Instructions. Show all work, with clear logical steps. No work or hard-to-follow work will lose points.

Problem 1. (4 points) Find the maximum value of the function

$$f(x, y) = e^{8xy}$$

subject to the constraint $x^2 + y^2 = 100$. Assume x and y are both positive.

Problem 2. (6 points) A rectangular box with a square base is to be constructed from material that costs \$5/ft^2 for the bottom, \$3/ft^2 for the top and \$5/ft^2 for he sides. Find the box of greatest volume that can be constructed for \$167. Round your answer to 2 decimals.