## 21C Homework 5

Due Friday May 6

## Steinellos $\equiv$ "Calculus and Analytic Geometry", 5th Edition, S.K. Stein and A. Barcellos

**Question 1** Compute the volume of a unit sphere using a triple iterated integral in cartesian coordinates.

Question 2 Explain why the infinitesimal area element  $dA = rdrd\theta$  in polar coordinates.

**Question 3** Steinellos, §15.2, pp 895-896, qq 2, 6, 10, 14, 18, 20, 24, 26, 28, 30, 42, 44.

Question 4 Steinellos, §15.3, pp 901-902, qq 2, 8, 10, 12, 16, 20.

**Question 5** Assume that the mass density of the earth is uniform. Find the total rotational kinetic energy of the earth. How does this compare to the energy released in a thermonuclear explosion? (State clearly what quantities you had to look up to solve this problem and your sources.)