Cesar E. Silva* (csilva@williams.edu), Department of Mathematics, Williams College, 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)