Acknowledgements

I would like to acknowledge my advisor Dr. Nittaya McNeil and my co-advisor Dr. Phattrawan Tongkumchum from their valuable advice and kind help throughout the completion of the thesis. Thanks also to Emeritus Prof. Dr. Don McNeil for assistance and helpful guidance on this thesis. Thank you to Dr. Somporn Chuai-Aree and Assoc. Prof. Dr. Wattanavadee Sriwattanapongse for their great comments and suggestions. I would like to thank all lecturers in department of Mathematics and Computer Science.

An support and An anzukee Mahyeng Finally, I would like to thank my parents, siblings and friends for their support and