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1. Evaluate $\int \int \int_E x \sqrt{x^2 + y^2 + z^2} \, dV$ where E is the region between $x^2 + y^2 + z^2 = 1$ and $x^2 + y^2 + z^2 = 4$ in the first octant by first converting the integral to spherical coordinates.

2. Convert the $\int_{-2}^2 \int_0^{\sqrt{4-x^2}} \int_0^{\sqrt{4-x^2-y^2}} xy \, dz \, dy \, dx$ to an integral in Spherical Coordinates.

3. Evaluate $\iint_R 4x + 8y \, dA$ where R is the parallelogram with vertices $(-1,3)$, $(1,-3)$, $(3,-1)$, and $(1,5)$ using the substitution $x = \frac{1}{4}(u + v)$ and $y = \frac{1}{4}(v - 3u)$

