

Math 53, Spring 2000, sections 107 & 109

Quiz #9, 1 April

Name _____

Instructions: You have 7 minutes in which to answer the following question. No calculators, notes, or other references may be used.

1. (10 points) Let S be the solid bounded by the surfaces $46x^2 - 37y^2 - 29z^2 + 74xy - 118xz - 112yz + 226x - 196y - 62z = 444$ and $5x^2 + 10y^2 + 5z^2 + 14xy - 8xz - 10yz + 34x + 48y - 26z = -58$ with density given by $\rho(x, y, z) = \sin^2(xy^3 - z)e^{-3xyz}$. Find the vector v which maximizes the moment of inertia of S about the line which contains the center of mass of S and is parallel to v .