

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS**  
**DEPARTMENT OF MATHEMATICS AND STATISTICS**  
**MATH 201 - QUIZ 5**

Name:

Student ID #:

**Question 1.** Find the critical points of  $f(x, y) = x^3 + xy + y^3$ . Then use second derivative test to determine whether they are local minima, local maxima, or saddle point.

**Question 2.** Find the maximum and the minimum of  $f(x, y) = x^2y + x + y$  subject to the constraint  $xy = 4$ .

**Question 3.** Evaluate  $\int \int_D x^2y dA$  where  $D$  is the region bounded by  $y = 1/x$ ,  $y = \sqrt{x}$ , and  $x = 2$ .

**Your Solution.**