Rudolf Taschner
The Continuum
Wiesbaden: Friedrich Vieweg & Sohn Verlag, 2005
136 pp. ISBN 3834800406

REVIEW

ROBERT S. LUBARSKY

Rudolf Taschner's idiosyncratic book is simultaneously charming and annoying.

Entitled *The Continuum*, it is an introduction to constructive analysis. The topics are the real numbers (a definition thereof and their basic properties), metric spaces (with such properties as completeness, compactness, locatedness, and separability), and continuous functions (including pointwise and uniform continuity, and sequences of such functions).

The next fact a potential reader would likely want to know is who the intended audience is. The preface indicates that these are students, advanced undergraduate and graduate. There are two problems with this, though. For one, there are no exercises. Even worse, there is virtually no discussion of constructivism. That is, in the introductory chapter there are just over two pages on this topic (p. 13-15). There the essence of the matter is described as follows: "The salient point of "Brouwer's new intuitionism" can be concentrated into one sentence: He replaced Dedekind cuts, i.e. vertical *lines* in the Farey table [rationals], by vertical *stripes*" (p. 13). And that, we are told, is Luitzen Egbertus Jan Brouwer's intuitionism. Excluded middle is not mentioned even once, nor are its consequences that constructivists routinely consider, such as Markov's Principle (If a decidable property of the natural numbers is not always false then it's somewhere true.). There is no discussion about the meaning of existence proofs. The limited principle of omniscience (LPO: Every binary sequence is all 0s or has a 1.) is the single exception, being mentioned once (p. 70), in the only Brouwerian counter-example in the text (If all subsets of

---