Electronic Journal: Southwest Journal of Pure and Applied Mathematics
Internet: http://rattler.cameron.edu/swjpam.html
ISSN 1083-0464
Issue 2, December 1998, pp. 44–48.
Submitted: March 1, 1998. Published: February1, 1999.

A UNIFYING SEMILOCAL CONVERGENCE THEOREM FOR NEWTON-LIKE METHODS IN BANACH SPACE

Ioannis K. Argyros I.

Abstract. We provide a unifying semilocal convergence theorem for Newton-like methods, in order to approximate a solution of a nonlinear equation in Banach space. We use a certain positive functional as an upper bound on the distances involved. This way we can obtain sharper error bounds than before. Earlier results are special cases of our theorem. Several choices of the majorizing functional are also provided.

1991 A.M.S. (MOS) Subject Classification Codes. 65B05, 47H17, 49D15.

Key Words and Phrases. Newton-like methods, Banach space, majorizing functional.

Department of Mathematics, Cameron University, Lawton, OK 73505 USA