Practice Problems — 03/07/05

(1) A piece of wire 10 m long is cut into two pieces. One piece is bent into a square and the other is bent into an equilateral triangle. How should the wire be cut so that the total are enclosed is (a) a minimum? (b) a maximum?

(2) If 1200 square centimeters of material is available to make a box with a square base and an open top, find the largest possible volume of the box.

(3) A crazy billionaire gives you 10 meters of wire and asks you to construct a isosocles triangle with as large an area as possible. If you are able to create an isosocles triangle with maximum area, he will pay you $1,000,000$. What are the dimensions of this area-maximizing triangle? What is its area?