MAT021D - Summer Session II
Quiz 2 - 08.09.16

Show all work clearly and in order. Circle your final answers.
Justify your answers algebraically whenever possible.

Problem 1. Integrate \( f(x, y) = \frac{\ln(x^2 + y^2)}{x^2 + y^2} \) over the region \( 1 \leq x^2 + y^2 \leq e^2 \).

Problem 2. Find the volume of the tetrahedron in the first octant bounded by the coordinate planes and the plane passing through \((1, 0, 0), (0, 2, 0),\) and \((0, 0, 3)\).
Problem 3. Evaluate the integral
\[
\iiint_S (x^2 + y^2) \, dx \, dy \, dz,
\]
where \( S \) is the solid bounded by the surface \( x^2 + y^2 = 2z \) and the plane \( z = 2 \).