Use cylindrical or spherical coordinates to do the following. Write solutions up neatly and show all steps necessary to obtain your answer.

1. Evaluate \( \iiint_G z \, dV \) where \( G \) is the solid enclosed by the hemispheres \( y = \sqrt{9-x^2-z^2}, \ y = \sqrt{4-x^2-z^2}, \) and the coordinate planes \( x = 0, \ y = 0, \) and \( z = 0. \)

2. Find the mass of the solid that is inside the cylinder \( x^2 + y^2 = 4, \) bounded above by the sphere \( x^2 + y^2 + z^2 = 9, \) and below by the \( xy \)-plane. The density is \( \delta(x, y, z) = 2z. \)
3. Find the volume of the solid that is inside the sphere \( x^2 + y^2 + z^2 = 36 \) and above the plane \( z = 3 \).