George A Anastassiou* (ganastss@memphis.edu), Department of Mathematical Sciences, University of Memphis, Memphis, TN 38152. On the left fractional local general M-derivative.

Here is introduced and studied the left fractional local general M-derivative of various orders. All basic properties of an ordinary derivative are established here. We also define the corresponding left fractional M-integrals. Important theorems are established such as: the inversion theorem, the fundamental theorem of fractional calculus, the mean value theorem, the extended mean value theorem, the Taylor’s formula with integral remainder, the integration by parts. Our left fractional derivative generalizes the alternative fractional derivative and the local M-fractional derivative. (Received August 15, 2019)