Math 241: Spring 2023

Nai	me:
Sectio	on:

Problem 1. (5 points) Find the curl of $\mathbf{F} = (y^2 + \cos z) \mathbf{i} + 2xy\mathbf{j} + e^x\mathbf{k}$. Is this vector field conservative? Explain your answer. (You do **not** need to compute a potential function.)

Problem 2. (5 points) Compute the line integral $\int_C \mathbf{F} \cdot d\mathbf{r}$ where $\mathbf{F} = 3x\mathbf{i} - y\mathbf{j}$ and *C* is the portion of the parabola $y = x^2$ with $-1 \le x \le 2$.