

Name:

1. Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint:

$$f(x, y) = x^2 + y^2, \quad xy = 1.$$

2. Use Lagrange multipliers to find the maximum and minimum values of the function subject to the given constraint:

$$f(x, y, z) = 2x + 2y + z, \quad x^2 + y^2 + z^2 = 9.$$