1. A building is 8 meters wide and 16 meters long. It has a flat roof that is 12 meters high at one corner, and 10 meters high at each of the adjacent corners. What is the volume of the building? *HINT: Find an equation for the roof.*

2. You are making a scale model of this building, with 1 centimeter on the model corresponding to 1 meter on the building. Your model will be made of gooey clay, which tends to settle, and is therefore denser at the bottom than the top. The density of clay in your model is in fact given by $2 - z/12$ g/cc. How much clay do you need to make your model? *HINT: What sort of an integral do you need?*

   (a) Set up but **do not evaluate** the integral

   (b) **EXTRA CREDIT:** Evaluate the integral.