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SYNOPSIS

385 The Academy Corner: No. 36 *Bruce Shawyer*

Featuring the 2000 International Mathematics Competition for University Students.

388 The Olympiad Corner: No. 209 *R. E. Woodrow*

Featuring the XXIII All Russian Olympiad of the Secondary Schools; the Fourth National Mathematical Olympiad of Turkey, 1996; readers' solutions to problem #1 of the XI Italian Mathematical Olympiad, 1995; problem #5 of the Dutch Mathematical Olympiad, 1993; problem #4 of the Vietnamese Mathematical Olympiad 3 / 1996, Category B; problems of the 19th Austrian–Polish Mathematics Competition, 1996; and problems of the 3rd Turkish Mathematical Olympiad.

405 Book Reviews *Alan Law*

Calculus Mysteries and Thrillers

by R. Grant Woods

The Math Chat Book

by Frank Morgan

407 A Nice COMC problem

Daryl Tingley

Question B12 of the 1999 Canadian Open Mathematics Challenge was:

Q: Triangle ABC is any one of the set of triangles having base BC equal to a and height from A to BC equal to h , with $h < \frac{\sqrt{3}}{2}a$. P is a point inside the triangle such that the value of

$$\angle PAB = \angle PBA = \angle PCB = \alpha.$$

Show that the measure of α is the same for every triangle in the set.

The problem is one implication of the following locus problem:

L: Let BC be parallel to the line ℓ such that the distance from BC to ℓ is less than $\frac{\sqrt{3}}{2}$ of the length of BC . Let A be a variable point on ℓ . Find the locus of all points P inside $\triangle ABC$ such that

$$\angle PAB = \angle PBA = \angle PCB. \quad (*)$$

The two constraints: “the distance from BC to ℓ is less than $\frac{\sqrt{3}}{2}$ of the length of BC ”, and “ P inside $\triangle ABC$ ” restrict the more general question:

G: Let BC be parallel to the line ℓ . Let A be a variable point of ℓ . Find the locus of all points P that satisfy $(*)$.

These are nice problems for computer investigation.

Read on!

412 The Skoliad Corner: No. 49 *R. E. Woodrow*

Featuring the British Columbia Colleges Junior High School Mathematics Contest, Final Round, 2000; and the “official” solutions to the British Columbia Colleges Senior High School Mathematics Contest, Preliminary Round, 2000.

417 Mathematical Mayhem

417 Mayhem Problems

417	High School Problems	H227–H280
418	Advanced Problems	A253–A256
419	Challenge Board Problems	C97–C98

420 Problem of the Month *Jimmy Chui*

421 J.I.R. McKnight Problems Contest 1986

422 Another Do-It-Yourself Proof of the $n = 3$ case of Fermat's Last Theorem
Andy Liu

Everyone knows Fermat's Last Theorem, which states that the Diophantine equation $x^n + y^n = z^n$ has no solution in non-zero integers for all $n \geq 3$. This article offers a proof of the case $n = 3$ different from the one presented in R. Vakil, *A Do-It-Yourself Proof of the $n = 3$ case of Fermat's Last Theorem*, CRUX with MAYHEM **26** (2000) pp. 36–44.

426 An Interesting Application of the Sophie Germain Identity
Carl Johan Ragnarsson

The readers of this article should be familiar with modular arithmetic, and may also recall Sophie Germain's identity. This article deals with an application of the identity in solving the equation $3^x + 4^y = 5^z$.

429 Problems: 2576—2588

This month's “free sample” is:

2585. Proposed by Vedula N. Murty, Visakhapatnam, India.

For $0 < \theta < \pi/2$, prove that $\tan \theta + \sin \theta > 2\theta$.

432 Solutions: 2464, 2467, 2469–2476, 2478–79