1035-Z1-1511 **Yajun Yang*** (yajun.yang@farmingdale.edu), Department of Mathematics, Farmingdale State College, SUNY, 2350 Broadhollow Road, Farmingdale, NY 11735, and **Sheldon P. Gordon** (gordonsp@farmingdale.edu), Department of Mathematics, Farmingdale State College, SUNY, 2350 Broadhollow Road, Farmingdale, NY 11735. *Approximating a Function.*

When most mathematicians think about the concept of approximating a function, they invariably think of it either in terms of local linearity or its natural extension, the Taylor polynomial approximations to the function. In this presentation, we will consider some different ways to think about approximating a function. To measure how well an approximation fits a function, we introduce three different criteria to measure the error. Ultimately, our problem is to find an approximation that produces the smallest possible errors for each of the three error criteria. Comparisons of various linear approximations and further study will be given. Pedagogical considerations on using the investigations discussed in this presentation as the basis for a wonderful computer lab project, if not a series of projects, will be included. (Received September 20, 2007)