

LINE INTEGRALS II

0.1. **Line Integrals of Function.** Integrate the function $f(x, y) = x^2 + y^2$ over the curve $\vec{r}(t) = \langle 2 \cos(t), 2 \sin(t) \rangle$.

0.2. **Line Integral of Vector Fields.** Compute the line integral of the vector field $\langle -y, 1 \rangle$ over the parametric curve $\langle t, t \rangle$ where $0 \leq t \leq 1$.

0.3. **FTOLI.** Compute the line integral of the vector field $\langle 2xy^3 + 3y, 3(x + x^2y^2) \rangle$ over the curve $\langle \cos t, \sin t \rangle$ as t goes from 0 to π . Hint: Consider the function $f(x, y) = x^2y^3 + 3xy$