

(d) Maximize this function.

(e) How do you know your value from Part (c) is the absolute maximum (as opposed to a local maximum or an absolute/local minimum)?

Exercise 2. A food company wants to design aluminum cans which minimize the amount of metal needed. The cans need to hold 12 oz of liquid, or approximately 21.7 in^3 .

(1) Write an equation for the surface area A of a cylindrical can in terms of the radius r and the height h .

(2) Use the constraint that the cans need to hold 12 oz of liquid to write an equation relating r and h .

(3) Combine Parts (a) and (b) to write an equation for the surface area A as a function of the radius r .

(4) What is the domain of this function in this context?

(5) Minimize this function. Justify your answer.

(6) What does your answer to Part (c) mean in the context of this problem?

(7) What are the dimensions of the can the company should make?