*Adapted from “Ten Simple Rules,” D. P. Bertsekas M.I.T.

WHAT IS DIFFERENT ABOUT MATH WRITING?

Math writing blends two languages (natural and math)
–Natural language is rich and allows for ambiguity
–Math language is concise and must be unambiguous

Math writing requires slow reading
–Often expresses complex ideas
–Often must be read and pondered several times
–Often is used as reference
–Usually must be read selectively and in pieces

Structured style
–Offers specific verifiable rules that students can follow and thesis advisors can check
–Allows room to develop and improve over time

Break up long blocks of text into simpler ones–
2-3-4 rule:Consider splitting every sentence of more than 2 lines, every sentence with more than 3 verbs, and every paragraph with more than 4 "long" sentences.

Mathspeak should be “readable”
–BAD: Let k>0 be an integer.
–GOOD: Let k be a positive integer
or
Consider an integer k>0.
–BAD:Let x ∈Rnbe a vector.
–GOOD: Let x be a vector in Rn
or
Consider a vector x ∈Rn
Don’t start a sentence with mathspeak
–BAD: Proposition: f is continuous.
–GOOD: Proposition: The function f is continuous.

Use active voice (“we” is better than “one”)
•Minimize “strange” symbols within text
•Make proper use of “very,” “trivial,” “easy,” “nice,” “fundamental,”
Etc…

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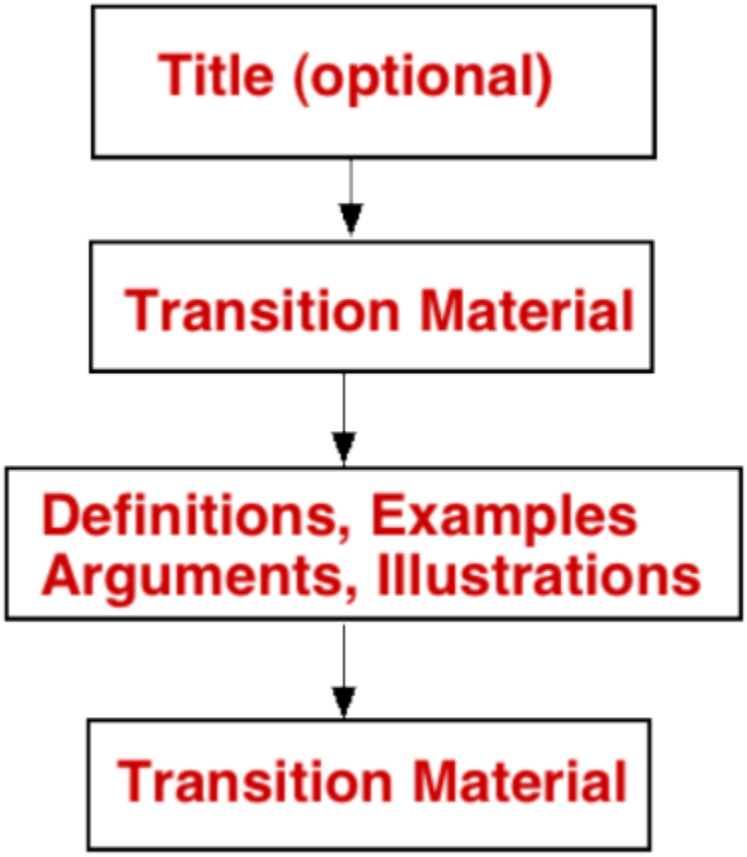
•Use abbreviations correctly (e.g.,cf., i.e., etc.)
•Comma rules
•“Which” and “that” rules

Examples of segments:
–A mathematical result and its proof
–An example
–Several related results/examples with discussion
–An appendix
–A long abstract
–A conclusions section
-A segment should “stand alone” (identifiable start and end, transition material)

Segment Structure



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STATE RESULTS CONSISTENTLY

•Keep your language/format simple and consistent (even boring)
•Keep distractions to a minimum; make the interesting content stand out
•Use similar format in similar situations
•Bad example:
–Proposition 1: If A and B hold, then C and D hold.
–Proposition 2: C’ and D’ hold, assuming that A’ and B’ are true.
Good example:
–Proposition 1: If A and B hold, then C and D hold.
–Proposition 2: If A’ and B’ hold, then C’ and D’ hold.

-Keep the reader informed about where you are and where you are going
•Start each segment with a short introduction and perhaps a road map
•Don’t string together seemingly aimless statements and surprise the reader with “We have thus proved so and so”
•Announce your intentions/results, e.g., “It turns out that so-and-so is true. To see this, note ...”