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SYNOPSIS

Pages Item

49-53 **On the Generalized Ptolemy Theorem** *Shailesh Shirali*

Shirali shows some results on the relatively unknown Generalized Ptolemy Theorem. These include

Theorem 1: Circles Ω_1 and Ω_2 are externally tangent at a point I , and both are enclosed by and tangent to a third circle Ω . One common tangent to Ω_1 and Ω_2 meets Ω in B and C , while the common tangent at I meets Ω in A on the same side of BC as I . Then I is the incentre of triangle ABC .

and

Theorem 2: Let $\triangle ABC$ have circumcircle Γ , and let Ω be a circle lying within Γ and tangent to it and to the sides AB (at P) and AC (at Q). Then the midpoint of PQ is the incentre of $\triangle ABC$.

He also uses his results to give a different proof of Feuerbach's Theorem:

Theorem: The incircle and nine-point circle of a triangle are tangent to one another.

He challenges the readership to use the Generalized Ptolemy Theorem to find a new proof of Thebault's theorem:

Theorem: Let $\triangle ABC$ have circumcircle Γ , let D be a point on BC , and let Ω_1 and Ω_2 be the two circles lying within Γ that are tangent to Γ and also to AD and BC . Then the centres of Ω_1 and Ω_2 are collinear with the incentre of $\triangle ABC$.

54-56 **The Skoliad Corner: No. 12** *R.E. Woodrow*

Featuring the 1995 Alberta High School Mathematics Competition and the solutions to the Sharp UK Intermediate Mathematical Challenge (in last month's issue of CRUX).

57-69 **The Olympiad Corner:** No. 172 *R.E. Woodrow*

Featuring the Telecom 1993 Australian Mathematical Olympiad, the final round of the 1993 Japan Mathematical Olympiad, the “quick” solutions to the six Klamkin Quickies (in last month’s issue) and some readers’ solutions to previously published IMO (used or otherwise) problems.

70 **IMO95 Puzzles**

Two Dutch students at the 1995 IMO have written a very nice computer program to manipulate the 1995 IMO logo.

71-74 **Book Review** *Andy Liu*

Assessing Calculus Reform Efforts : A Report to the Community, edited by James Leitzel and Alan C. Tucker, 1995. Paperback, 100+ pages, US\$18.00, ISBN 0-88385-093-1.

Preparing for a New Calculus, edited by Anita Solow, 1994. Paperback, 250+ pages, US\$24.00, ISBN 0-88385-092-3.

Both published by The Mathematical Association of America, Washington, DC 20036.

Both reviewed by *Jack Macki*, University of Alberta.

74 A short **Biography** of Colin Bartholomew, the new Associate Editor.

75-77 **Problems:** 2114–2124

This month’s “free sample” is:

2124. *Proposed by Catherine Shevlin, Wallsend, England.*

Suppose that $ABCD$ is a quadrilateral

with $\angle CDB = \angle CBD = 50^\circ$ and $\angle CAB = \angle ABD = \angle BCD$.

Prove that $AD \perp BC$.

77 **Mathematical Literacy:** a couple of interesting quotations about mathematics – who said them originally?

78-96 **Solutions:** 1827, 2000, 2011, 2016–24, 2027–28