

## Math 215 Homework 5- Continued

**READ ME:** Except where indicated, merely finding the answer to a problem is not enough to receive credit. You must show how you arrived at that answer.

**1)** (5 points) Find equations describing the region in the first octant outside the cylinder  $x^2 + y^2 = 16$  and inside the sphere  $x^2 + y^2 + z^2 = 32$  in both cylindrical and spherical coordinates. You may need more than one set of inequalities.

**2)** (5 points) Calculate the volume of the region bounded by the common intersection of the cylinders  $x^2 + y^2 = 9$  and  $x^2 + z^2 = 9$ .

**3)** (5 points) Determine the  $z$ -coordinate of the center of mass of the solid  $4 \leq x^2 + y^2 + z^2 \leq 9$  if its density function is given by the distance between a point in the solid and the  $z$ -axis.