Questions

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