Homework due on Thursday, February 4

Read carefully Chapters 1 and 3 of the book by Berlinghoff and Gouvea. Solve Question 1 to Chapter 1 and Question 1 to Chapter 3. Also solve the following problem.

Problem 1. Assume the following result: the volume of a pyramid with base of area A and height H is equal to AH/3. Suppose now that such a pyramid is truncated by a plane parallel to the base whose distance to the base is h and let B be the area of the top of the truncated pyramid. Prove that the volume V of the truncated pyramid is given by the following formula:

$$V = \frac{1}{3}h(A + \sqrt{AB} + B).$$

Explain carefully your argument using full sentences. Hint. Use the facts that the two pyramids determined by the top and bottom planes are similar.