

MATH 251, Section \_\_\_\_\_  
Thursday, Sept. 30, 2010

Quiz 6 (Sections 12.7, 12.8).  
Dr. M. Vorobets

The quiz is **due Tuesday, Oct. 5 at the beginning of class.**

NAME (print): \_\_\_\_\_

**No credit for unsupported answers will be given. Clearly indicate your final answer**

1. [3 pts.] Find the local minimum and maximum, if any, of the function  $f(x, y) = x^2 + xy + y^2 - 2x - y$ .

2. [3 pts.] Use Lagrange multipliers to find the maximum and minimum values of the function  $f(x, y) = 6 - 4x - 3y$  subject to the constraint  $x^2 + y^2 = 1$ .

[more problems on back]

3. [4 pts.] Find the absolute maximum and minimum values of the function  $f(x, y) = x^2 + y^2 - xy + x + y$  if  $D = \{(x, y) \in \mathbb{R}^2 \mid x \leq 0, y \leq 0, x + y \geq -3\}$ .