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The history of mathematics as a pedagogical tool: Teaching the integral of the secant via Mercator's projection.

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Summary: This article explores the use of the history of mathematics as a pedagogical tool for the teaching and learning of mathematics. In particular, we draw on the mathematically pedigreed but misunderstood development of the Mercator projection and its connection to the integral of the secant function. We discuss the merits and the possible pitfalls of this approach based on a teaching module with undergraduate students. The appendices contain activities that can be implemented as an enrichment activity in a Calculus course.

Classification: I55 A30 M65

Keywords: conformal mappings; history of mathematics; integrals; Mercator projection; rhumb lines; secant function; undergraduate mathematics education