

Special Problem 2-5.1

Evaluate the surface integral:

$$\iint_S \mathbf{A}(\bar{\mathbf{r}}) \cdot \overline{d\mathbf{s}}$$

where:

$$\mathbf{A}(\bar{\mathbf{r}}) = \frac{r}{\sin\theta} \hat{\mathbf{a}}_r$$

and S is the portion of a sphere with unit radius (i.e., $r=1$) where $x > 0$, $y > 0$, and $z > 0$.

