

## Questions

1. Let  $\mathbf{F}$  be the vector field  $\mathbf{F}(x, y, z) = (1 - 3x^2)\hat{\mathbf{i}} + 3y\hat{\mathbf{j}} + x\hat{\mathbf{k}}$  and  $C$  the curve given by  $\mathbf{r}(t) = 2t\hat{\mathbf{i}} + (2t + 1)\hat{\mathbf{j}} + 2\hat{\mathbf{k}}$  for  $-1 \leq t \leq 0$ . Calculate  $\int_C \mathbf{F} \cdot d\mathbf{r}$ .