

Frieda Jo, Development Office , Big City University

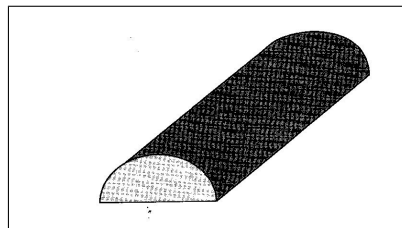
Math 201 Students
Winthrop University
Rock Hill, SC 29733

October 28, 2013

Dear Calculus Students,

After months of diligent work, I finally earned a promotion to Vice President for Development here at Big City U. I'm very proud of my fund-raising accomplishments, but sometimes the gifts come with very strict limitations on how they can be used. We just received such a donation, and when I went looking for help, your enterprising and resourceful professor naturally referred me to you.

We have a somewhat eccentric alum who has made a major contribution in memory of his favorite Chia Pet Airplane that recently passed away in a bizarre gardening accident (it's best we not discuss the details). As a fitting tribute to the dearly departed, the donor has designated that the funds be used to build a dorm in the shape of an airplane hanger, as shown below. There is an additional stipulation on the gift: the volume of the dorm must be *exactly* 225,000 cubic feet, which is one cubic foot for each sprout on the Chia plane.



We're in the planning stages with the architects now, and we would obviously like to minimize the cost of the building. This is where I need your help. Currently, the construction costs for the foundation are \$30 per square foot, the sides cost \$20 per square foot to construct, and the roofing costs \$15 per square foot. I need your expert advice on what the dimensions of the building should be to minimize the total cost.

While the cost of the flooring and siding has been fairly stable, a further complicating factor is that the cost of roofing material has been fluctuating dramatically for as long as I can remember (at least two months). In addition to your recommendation for the price of \$15 per square foot, I also need a recommendation on the dimensions of the dorm if the roofing costs \$R per square foot. We are meeting with the architects to discuss plans before Thanksgiving, so I would appreciate your report by November 11.

Yours sincerely,

Frieda Jo