

WRITE YOUR NAME:

MAC 2313 B51 Spring 2024

Written homework #11

Due Tuesday April 2nd, in Canvas

Question 1. Evaluate the line integral

$$\int_C (x^2 + y^2) ds$$

where C is the circle of radius 4 centered at the origin.

Question 2. Suppose C is the circle $\mathbf{r}(t) = \langle \cos t, \sin t \rangle$ for $0 \leq t \leq 2\pi$, and $\mathbf{F} = \langle 1, x \rangle$. Evaluate both of the following integrals.

$$\int_C \mathbf{F} \cdot \mathbf{T} \, ds \quad \text{and} \quad \int_C \mathbf{F} \cdot \mathbf{n} \, ds$$

Question 3. Evaluate the integral

$$\int_C \mathbf{F} \cdot \mathbf{T} ds$$

where $\mathbf{F} = \langle x, y \rangle$ and C is the parabola $\mathbf{r}(t) = \langle 4t, t^2 \rangle$ for $0 \leq t \leq 1$.