Dr. Norazaliza binti Mohd Jamil is currently a senior lecturer in the Faculty of Industrial Sciences & Technology at the Universiti Malaysia Pahang. She earned her Bachelor of Science (Mathematics) with first class honours and Master of Science degree in Mathematics from Universiti Teknologi Malaysia. She completed her Doctor of Philosophy (PhD) in Applied and Computational Mathematics at the University of South Carolina, USA in 2015.

Dr. Nor Alisa binti Mohd Damanhuri is a senior lecturer in the Faculty of Industrial Sciences at the Universiti Malaysia Pahang. She obtained BSc. (Mathematics) and MSc. (Applied Mathematics) from the Universiti Sains Malaysia. She received her Ph.D in Mathematics from the University of Manchester, UK in 2014.

Dr. Yuhani binti Yusof is currently served as a Senior Lecturer in the Faculty of Industrial Sciences & Technology at Universiti Malaysia Pahang. She graduated from Universiti Teknologi Malaysia, with BSc. (Industrial Mathematics) and MSc. (Mathematics). She completed her Ph.D (Mathematics) at the same university in 2012 and attached as a visiting scholar of Towson University, USA under SLAI scholarship. Experiences of 10 years in teaching of various mathematics subjects at an Institute of Higher Learning, she also actively involved in research related to the biomathematics field.

Dr. Nor Aida Zuraimi binti Md Noar is currently a senior lecturer in the Faculty of Industrial Sciences & Technology, Universiti Malaysia Pahang (UMP). She received her Bachelor of Science (Industrial Mathematics) from Universiti Teknologi Malaysia. Upon completion her bachelor degree program, she was appointed as a Tutor at Universiti Pendidikan Sultan Idris (UPSI) in 2002 before she continued her postgraduate study in Master of Science (MSc) in Computational Mathematics with Modelling at Brunel University, UK. Then, she was appointed as a lecturer at UPSI. After she completed her Doctor of Philosophy (PhD) in Applied Mathematics at Brunel University, UK in 2012, she was promoted as a senior lecturer at UPSI before joining UMP in 2013.

Norhafizah binti Md Sarif is a lecturer in the Faculty of Industrial Sciences at the Universiti Malaysia Pahang. She obtained BSc. (Industrial Mathematics) and MSc. (Applied Mathematics) from the Universiti Teknologi Malaysia. She is currently pursuing her doctoral studies in Applied Mathematics at the University Malaysia Pahang.

ISBN 978-967-2054-68-9

PUBLISHER
UNIVERSITI MALAYSIA PAHANG

Universiti Malaysia PAHANG

Mathematical Formulae 2.0

Norazaliza Mohd Jamil
Nor Alisa Mohd Damanhuri
Yuhani Yusof
Nor Aida Zuraimi Md Noar
Norhafizah Md Sarif

Mathematical Formulae 2.0

Mathematical Formulae 2.0

Norazaliza Mohd Jamil
Nor Alisa Mohd Damanhuri
Yuhani Yusof
Nor Aida Zuraimi Md Noar
Norhafizah Md Sarif

Publisher
Universiti Malaysia Pahang
Kuantan
2017

First Published, 2017

Perpustakaan Negara Malaysia Cataloguing-in-Publication Data

Norazaliza Mohd Jamil
Mathematical Formulae 2.0 / Norazaliza Mohd Jamil, Nor Alisa Mohd Damanhuri, Yuhani Yusof, Nor Aida Zuraimi Md Noar, Norhafizah Md Sarif.
ISBN 978-967-2054-68-9
1. Mathematics--Formulae. 2. Arithmetics--Formulae. 3. Government publications-Malaysia I. Title.
510

Published By:
Publisher
Universiti Malaysia Pahang,
Lebuhraya Tun Razak,
Pahang Darul Makmur.
Tel: 09-549 3320 Fax: 09-549 3381

Printing:
Syarikat Percetakan Inderapura Sdn. Bhd
Jalan Tanjong Api Off Jalan Telok Sisek
25200 Kuantan, Pahang Darul Makmur
Tel: 09-5177225/5177031 Fax: 095139434

Preface

Mathematical Formulae intends to provide students, scientists, engineers, and researchers with a readily available reference to the mathematical formulae needed during their studies or work situation. It is a handy book that one must have on the bookshelf. The text is divided, for ease of reference, into ten main chapters embracing algebra, trigonometry, limit, differentiation and integration, vector calculus, coordinate geometry, differential equations, numerical methods, discrete mathematics, and financial mathematics. Essential theory, formulae, definitions and laws are clearly stated in this book. This collection of formulas constitutes a compilation of mathematics for Engineering and Sciences. In addition, people who often deal with practical or applied problems will also find this collection an efficient and easy-to-use work of reference. The present book arose as a result of many years of teaching experience of various faculties in Universiti Malaysia Pahang (UMP) which are Chemical & Natural Resources Engineering, Civil Engineering & Earth Resources, Computer Systems & Software Engineering, Electrical & Electronics Engineering, Industrial Sciences & Technology, Manufacturing Engineering, Mechanical Engineering, Engineering Technology and Industrial Management. The text assumes little previous knowledge and is suitable for a wide range of courses in UMP. Finally, we would also like to emphasize that remarks and criticism are always welcome.

Contents