HOMEWORK 13
APPLIED CALCULUS
DUE 2013-10-10

Show your work!

(1) Consider the problem from class:

> What is the largest rectangular box, without a top, that can be made from 50 in^2 of material, if the base is required to be twice as long as it is wide?

(a) In class, we found that the volume of the box is given in terms of the width of its base by

$$V(w) = \frac{w(50 - 2w^2)}{3},$$

and that the domain is $w \in (0, 5]$). Find the value of w that maximises the volume. What is the maximum volume?

(b) Find the other dimensions of the maximum-volume box (its length ℓ and height h).

- **Eight** book problems: #12.3.11, 13, 19, 22, 23, 25, 27, 33. For #12.3.23, the *average cost* is the cost per unit, given by $\frac{C}{x}$.