Instructions:
Please answer the questions below. Show all your work. You may use a TI-84/85 (or equivalent) calculator.

Problem 1. (20 points) A cylindrical barrel with a volume of 1 L (= 1000 cm^3) is constructed out of sheet metal. The cost to make this barrel is proportional to its surface area. What radius and height minimizes the cost? (Hint: The volume of a cylinder is $V = \pi r^2 h$ and the surface area is $A = 2\pi r h + 2\pi r^2$, where r is the radius and h is the height)