

**Problem Set 1****Calculus 3****Due 10/18/19**

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 3 points for correct and clearly justified answers.

1. Find the centroid of the solid bounded by  $z = 9 - x^2 - y^2$  and the plane  $z = 0$ .
2. Find the centroid of the solid bounded by  $z = 9 - x^2 - y^2$  above the plane  $z = 0$  and below the plane  $z = b$  for some value  $0 \leq b \leq 9$ .
3. Use an iterated integral to find the volume of the solid bounded by  $z = h - \frac{h}{a}\sqrt{x^2 + y^2}$  and  $z = 0$ .
4. Use a double integral to find the volume of the solid with right triangular base with legs of length  $a$  and  $b$ , but extending up from that base in such a way that the three vertical edges are of lengths  $h_a$ ,  $h_b$ , and  $h_v$ , with the top surface being a plane.



