

Group members (2 to 4): _____

- (1) Use cylindrical coordinates to write the integral expressing the volume of the solid formed by intersecting the cylinder $x^2 + y^2 \leq A^2$ with the unit ball $x^2 + y^2 + z^2 \leq 1$. You can assume that $0 \leq A \leq 1$.

- (2) Write the same volume integral in spherical coordinates.

- (3) Compute the volume using whichever of the above integral forms seems easiest. If you expand your answer to 2nd order in a power series in A^2 around $A = 0$, what is a geometric interpretation for the first term?