Quiz 3, Math 0240

Last Name: ____________________  First Name: ____________________

Show all work clearly. You have 30 minutes to complete this 10 point quiz.

1. (3 points) Calculate the double integral

\[
\int_{R} (y + xy^{-2}) \, dA, \quad R = \{(x, y) | 0 \leq x \leq 2, 1 \leq y \leq 2\}.
\]

2. (3 points) Evaluate the integral \(\int_{0}^{1} \int_{3y}^{3} ye^{x^2} \, dx \, dy\) by reversing the order of integration.

3. (4 points) Find the extreme values of \(f(x, y, z) = 3x - y - 3z\) subject to both constraints \(x + y - z = 0, \; x^2 + 2z^2 = 6\).