

AFIT/123/456/78-9

A TALE OF GNUS, GNATS AND ARMADILLOS

THESIS

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THESIS

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Abstract

We study the effects of warm water on the local penguin population. The major finding is that it is extremely difficult to induce penguins to drink warm water. The success factor is approximately $-e^{-i\pi} - 1$. Replace this text with your own abstract.

Preface

This is the preface. Your name appears automatically at the end of this section when the document is typeset. You can use Acknowledgments here instead.

A. U. Thor

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I. 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

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

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

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

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*

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

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

$$a_1 = -\lim_{z \rightarrow \infty, z \in \Gamma_{\varepsilon}} z^2 f'(z), \quad (1.2)$$

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

$$f(1/z) = a_0 + a_1 z + o(z). \quad (1.3)$$

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 (1.3) that

$$\frac{1}{2\pi i} \int_{C_r(z)} \frac{f(\lambda) d\lambda}{(\lambda - z)^2} = \sum_{m=0}^1 a_m \frac{1}{2\pi i} \int_{C_r(z)} \frac{(\lambda - z)^m d\lambda}{(\lambda - z)^2} + R(z), \quad (1.4)$$

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

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

Therefore $R(z) \rightarrow 0$ as $z \rightarrow \infty, z \in \bar{\Gamma}_{\varepsilon/2}$, and hence by the Cauchy theorem (1.4) implies

Head	Head	Head
entry	entry	entry
entry	entry	entry
entry	entry	entry

Table 1.1 Sample table.

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

that implies (1.2) by substituting $1/z$ back for z . ■

II. Features Unique to This Shell

2.1 Typesetting Features

2.1.1 Number by Chapter. If `\numberbychapter` is added to the document preamble, then pages, figures, tables and equations will all be numbered by chapter.

2.1.2 No Section Numbers. If `\nosectionnumbers` is added to the document preamble, then section numbers are not used in the text and in the table of contents.

2.1.3 Underline Option. If `\underlineoption` is added to the document preamble, then underlining is used instead of italics for emphasized text, including chapter, section, etc. headings

2.1.4 List of Symbols. Remove the List of Symbols tag from the front matter if you are not using this document feature. To place symbols in the list use the command `\symbol[#1]{#2}` inside of an encapsulated TeX field where `#2` is the symbol and `#1` is the definition to be put in the list of symbols. The symbol is also automatically put in your text. Leave out `[#1]` if you don't want a definition. For example, `He` is the symbol for Helium and `Au` inserts another symbol in the body of the document, without adding a definition to the List of Symbols. **NOTE:** The `\symbol` macro must be encapsulated since the typesetting style used by this document defines this macro as a replacement for the `\symbol` macro already defined by L^AT_EX.

2.1.5 List of Abbreviations. Remove the List of Abbreviations tag from the front matter if you are not using this document feature. To place abbreviations in the list use the command `\abbreviation[#1]{#2}` inside a TeX field where `#2` is the abbreviation and `#1` is the definition to be put in the list of abbreviations. The abbreviation is also automatically put in your text. Leave out `[#1]` if you don't want a definition. For example, `Win2k` is sometimes used as an abbreviation for Windows 2000.

2.1.6 A Subsection. Note: subsection's and below should be printed with some sort of punctuation. A period is automatically supplied if you don't supply some punctuation.

2.1.6.1 A Subsubsection. Just some text after the subsubsection to show type typeset appearance.

Appendix A. First appendix title

A.1 In an appendix

This is appendix section A.1. The appendix fragment is used only once. Subsequent appendices can be created using the Chapter Section/Body Tag.

A.2 Sample Citations and Bibliography

BibTeX has been selected for the bibliography choice in this shell document. The BibTeX bibliography style was designed to accompany the typesetting style used by this document. One of the sample BibTeX databases included with SW has been selected and some citations added in the next sentence. This sentence refers to the TeXBook (?), the LaTeX reference book (?), and to a well known grammar book (?). The bibliography section for these citations comes next.

Vita

Insert your brief biographical sketch here. Your permanent address is generated automatically.

Permanent address: My Home, Anytown, USA