

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. If S is the unit sphere with the outward orientation, then

True or False: $\iint_S \vec{F} \cdot \vec{n} \, dS = 0$?

- A. True, and I am confident
- B. True, but I am not confident.
- C. False, but I am not confident.
- D. False, and I am confident.

