Math 123, Section 4   Fall 2001
Assignment #2: Due October 9

1   Mathematics in This Shell

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

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

is displayed and automatically numbered as equation **??**.

Let H be a Hilbert space, C be a closed bounded convex subset of H, T a nonexpansive self map of C. Suppose that as $n \to \infty$, $a_{n,k} \to 0$ for each k, and $\gamma_n = \sum_{k=0}^{\infty} (a_{n,k+1} - a_{n,k})^{+} \to 0$. 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 LaTeX parameters govern mathematical displays. 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.

2   Features of This Shell

This is some introductory text.

3   Section Headings

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

3.1   Subsection

This is some harmless text under a subsection.

3.1.1   Subsubsection

This is some harmless text under a subsubsection.

Subsubsubsection   This is some harmless text under a subsubsubsection.

Subsubsubsubsection   This is some harmless text under a subsubsubsubsection.

4   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 $\mathfrak{fraktur}$, $\mathbb{BLACKBOARD\ BOLD}$, and $\mathcal{CALLIGRAPHIC}$. 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 WorkPlace 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

4.1   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.