Dedication

To my parents, sisters, brothers and my husband.

Acknowledgements

I would like to thank the Almighty God, my parents who have encouraged me very much to study. I am greatly indebated to my supervisor Dr. Mohamed Hassan Mohamed Khabir. anyone who helped and encouraged me to learn, specifically at SUST, where I discovered my vision for the future. My thankful to Omran for his good typing

Abstract

The finite element method is presented in this thesis, and we applied it for obtaining the approximate solution to the two points boundary value problem. This method uses the Galerkin method and the variational (weak) formulation to convent the stronge form of the problem to linear algebriac system which we solved it by using Matlab program. We estimate the errors for the solution using linear and quadratic basis. We also show the equivelance relation between Galerkin method and the minimizing of the problems. We also showed the uniqueness of the solution using the finite element problem.

Abstract (Arabic)

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