1. The figure below shows the surface created when the cylinder $y^2 + z^2 = 1$ intersects the cylinder $x^2 + z^2 = 1$. Find the surface area of this surface.
2. Evaluate the following triple integral where $Q$ is the region in three-dimensional space bounded by $y = x^2$, $x = z$, $x = y$, and $z = 0$.

\[ \iiint_Q (2y + x) \, dV \]
3. (20 points) Find the mass and center of mass of the object with density \( \rho(x, y, z) = x^2 + y^2 + z^2 \) occupying the region \( Q = \{(x, y, z) \mid 0 \leq x \leq a, 0 \leq y \leq a, 0 \leq z \leq a\} \).