

Math 311 Quiz 4 Version A

1. Please fill in the missing blanks to make the theorem correct.

Green's Theorem: Suppose S is a in \mathbf{R}^2 with piecewise smooth boundary ∂S . Suppose also F is a vector field of class C^1 on \bar{S} . Then

$$\int_{\partial S} \left[\text{input} \right] = \iint_S \left(\frac{\partial F_2}{\partial x_1} - \frac{\partial F_1}{\partial x_2} \right) dA.$$

2. Find the positively oriented simple closed curve C that maximizes the line integral $\int_C [y^3 dx + (3x - x^3) dy]$.