1. Convert the integral \( \int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{x^2+y^2}} dz \, dy \, dx \) from rectangular to cylindrical coordinates and evaluate it.

2. Let \( E \) be the cone \( E = \{(x, y, z) : \sqrt{x^2 + y^2} \leq z \leq 4\} \).
   
a) Use cylindrical coordinates to find the volume, \( V \), of \( E \).

   b) Find \( \bar{z} = \frac{1}{V} \iiint_E z \, dV \), the \( z \)-coordinate of the centroid of \( E \).

3. Use spherical coordinates to find the volume of the solid between the sphere \( x^2 + y^2 + z^2 = 9 \), and the cone \( z = \sqrt{\frac{x^2 + y^2}{3}} \).