

Existence of Solutions Exercises

1) Prove that if the conditions of the theorem of the maximum are satisfied, then $x^*(\theta)$ is closed-valued. Then prove that $x^*(\theta)$ is compact-valued.

2) Let f be a continuous function on $[a, b]$. Prove that for all $y \in (f(a), f(b))$, there exists an $c \in (a, b)$ such that $f(c) = y$.