International J. of Math. Sci. & Engg. Appls. (IJMSEA) ISSN 0973-9424, Vol. 5 No. II (March, 2011), pp. 263-266

\_\_\_\_\_

## AN OPTIMIZATION THEOREM IN SPACES ADMITTING A CONTINUOUS BIJECTION ONTO [0,1]

## GIUSEPPE RAO

## Abstract

The most classical conditions ensuring that f has a global minimum in X are compactness of X and lower semicontinuity of f.

On the other hand, if X is metrizable and non-compact, then there exist lower semicontinuous functions  $f: X \to \mathbf{R}$  which are unbounded below. Indeed, in that case, there exists a sequence  $\{x_n\}$  in X without any cluster point. Then, consider the function  $f: X \to \mathbf{R}$  defined by

$$f(x) = \begin{cases} -n & \text{if } x = x_n \\ 0 & \text{if } X \setminus \bigcup_{n \in \mathbf{N}} \{x_x\} \end{cases}$$
(1)

Clearly, such a function is lower semicontinuous and unbounded below. The result given in theorem 1 is the main object of the present paper:

\_\_\_\_\_

©Ascent Publication House: http:// www.ascent-journals.com