

## Questions

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