

MATH 211- EXAM III -November 19, 2008

1) Sketch the region of integration, reverse the order of integration and evaluate

$$\int_0^2 \int_0^{4-x^2} \frac{xe^{2y}}{4-y} dy dx$$

2) Evaluate by converting to polar coordinates and integrating

$$\int_0^1 \int_0^{\sqrt{1-y^2}} \frac{1}{1+x^2+y^2} dy dx$$

3) Find the coordinates of the center of mass of a thin triangular plate formed by the points $(0,0)$, $(0,1)$, $(1,0)$ where the density within this area is given by $\rho = x + y$

4) Evaluate, using triple integration, the volume of the region in the first octant bounded by the coordinate planes $(x=0, y=0, z=0)$ the plane $y + z = 2$ and the parabolic cylinder $x = 4 - y^2$

5) Find the mass of the solid that has a density $\rho = yz$ and is enclosed by the surfaces $z = 1 - y^2$ ($y \geq 0$), $z = 0$, $y = 0$, $x = -1$, $x = 1$