.

i. Third level list item under a list item.

(A) Fourth and final level of list items allowed.

- Bullet item 1

- Bullet item 2
 - Second level bullet item.
 - * Third level bullet item.
 - Fourth (and final) level bullet item.

Description List Each description list item has a term followed by the description of that term. Double click the term box to enter the term, or to change it.

Bunyip Mythical beast of Australian Aboriginal legends.

2.A Appendix to Chapter 2

This is some additional information for the chapter.

Appendix A

The First Appendix

The appendix fragment is used only once. Subsequent appendices can be created using the Section tag.

References

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Knuth, Donald E., *The $\text{T}_{\text{E}}\text{X}$ book*, Addison-Wesley and American Mathematical Society, 1984.

Lamport, Leslie, *$\text{E}_{\text{T}}\text{E}_{\text{X}}$* , *A document preparation system*, Addison-Wesley, 1985.

Southall, Richard, First principles of typographic design for document production, *TUGboat* Vol. 5 (1984), No. 2, 79–90; *Corrigenda*, Vol. 6 (1985), No. 1, p. 6.

TUGboat, the Newsletter of the $\text{T}_{\text{E}}\text{X}$ Users Group, $\text{T}_{\text{E}}\text{X}$ Users Group, © American Mathematical Society, P. O. Box 9506, Providence, RI, 02940.