

Solvability of a Second Order Boundary Value Problem.

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Abstract- The study of nonlinear boundary value problems is a very important and difficult area of research in differential equations. The aim of our work is to establish the existence of solutions for a second order boundary value problem which models different real situations especially in physics and mechanics. Our approach consists to modify the given problem and prove the existence results of the modified one which are equivalent, using fixed point theory combined with the lower and upper solutions method. We need also to introduce the Nagumo condition to get bounds of the first derivative because the term of nonlinearity depends on it.

Keywords- Boundary value problem. Existence of solutions. Fixed point theorem.