Math 3298 Worksheet 16

Group members (1 to 3): _____

(1) Use cylindrical coordinates to find the volume of the solid formed by inter-
    secting 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 $0 \leq A \leq 1$. (For extra credit: expand your answer to at least 6th
    order in a power series in A around $A = 0$, and provide an interpretation for
    the first two nonzero terms.)

(2) Evaluate the scalar line integral $\int_C 2xy \ ds$ where C is the line segment from $(1, 2)$ to $(-1, 0)$.