

Math 1451, Honor Calculus Practice 10, Spring 2016.

April 6, 2016

PSID: _____ Name: _____

1. Set up the integral for

$$\iiint_E x^2 dV,$$

where E is the solid that lies within the cylinder $x^2 + y^2 = 1$, above the plane $z = 0$, and below the cone $z^2 = 4x^2 + 4y^2$.

2. Find the mass and center of mass of the solid S bounded by the paraboloid $z = 4x^2 + 4y^2$ and the plane $z = a$ where $a > 0$ if S has constant density K .

3. Set up the integral

$$\iiint_E z dV$$

where E lies between the spheres $x^2 + y^2 + z^2 = 1$ and $x^2 + y^2 + z^2 = 4$ in the first octant.