Math 1451, Honor Calculus Practice 9, Spring 2016.

March 25, 2016

PSID: _____   Name: _____

1. Evaluate
$$\iint\limits_{R} (3x + 4y^2)dA$$

   where R is the region in the upper half-plane bounded by the circles $x^2+y^2 = 1$ and $x^2+y^2 = 4$.

2. Find the volume of the solid bounded by the plane $z = 0$ and the paraboloid $z = 1 - x^2 - y^2$.

3. A solid E lies within the cylinder $x^2 + y^2 = 1$, below the plane $z = 4$, and above the paraboloid $z = 1 - x^2 - y^2$. The density at any point is proportional to its distance from the axis of the cylinder. Find the mass of E.