

Questions

1. Let \mathbf{F} be the vector field $\mathbf{F}(x, y, z) = z\hat{\mathbf{i}} + 9y^2(x + 2)\hat{\mathbf{j}} + z\hat{\mathbf{k}}$ and C the curve given by $\mathbf{r}(t) = -2\hat{\mathbf{i}} - 3t^3\hat{\mathbf{j}} + (t + 1)\hat{\mathbf{k}}$ for $2 \leq t \leq 3$. Calculate $\int_C \mathbf{F} \cdot d\mathbf{r}$.