Mathematical Writing
Chapter 1

Numbers and Symbols

➢ A sentence containing numbers and symbols must still be a correct English sentence, including punctuation.

Bad: $a < b \ a \neq 0$

Good: We have $a < b$ and $a \neq 0$.

Good: We find that $a < b$ and $a \neq 0$.

Good: Let $a < b$, with $a \neq 0$.

➢ Omit unnecessary symbols.

Bad: Every differentiable real function f is continuous.

Good: Every differentiable real function is continuous.

Numbers and Symbols

➢ If you use <u>small numbers for counting</u>, write them <u>out in full</u>; if you refer to specific numbers, <u>use numerals</u>.

Bad: The equation has 4 solutions.

Good: The equation has four solutions.

Good :The equation has 127 solutions.

Bad: Both three and five are prime numbers.

Good: Both 3 and 5 are prime numbers.

Numbers and Symbols

➢ If at all possible, do not begin a sentence with a <u>numeral</u> or a <u>symbol.</u>

Bad: ρ is a rational number with odd denominator.

Good: The rational number ρ has odd denominator.

➢ Do not combine <u>operators</u> (+, =, <, etc.) with <u>words</u>.

Bad: The difference $b - a$ is < 0.

Good: The difference $b - a$ is negative.

Numbers and Symbols

➢ Do not misuse the implication operator '$\Rightarrow$' or the symbol '$\therefore$' . The former is employed only in symbolic sentences, the latter is not used in higher mathematics.

Bad: a is an integer $\Rightarrow$ a is a rational number.

Good: if a is an integer, then a is a rational number.

Bad: $\Rightarrow x = 3$.

Bad: $\therefore x = 3$.

Good: hence $x = 3$.

Numbers and Symbols

➢ Within a sentence, adjacent formulae or symbols must be separated by words.

Bad: Consider An, $n < 5$.

Bad: Add p k times to c.

Bad: Add p to c k times.

Good: Add p to c, repeating this process k times.

GRAMMAR Part1

INDEFINITE ARTICLE (a, an, ----)

1. Instead of the number "one":

    Examples: The four centers lie in a plane.

        A chapter will be devoted to the study of expanding maps.

2. Meaning "member of a class of objects", "some", "one of":

    Examples: Then *D* becomes a locally convex space with dual space *D'*.

        The right-hand side of (4) is then a bounded function.

        Theorem 7 has been extended to a class of boundary value problems.

        This property is a consequence of the fact that .....

  in the plural :

    Examples : The existence of partitions of unity may be proved by .....

        The definition of distributions implies that .....

INDEFINITE ARTICLE (a, an, ----)

3. In definitions of classes of objects:

Examples : A fundamental solution is a function satisfying .....

We wish to find a solution of (6) which is of the form .....

in the plural :

The elements of *D* are often called **t**est functions.

The integral may be approximated by **s**ums of the form .....

4. In the plural—when you are referring to each element of a class:

Examples: Direct sums exist in the category of abelian groups.

In particular, **c**losed sets are Borel sets.

Borel measurable functions are often called Borel mappings.

*If you are referring to all elements of a class, use "the":

Examples: The real measures form a subclass of **the** complex ones.

5. In front of an adjective which is intended to mean "having this particular quality":

Examples: This map extends to all of *M* in **an** obvious fashion.

A remarkable feature of the solution should be stressed.

Combining (2) and (3) we obtain, with **a** new constant *C*, ...

A more general theory must be sought to account for these irregularities.