

**SURVEYING ENGINEERING  
FERRIS STATE UNIVERSITY**

**SURE 452 - Geodesy 1**

**Winter 2003/04**

**Extra Credit #1**

T. Vincenty published a paper entitled “Direct and Inverse Solution of Geodesics on the Ellipsoid with Application of Nested Equations” in **Survey Review**. A copy of this paper is available at the National Geodetic Survey (NGS) web site [http://www.ngs.noaa.gov/PUBS\\_LIB/inverse.pdf](http://www.ngs.noaa.gov/PUBS_LIB/inverse.pdf). This paper is the basis for the programs FORWARD and INVERSE that are also available at the NGS web site. Write a program using either MathCad or Visual Basic to solve the direct and inverse problem as presented by Vincenty. Use the stations **Hoodport** and **Detroit 1** that were employed in homework #2.