The Krantz Critique Sheet

Based on "A Primer of Mathematical Writing"

When rating a piece of mathematical prose, ask yourself if the author has committed any of the following "sins" or followed these "virtues":

1. The "Notation" Trap

- **The Sin:** Using symbols when words are clearer. (e.g., "Let f be a function. If f is continuous...")
- **The Virtue:** Use prose to describe relationships. Only introduce a symbol if you plan to manipulate it or refer to it frequently.
- **Check:** Is there any notation in the sentence that could be deleted without losing meaning?

2. The "Library" Problem

- **The Sin:** Forcing the reader to look up outside references to understand a basic point.
- **The Virtue:** The "Walk in the Woods" philosophy. You should be able to explain the *idea* of the proof to a colleague while walking, without a blackboard or a library.
- **Check:** Does the author explain the *logic* of the step, or just cite a theorem number?

3. Tone and "Clichés"

- **The Sin:** Using words like "trivial," "obvious," "very," or "clearly."
- **The Virtue:** If it is obvious, the prose should make it so; you shouldn't have to tell the reader it is obvious. Avoid "the X of the Y of the Z" (over-nesting genitives).
- **Check:** Are there "intensifiers" (like "very") that actually weaken the statement?

4. Sentence Mechanics

- **The Sin:** Dangling participles. (e.g., "Applying the Lemma, the theorem is proved." *The theorem didn't apply the Lemma; the author did.*)
- **The Virtue:** Use simple, declarative sentences. Favor the **active voice** ("We define...") over the passive voice ("It is defined...").
- **Check:** Is the subject of the sentence actually the one performing the action?

5. Psychological Clarity

- **The Sin:** Being logically correct but "psychologically opaque."
- **The Virtue:** Organizing the writing to match how a human brain learns (linearly), even if the math was discovered non-linearly.
- **Check:** Does the author provide "signposts" (e.g., "Our goal is to show...") so you know where the argument is headed.