

Line Integrals.

Spring 2016

Attendance Quizzes

April 13, 2016

Quiz 27 Line Integrals.

Consider the parametric ellipse

$$C : r(t) = \langle x(t), y(t) \rangle = \langle 2 \cos(t), 3 \sin(t) \rangle$$

where $t \in [0, 2\pi]$. Let $F = \langle -y, x \rangle$. Calculate the line integral of F along C , denoted by $\int_C F \cdot dr$.

Answer:

$$\int_C F \cdot dr = \int_0^{2\pi} (-3 \sin(t))(-2 \sin(t)) + (2 \cos(t))(3 \cos(t)) dt$$

This evaluates to $(6)(2\pi)$.