1023-Z1-387   **William Freed*** (`billfreed@shaw.ca`), Concordia University College, 7128 Ada Blvd., Edmonton, Alberta T5B 4E4, Canada. *Natural Parameterizations of a Region.*

A natural parametrization of a closed two dimensional region R is a parametrization for which each boundary segment has one parameter as a constant. In this paper it is shown that every x-, y-, or r-simple region (as in the topic of double integrals) has a natural parametrization. Similar results hold in three dimensions. A unified method of constructing natural parameterizations is described. Natural parametrization of R have several important applications: 1. Surfaces can be drawn just over the region, 2. Iterated integrals over the region have constant limits of integration, 3. Surfaces with special designer properties can be drawn over the region, and 4. Three dimensional solids, such as those for triple integration, can be drawn so that the surfaces join along curves and do not extend beyond. These applications are readily executed with the help of a symbolic algebra program. Varied examples will be shown. (Received September 11, 2006)