Class Exercise 5

1. Determine the mass and the center of mass of the thin solid region bounded in the first quadrant bounded by the coordinate axes and the line $x + 2y = 1$. The density of the solid is $\delta(x, y) = x$.

2. Let Ω be the region bounded between the surface $z = 9 - x^2 - y^2$ and $z = 5$. Express

$$\iiint_\Omega f(x, y, z)\, dV$$

   in cylindrical and spherical coordinates.

3. The same problem as in (2) where Ω is replaced by H, the region bounded by $z = 9 - x^2 - y^2$, $z = 5$ and $z = 0$.