

Math 53, Spring 2000, sections 107 & 109  
Quiz #10, 7 April

Name\_\_\_\_\_

Instructions: You have 25 minutes in which to answer the following two questions. No calculators, notes, or other references may be used.

1. (5 points) Given the vector field  $\mathbf{F}(x, y) = y^2 \mathbf{i} - x^2 \mathbf{j}$ , find an equation for the flow line which passes through the point  $(1, 0)$ .

2. (5 points) Evaluate the line integral  $\int_C \mathbf{F} \cdot d\mathbf{r}$ , where  $\mathbf{F}$  is the vector field from Problem 1 and  $C$  is the curve defined by  $\mathbf{r}(t) = \langle \cos \theta, \sin \theta \rangle$ ,  $0 \leq \theta \leq \frac{\pi}{2}$ .