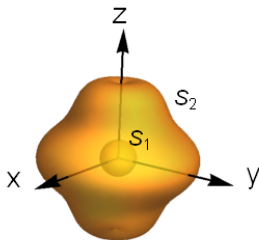


# The Divergence Theorem

## Question

The vector field  $\vec{F} = \frac{x\vec{i} + y\vec{j} + z\vec{k}}{(x^2 + y^2 + z^2)^{3/2}}$  has  $\text{div}(\vec{F}) = 0$

everywhere it is defined. How do  $\iint_{S_1} \vec{F} \cdot d\vec{S}$  and  $\iint_{S_2} \vec{F} \cdot d\vec{S}$  compare if both surfaces are oriented outward?



- A.  $\iint_{S_1} \vec{F} \cdot d\vec{S} < \iint_{S_2} \vec{F} \cdot d\vec{S}$
- B.  $\iint_{S_1} \vec{F} \cdot d\vec{S} = \iint_{S_2} \vec{F} \cdot d\vec{S}$
- C.  $\iint_{S_1} \vec{F} \cdot d\vec{S} > \iint_{S_2} \vec{F} \cdot d\vec{S}$
- D. There is not enough information.