

Contents

Preface	v
1 Problems	1
1.1 Junior Problems	3
1.2 Senior Problems	16
1.3 Undergraduate Problems	30
1.4 Olympiad Problems	45
2 Solutions	61
2.1 Junior Solutions	63
2.2 Senior Solutions	126
2.3 Undergraduate Solutions	203
2.4 Olympiad Solutions	300
3 Articles	395
3.1. Searching for Homogeneity Across Multi-Variable Polynomials .	397
3.2. Triangles Homothetic with the Intouch Triangle	412
3.3. Power-sum Problem, Bernoulli Numbers and Bernoulli Polynomials	424
3.4. Convergence of Root Location Algorithms with Random Initial Points	437
3.5. About an Old Romanian TST Problem	444
3.6. Unexpected Applications of Mean Value Theorem(s) in Number Theory	454

3.7. The Sequence $(\{n^d\alpha\})$ is Dense in $[0, 1]$. An Elementary Proof	464
3.8. On a Special Center of Spiral Similarity	471
3.9. A Discrete Approach to a Result Concerning a Contour Integral	487
3.10. Linear Approximation Implies Unique Solution	497
3.11. Joining the Incenter and Orthocenter Configurations: Properties Associated with a Tangential Quadrilateral	505
3.12. Best Polynomial Estimates in a Triangle	519
3.13. On a Property of the Primitive Roots of Unity Leading to the Evaluation of Ramanujan's Sums	528
3.14. Ptolemy's Sine Lemma	539
Problem Author Index	549
Article Author Index	551