

Math 18 Practice Final Problems 12/10/01

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If R is a smooth solid region in \mathbb{R}^3 , S is its boundary surface (oriented outwards), and $\vec{F}(x, y, z) = x\vec{i} + y\vec{j} + z\vec{k}$, show that $\text{volume}(R) = \frac{1}{3} \int_S \vec{F} \cdot d\vec{S}$