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**SYNOPSIS**

257 Editorial    *Shawn Godin*

259 Skoliad No. 134    *Lily Yen and Mogens Hansen*

- Baden-Württemberg Mathematics Contest, 2010
- Concours mathématique Baden-Württemberg 2010
- Solutions to questions of the Mathematics Association of Quebec Contest, Secondary level, 2010

266 Mathematical Mayhem    *Shawn Godin*

266 Editorial:    *Shawn Godin*

267 Mayhem Problems:    M495–M500

269 Mayhem Solutions:    M457–M462

273 Problem of the Month    *Ian VanderBurgh*

275 The Olympiad Corner: No. 295    *R.E. Woodrow and Nicolae Strugaru*

275 Olympiad Corner Problems:    OC21–OC30

In this *Corner* are solutions from readers to some problems from

- Youth Mathematical Olympiad of the Asociación Venezolana de Competencias Matemáticas, 2006
- 42<sup>nd</sup> Mongolian Mathematical Olympiad, 10<sup>th</sup> Grade
- Olympiade Suisse de mathématiques, 2005, tour final
- 55<sup>th</sup> Czech and Slovak Mathematical Olympiad, 2006
- 24<sup>th</sup> Iranian Mathematical Olympiad, First Round
- 24<sup>th</sup> Iranian Mathematical Olympiad, Third Round
- XVIII Olimpiada de Matemática de Países del Cono Sur
- 2007 Bulgarian National Olympiad
- 48<sup>th</sup> IMO Bulgarian Team, First Selection Test

301 Book Reviews    *Amar Sodhi*

301 *Lobachevski Revisited*

by Seth Braver

Reviewed by J. Chris Fisher

303 Unsolved Crux Problems: 342 and 1754

Two unsolved problems from *Crux* are reproduced.

304 Recurring Crux Configurations: *J. Chris Fisher*

This new, occasionally appearing column, highlights situations that reappear in *Crux* problems. In this issue problem editor J. Chris Fisher examines triangles for which  $2b^2 = c^2 + a^2$ . Enjoy!

308 Summations according to Gauss  
by *Gerhard J. Woeginger*

The paper begins with a well known anecdote involving C. F. Gauss, as a young child, summing the integers 1 through 100. The author illustrates how a method that could be employed with Gauss' problem can be used to determine various sums and integrals. The method is used on several problems, including one from the 2000 APMO and one from the 1980 Putnam Competition.

312 A nest of Euler Inequalities  
by *Luo Qi*

For any given  $\triangle ABC$ , the *antipodal triangle* is defined. Repeating this construction gives a sequence of triangles with circumradii  $R_n$  and inradii  $r_n$  obeying a generalized form of Euler's inequality

$$2^n R_n \geq \dots \geq 2^2 R_2 \geq 2R_1 \geq R_0 \geq 2r_0 \geq 2^2 r_1 \geq \dots \geq 2^{n+1} r_n,$$

( $n = 1, 2, \dots$ ), with equalities iff  $\triangle ABC$  is equilateral.

318 Problems: 3650–3663

This month's "free sample" is:

**3658.** *Proposed by Ovidiu Furdui, Campia Turzii, Cluj, Romania.*

Let  $-\pi < \theta_0 < \theta_1 < \dots < \theta_k < \pi$  and let  $a_j, j = 0, 1, \dots, k$ , be complex numbers. Prove that if

$$\lim_{n \rightarrow \infty} \sum_{j=0}^k a_j \cos(\theta_j n) = 0,$$

then  $a_j = 0$  for all  $j$ .

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**3658.** *Proposé par Ovidiu Furdui, Campia Turzii, Cluj, Roumanie.*

Soit  $-\pi < \theta_0 < \theta_1 < \dots < \theta_k < \pi$  et soit  $a_j$ ,  $j = 0, 1, \dots, k$ ,  $k$  nombres complexes. Montrer que si

$$\lim_{n \rightarrow \infty} \sum_{j=0}^k a_j \cos(\theta_j n) = 0,$$

alors  $a_j = 0$  pour tout les  $j$ .

323 Solutions: 3224, 3551–3555, 3557–3562