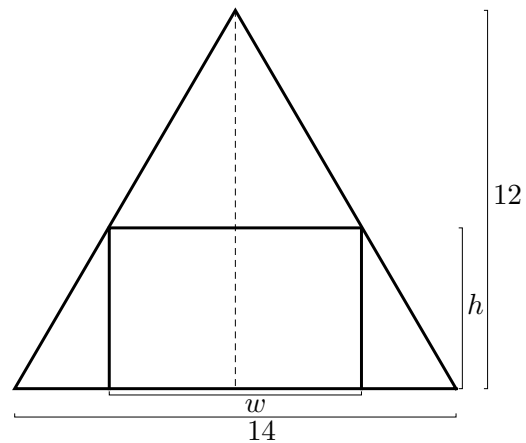


2. [5 points] Caleb has an attic apartment, and his bedroom has a triangular wall that is 14 feet wide and 12 feet tall at its tallest point. He wants to build a rectangular bookcase to put against the wall, as shown to the right. He is trying to maximize the area of the front of the bookcase.

- a. [3 points] If the bookcase has width w and height h , write a formula relating w and h .



- b. [2 points] Using your answer from (a), find an expression for the area of the front of the bookcase in terms of the variable h .
3. [4 points] Suppose $g(x) = x^{2x}$. Write an explicit expression for $g'(5)$ using the limit definition of the derivative. Your expression should not contain the letter “ g ”. Do not evaluate your expression.