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R. Michael Range* (range@math.albany.edu), Department of Mathematics and Statistics,
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Rethink Elementary Calculus?*

I will discuss an elementary algebraic method to introduce derivatives, whose roots go back to Descartes and van Schooten in the 17th century, and which was recently resuscitated and extended to cover all algebraic functions. This simple approach avoids infinitesimals, differentials, and similar vague concepts, and most importantly, it does not require any limits. Furthermore, it naturally leads to continuity and to the modern definition of differentiability—in an elegant formulation introduced by C. Carathéodory—which needs to be considered when studying the elementary transcendental functions. This approach might provide an easier and more direct introduction to calculus for students in the 21st century than the standard 20th century approach which emphasizes limits early on. (Received August 31, 2010)