1010-68-71 **Christopher O. Ward*** (`cward@fsa.uwi.tt`), University of the West Indies, St. Augustine Campus, Trinidad & Tobago. *An Algorithm for Global Polynomial Approximation of Continuous Real-valued Functions in Two Variables.*

The Weierstrass Approximation Theorem establishes the existence of a polynomial approximation for any real-valued continuous function on a finite closed interval. However, Faber's Theorem describes a problem of non-convergence of interpolations as increasingly larger sets of sample points are taken. We report on the development of a global polynomial approximation algorithm that exhibits good behavior on approximation of intermediate points using just the sample points. The algorithm achieves this by considering both the shape of the desired approximating function as suggested by the sample points, and the fit of the approximating function. The algorithm was successfully used to approximate an error correcting function in two variables as part of an image processing system. (Received August 19, 2005)