

MATH 2934 – Additional problem assigned on 7/25/14

Additional Problem.

When you have to find the global extrema of a function f over a region D in \mathbb{R}^2 , you have to study the critical points inside D as well as the values of f on the boundary of D . Assume that you have to find the global extremum of the function $f : D \rightarrow \mathbb{R}$, where

$$f(x, y) = x^2 + y^2 ,$$

and D is the triangle bounded by the x -axis, the y -axis, and the straight line with equation

$$x + 2y = 2 .$$

In this problem you only have to study the values of the function f on the straight line segment connecting the points $(0, 1)$ and $(2, 0)$. First you have to parameterize this line segment, and then to find the local extrema of the function f at the points on this segment.