

Instructions: Show Your Work!

- (8^{pts}) 1. Find the absolute maximum and minimum values of $f(x, y) = x^2y$ on the set $D = \{(x, y) : x^2 + y^2 \leq 3\}$
- (a) Without using Lagrange Multipliers,
 - (b) Using Lagrange Multipliers.

- (4^{pts}) 2. Evaluate the double integral by identifying it as the volume of a solid

$$\int_R (4 - x) dA, \quad R = \{(x, y) : 0 \leq x \leq 4, 0 \leq y \leq 3\}.$$