Math 443 **Differential Geometry** **Spring 2013**

Assignment #6
Due 5/24/13

Reading:

- [AT] Section 5.1 (pages 259–260).
- [AT] Section 5.2.

Written Problems:

(1) [AT] Exercise 5.17
(2) [AT] Exercise 5.18
(3) [AT] Exercise 5.19
(4) Determine all smooth curves on the unit sphere that have constant geodesic curvature.
(5) Suppose S_1 and S_2 are connected regular surfaces, and $F, G\colon S_1 \to S_2$ are two local isometries such that $F(p) = G(p)$ and $dF_p = dG_p$ for some $p \in S_1$. Prove that $F \equiv G$. [Hint: Let T be the set of points $q \in S_1$ such that $F(q) = G(q)$ and $dF_q = dG_q$, and show that T is both open and closed in S_1.]