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SYNOPSIS

193 The Academy Corner: No. 19 *Bruce Shawyer*

Featuring a complete set of solutions to the 1997 Memorial University Undergraduate Mathematics Competition from Solomon Golomb.

196 The Olympiad Corner: No. 190 *R. E. Woodrow*

Featuring the problems of the Grade XI and Grade XII versions of the Lithuanian Mathematical Olympiad; the problems of the Korean Mathematical Olympiad; problems selected from the 1995 Israel Mathematical Olympiads; solutions to problems posed in the February 1997 number of the Corner; readers' solutions of problems from the March 1997 Corner and the 3rd Mathematical Olympiad of the Republic of China (Taiwan); solutions of Selected Problems from the Israel Mathematical Olympiads, 1994; and solutions to Problems From the Bi-National Israel–Hungary Competition, 1994.

208 Book Review *Andy Liu*

Mathematical Challenge by Tony Gardiner

More Mathematical Challenges by Tony Gardiner

Reviewed by *Ted Lewis*, University of Alberta

210 A Note on Special Numerals in Arbitrary Bases

Glenn Appleby, Peter Hilton and Jean Pedersen

In [1], at the end of a section devoted to the Pigeonhole Principle, the author posed the following problem:

“4.2.28 Show that, for any integer n , there exists a multiple of n that contains only the digits 7 and 0.”

Plainly the author is referring to the representation of the multiple as a numeral in base 10. Thus the reader of the problem is encouraged to believe that the validity of the statement depends in some way on the numbers 7 and 10 and their mutual relationship. Our analysis of the problem shows that, in fact, we may replace 10 by any base $b \geq 2$, and 7 by any digit t in base b .

Read on!

Reference [1] Zeitz, Paul, *The Art and Craft of Problem Solving*, John Wiley & Sons, 1998.

215 The Skoliad Corner: No. 30 *R. E. Woodrow*

Featuring the “official” solutions of Part I of the Alberta High School Mathematics Competition; the Fifteenth W.J. Blundon Contest, which was taken by students in Newfoundland and Labrador; and a correction to a solution given in the October 1997 number of the Skoliad Corner.

219 Advance Announcement of the 1999 Summer Meeting of the Canadian Mathematical Society will take place at Memorial University in St. John's, Newfoundland, from Saturday, 29 May 1999 to Tuesday, 1 June 1999.

The Special Session on Mathematics Education will feature the topic

What Mathematics Competitions do for Mathematics.

The invited speakers are

Ed Barbeau (University of Toronto),

Ron Dunkley (University of Waterloo),

Tony Gardiner (University of Birmingham, UK), and

Rita Janes (Newfoundland and Labrador Senior Mathematics League).

220 Mathematical Mayhem

220 Shreds and Slices *From the Archives*

An excerpt from “Wilson's Theorem”, by Oliver Johnson, Volume 5, Issue 2, *Mathematical Mayhem*

222 Mayhem Problems

222 High School Solutions **H221–224**

226 Advanced Solutions **A197–200**

228 Challenge Board Solutions **C74**

231 Swedish Mathematics Olympiad, 1986 Qualifying Round.

232 J.I.R. McKnight Problems Contest 1982

234 Problems: 2338–2350

This month's “free sample” is:

2342. *Proposed by D.J. Smeenk, Zalthommel, the Netherlands.*

Given A and B are fixed points of circle Γ . The point C moves on Γ , on one side of AB . D and E are points outside $\triangle ABC$ such that $\triangle ACD$ and $\triangle BCE$ are both equilateral.

(a) Show that CD and CE each pass through a fixed point of Γ when C moves on Γ .

(b) Determine the locus of the midpoint of DE .

237 Solutions: 2223, 2227–2228, 2231–2239