11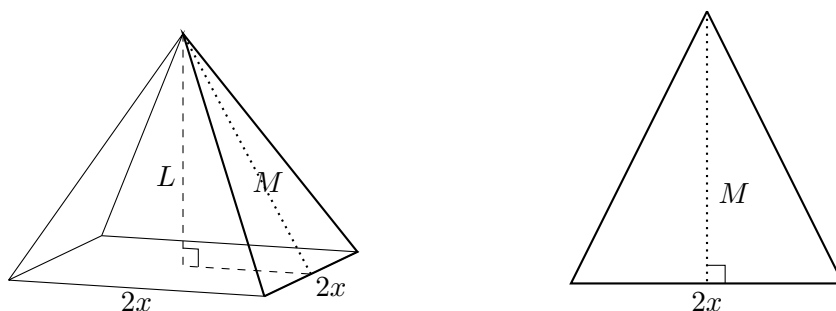. [8 points] Jose is building a pyramid-shaped hat with 4 triangular sides of the same shape. Each side has a base of $2x$ centimeters. The height of the hat is L centimeters. Each of the four triangular sides has height M centimeters (see the diagram below).

a. [3 points] Jose plans to use 400 square centimeters of material in the construction of the hat. Find a formula for the height L of the hat only in terms of x. *Your formula should not include the letter M.* Show all your work.

Answer: $L(x) =$ _____

b. [2 points] The volume of a pyramid is given by $V = \frac{1}{3}Ah$, where A is the area of the base and h is the height of the pyramid. Find a formula for the volume of the hat V, in cubic centimeters, in terms only of the variable x. *Your answer should not include the variables L and/or M.*

Answer: $V(x) =$ _____

c. [3 points] What is the domain of the function $V(x)$ in the context of this problem?

Answer: _____