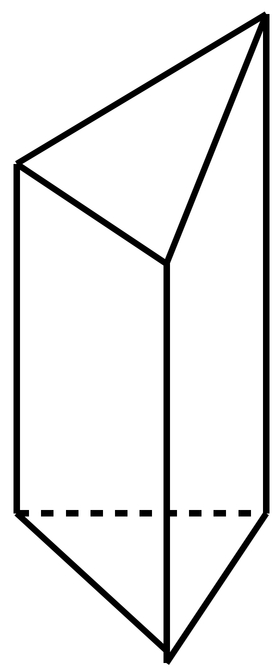
Problem Set 2 **Calculus 3** **Due 10/23/15**

You are encouraged to work in groups of two to four on this assignment and make a single group submission. Each problem is worth 5 points for correct and clearly justified answers.

1. Do #52 in §13.2.

2. 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.



3. Do #70 in §13.2.

4. Consider a paraboloidal solid between $z = 1 - x^2 - y^2$ and $z = 0$. Suppose the density varies linearly between 1 at the bottom and k at the top.
   a) Find the total mass of the solid.

   b) For which value of k will the center of mass be halfway up the paraboloid?