

MATH 311 – CALCULUS 3
Spring 2006
QUIZ 10

NAME _____

1. Let Q be the of space region under the graph of $z = x + y$ and above the rectangle $[0, 2] \times [0, 3]$ in the xy -plane. Evaluate $\iiint_Q dz dy dx$.

2. Let Q be the solid bounded by the xz -plane, the xy -plane, the plane $z = 8$ and the cylinder $y = \sqrt{4 - x^2}$. The density $\rho(x, y, z) = 2z$. Set up but DO NOT EVALUATE a triple integral in cylindrical coordinates to compute the mass of Q .

3. Let Q be the region of space inside the hemisphere $z = \sqrt{50 - x^2 - y^2}$ and inside the cone $z = \sqrt{x^2 + y^2}$. Set up but DO NOT EVALUATE a triple integral in spherical coordinates to evaluate

$$\iiint_Q \frac{dV}{\sqrt{x^2 + y^2 + z^2}}$$

4. Find cylindrical and rectangular coordinates of the point given by $(4, \frac{\pi}{3}, \frac{\pi}{4})$ is spherical coordinates.

$$r = \underline{\hspace{2cm}} \quad \theta = \underline{\hspace{2cm}} \quad z = \underline{\hspace{2cm}}$$

$$x = \underline{\hspace{2cm}} \quad y = \underline{\hspace{2cm}} \quad z = \underline{\hspace{2cm}}$$