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Williamstown, MA 01267. *Cantor's set throughout real analysis.*

The Cantor set in its various forms can be used as an example to introduce and illustrate many concepts and proofs in introductory real analysis. We start with the set  $2^{\mathbb{N}}$  of infinite sequences of 0's and 1's to illustrate countability arguments, then we put a metric on this and discuss compactness, then define functions on  $2^{\mathbb{N}}$  such the shift to illustrate continuity, proceeding to its identification with the middle thirds set in the unit interval, to end with its identification with the 2-adic integers, to illustrate concepts such as the non-Archimedean property. Some topics are assigned as projects, such as the completion of  $2^{\mathbb{N}}$  under the 2-adic metric to obtain the 2-adic numbers, convergence of sequences and series in the 2-adics, and the notion of measure zero sets. (Received September 22, 2011)