

Questions

1. Let ϕ be the scalar field $\phi(x, y, z) = 1$ and C the curve given by $\mathbf{r}(t) = t\hat{\mathbf{i}} + \hat{\mathbf{j}} + (1 - t)\hat{\mathbf{k}}$ for $1 \leq t \leq 2$. Calculate $\int_C \phi \, ds$.