Evaluating the derivative after the inverse point is known takes one derivative evaluation and one reciprocal. Numerically perturbing y and resolving the inverse twice adds two nonlinear solves. The direct inverse-derivative formula is conventional and already optimal at this level; the complex formulation adds branch and sensitivity information.

Source qualification

Invertibility alone does not imply a differentiable inverse. The nonzero-derivative hypothesis is added explicitly and the degenerate case is exhibited.