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SYNOPSIS

193 Skoliad: No. 94 *Robert Bilinski*

- BC Colleges High School Mathematics Contest 2005, Senior Final Round, Part B
- Collèges de Colombie Britannique 2005 Concours Sénior de Mathématiques du Secondaire, Ronde Finale Partie B, Vendredi
- Solutions to the 1999 New Zealand Junior Mathematics Competition

200 Mathematical Mayhem

200 Mayhem Problems: M244–M250

203 Mayhem Solutions: M188–M200

211 Problem of the Month *Ian VanderBurgh*

213 Pólya's Paragon: Magic Triangles: Beyond the Elementary Idea
John Grant McLoughlin

215 The Olympiad Corner: No. 254 *R.E. Woodrow*

Featuring the British Mathematical Olympiad, 2002/3, Rounds 1 and 2; the Kazakh National Mathematical Olympiad, 2002–2003; the Ukrainian Mathematical Olympiad, 11th Form; and readers' solutions to some of the problems from

- the 8th Macedonian Mathematical Olympiad;
- the Latvian Mathematical Olympiad 2000/2001, Final Grade, 3rd Round;
- the 13th Irish Mathematical Olympiad;
- the Third Hong Kong Mathematical Olympiad.

231 Book Review *John Grant McLoughlin*

231 *From Calculus to Computers: Using the Last 200 Years of Mathematics History in the Classroom*

by Amy Shell-Gellasch & Dick Jardine (Eds.)

Reviewed by John Grant McLoughlin

233 Cycles of Residues Generated by Divisibility Tests

by James T. Bruening and Deanna Kindhart

Divisibility tests have long fascinated mathematicians and mathematics students. Tests for divisibility by 2, 3, 5, 9, and 11, for example, are very familiar and are based on modular arithmetic. The history of mathematics has recorded many efforts to devise tests for divisibility by other positive integers, especially primes. This paper studies cycles of residues generated by repeating tests for divisibility by a prime, and shows relationships between the cycles and aspects of group theory from abstract algebra.

Enjoy!

238 Problems: 3139–3150

This month's "free sample" is:

3141. *Proposé par José Luis Díaz-Barrero, Université Polytechnique de Catalogne, Barcelone, Espagne.*

Soit a , b et c les côtés d'un triangle scalène ABC . Montrer que

$$\sum_{\text{cyclique}} \frac{(a+1)bc}{(\sqrt{a}-\sqrt{b})(\sqrt{a}-\sqrt{c})} < \frac{a^4+b^4+c^4}{abc}.$$

.....

3141. *Proposed by José Luis Díaz-Barrero, Universitat Politècnica de Catalunya, Barcelona, Spain.*

Let a , b , and c be the sides of a scalene triangle ABC . Prove that

$$\sum_{\text{cyclic}} \frac{(a+1)bc}{(\sqrt{a}-\sqrt{b})(\sqrt{a}-\sqrt{c})} < \frac{a^4+b^4+c^4}{abc}.$$

243 Solutions: 3034–3043