Math 282 Homework 4 Name: _____

Complete the following problems and submit your solutions at the beginning of class on Tuesday. If you use notebook paper, please remove the jagged edges of the paper before submitting your homework. Your solutions must be numbered and submitted in the order the problems were given, legibly written using correct notation and including all mathematical details. If you submit work that is disorganized, messy, or lacking detail, you should expect to receive little credit regardless of having the correct final answer.

Due: 9:00am on Tuesday, February 4

For each of the following integrals, you must sketch the region of integration.

1. Use cylindrical and spherical coordinates to find the volume of a sphere with radius a.
2. Evaluate $\iiint_E ze^{(x^2+y^2+z^2)^2}dV$ where E is the solid that lies between the spheres $x^2+y^2+z^2=1$ and $x^2+y^2+z^2=4$ for $y \geq 0$ and $z \geq 0$.
3. Evaluate
$$\int_{-1}^{1}\int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}}\int_{\sqrt{x^2+y^2}}^{1+\sqrt{1-x^2-y^2}}(x^2+y^2)dzdydx$$