

1. Find the length of the curve $\mathbf{r} = \langle te^{-t}, t, e^{-t} \rangle$ for $-1 \leq t \leq 2$.

2. a) Find the curvature for $\mathbf{r}(t) = t^2\mathbf{i} + e^{-t}\mathbf{j} - 3e^{-t}\mathbf{k}$.

b) Find the radius.