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SYNOPSIS

1 Skoliad No. 122   Lily Yen and Mogens Hansen

   - 27th New Brunswick Mathematics Competition, 2009; Grade 9, Part C
   - 27th Concours de Mathématiques du Nouveau-Brunswick, 2009; 9e année, Partie C
   - Solutions to the questions of the Swedish Junior High School Mathematics Contest, Final Round, 2007/2008

7 Mathematical Mayhem   Ian VanderBurgh

   7 Mayhem Problems: M420–M425
   9 Mayhem Solutions: M388–M393

14 Problem of the Month   Ian VanderBurgh

18 The Olympiad Corner: No. 283   R.E. Woodrow

Featuring the 2007 IMO in Vietnam, Problems Proposed But Not Used; the Bundeswettbewerb Mathematik 2006, Second Round; the Bundeswettbewerb Mathematik 2007, First Round; and readers’ solutions to some problems from

   - the Bulgarian National Olympiad 2006;
   - the Indian Mathematical Olympiad 2006 (Team Selection Problems);
   - the 2004 South African Mathematical Olympiad, Third Round, Senior Division;
   - the 2006 Vietnamese Mathematical Olympiad;
   - the 47th International Mathematical Olympiad 2006 in Slovenia, Problems Proposed but not Used.

39 Book Reviews   Amar Sodhi

39 When Less is More: Visualizing Basic Inequalities
   by Claudi Alsina and Roger Nelsen
   Reviewed by Bruce Shawyer
40 I Want to be a Mathematician, A Conversation with Paul Halmos
DVD produced and directed by George Csicsery
Reviewed by Brenda Davison

42 On an Inequality from the IMO 2008
by Nikolai Nikolov and Svilena Hristova

The authors investigate the inequality contained in the following problem from the IMO 2008 in the case of several variables:

Problem 2(a) (IMO 2008) Prove that \( \frac{x^2}{(1-x)^2} + \frac{y^2}{(1-y)^2} + \frac{z^2}{(1-z)^2} \geq 1 \)

for all real numbers \( x, y, z \), each different from 1, and satisfying \( xyz = 1 \).

Enjoy!

44 Problems: 3501–3513

This month’s “free sample” is:

3501. Proposed by Hassan A. ShahAli, Tehran, Iran.

Let \( \mathbb{N} \) be the set of positive integers, \( E \) the set of all even positive integers, and \( O \) the set of all odd positive integers. A set \( S \subseteq \mathbb{N} \) is closed if \( x + y \in S \) for all distinct \( x, y \in S \), and unclosed if \( x + y \not\in S \) for all distinct \( x, y \in S \). Prove that if \( \mathbb{N} \) is partitioned into \( A \) and \( B \), where \( A \) is closed and nonempty, and \( B \) is unclosed and infinite, then \( A = E \) and \( B = O \).

3501. Proposé par Hassan A. ShahAli, Téhéran, Iran.

Soit \( \mathbb{N} \) l’ensemble des nombres entiers positifs, \( E \subseteq \mathbb{N} \) l’ensemble de ceux qui sont pairs, et \( O \subseteq \mathbb{N} \) l’ensemble de ceux qui sont impairs. On dit qu’un ensemble \( S \subseteq \mathbb{N} \) est fermé si \( x + y \in S \) pour tous les \( x, y \in S \) distincts, et non-fermé si \( x + y \not\in S \) pour tous les \( x, y \in S \) distincts. Montrer que si \( \mathbb{N} \) est partagé en \( A \) et \( B \), où \( A \) est fermé et non vide, et \( B \) est non-fermé et infini, alors \( A = E \) et \( B = O \).

49 Solutions: 3401–3414