Name _____

Homework 12
Section 16.5

1. (3ea) Set up triple integrals which represent the volume inside the hemisphere bounded by the graph of $z = -\sqrt{12 - x^2 - y^2}$ and the xy-plane in

   (a) Cartesian coordinates

   (b) Cylindrical coordinates

   (c) Spherical coordinates

2. (6) Determine the integral of $f(x, y, z) = \dfrac{3x^2}{2x^2 + 2y^2}$ over the solid, Q, which is bounded between the graph of $z = 5 - \frac{1}{2}\sqrt{x^2 + y^2}$ and the $z = 1$ plane.

3. (5) Evaluate $\displaystyle\int_{-2}^{0}\int_{-\sqrt{4-y^2}}^{\sqrt{4-y^2}}\int_{0}^{\sqrt{4-x^2-y^2}}\frac{2y}{\sqrt{x^2+y^2+z^2}}\,dz\,dx\,dy$