
Show all work. 5 points each. Be sure to draw the region D for problem 2.

1. Evaluate the line integral $\int_C y^3 ds$ where $C : x = t^3, y = t$ for $0 \leq t \leq 2$.

Hint: u -substitution.

2. Convert the line integral $\int_C \mathbf{F} \cdot d\mathbf{r}$ into an integral in the variable t , given $\mathbf{F}(x, y) = \langle xy, 3y^2 \rangle$ and C has parametrization $\mathbf{r}(t) = \langle 11t^4, t^3 \rangle$.