

Line Integral Questions

1. Let \mathbf{F} be the vector field $\mathbf{F}(x, y, z) = y\hat{\mathbf{i}} + x\hat{\mathbf{j}} + z\hat{\mathbf{k}}$ and C the curve given by $\mathbf{r}(t) = t\hat{\mathbf{i}} + t\hat{\mathbf{j}} + 2t^2\hat{\mathbf{k}}$ for $0 \leq t \leq 1$. Calculate $\int_C \mathbf{F} \cdot d\mathbf{r}$.