MA133C & MA160
Calculus 1

Lecture 20

Problem 1

Find the maximum value of xy where x and y are real numbers satisfying

$$x^2 + \frac{y^2}{4} = 2.$$

Problem 2

A farmer has 1200m of fencing and wants to fence off a rectangular field that borders a straight river. No fence is needed along the river. What are the dimensions of the largest rectangle that can be enclosed?

Problem 3

A farmer wants to fence a rectangular area of 15000m^2 and then divide it in half with a fence parallel to one of the sides of the rectangle. What is the most convenient way to do this in order to minimise the cost of the fence?

Problem 4

A farmer wishes to fence off 450m^2 of land adjacent to a straight river. It costs 16 Euro per metre to erect a fence adjacent to the river, but only 9 Euro per metre to erect a fence not adjacent to the river. Assuming the area to be fenced is rectangular, how long should the fence along the river be if the total cost of all fencing is to be minimised?