

28 : No 2 MARCH / MARS 2002

Published by :

Canadian Mathematical Society
Société mathématique du Canada
577 King Edward, POB/CP 450-A
Ottawa, ON K1N 6N5
Fax/Télec : 613 565 1539

©CANADIAN MATHEMATICAL SOCIETY 2001. ALL RIGHTS RESERVED.

SYNOPSIS

65 The Olympiad Corner : No. 220 *R.E. Woodrow*

Featuring the problems of the two days of the Turkish Mathematical Olympiad 1998; the Turkish Team Selection Examination for the 40th IMO, 1999; and the problems of the Final Round of the Japanese Mathematical Olympiad 1999; readers' solutions to : problems of the 13th Iranian Mathematical Olympiad 1995, given [1999 : 456]; problems of the Final (Selection) Round of the Estonian Mathematical Contests 1995-96 given [2000 : 6]; and the problems of the Japan Mathematical Olympiad, Final Round, 1996 given [2000 : 7].

82 Professor Toshio Seimiya

A very short appreciation of Professor Toshio Seimiya. See page 100 for a photograph of him.

83 Book Reviews *John Grant McLoughlin*

Teaching Statistics : Resources for Undergraduate Instructors
edited by Thomas L. Moore

Gardner's Workout : Training the Mind and Entertaining the Spirit
by Martin Gardner

86 On a "Problem of the Month"

Murray S. Klamkin

In the problem of the month [1999 : 106], one was to prove that

$$\sqrt{a+b-c} + \sqrt{b+c-a} + \sqrt{c+a-b} \leq \sqrt{a} + \sqrt{b} + \sqrt{c},$$

where a, b, c are sides of a triangle.

It is to be noted that this inequality will follow immediately from the Majorization Inequality.

Read on !

88 Substitutions, Inequalities, and History

Shay Gueron

A solution to the inequality (1996 Asian Pacific Mathematical Competition)

$$\sqrt{a+b-c} + \sqrt{a-b+c} + \sqrt{-a+b+c} \leq \sqrt{a} + \sqrt{b} + \sqrt{c} \quad (1)$$

where a, b, c are the sides of a triangle, appeared in Crux [1999 : 106]. It starts with the substitution $a = x + y, b = y + z, c = z + x$ ($x, y, z > 0$).

This substitution is referred to as the “Ravi Substitution” and reported to be known by this name, at least in Canadian IMO circles.

It seems that this awkward credit for the substitution diffused to wider circles. The same inequality (1) appears in a French problem solving book from 1999 [1, p. 146]. Although the solution proposed in [1] is different, it starts with the same substitution which, amazingly, is called there too the “Ravi Substitution”. Further, [1] includes several other mentions and applications of the “Ravi Substitution” [1, pp. 130, 146, 147, 155, 237].

Read on !

References

1. T.B. Soulamy. Les Olympiades de mathématiques ; Réflexes et stratégies. Ellipse, Paris (1999).

91 Mathematical Mayhem

- 91 Mayhem Problems
- 93 Challenge Board Solutions Konhauser 1–8
- 101 Problem of the Month *Jimmy Chui*
- 102 Skolid No. 60 *Shawn Godin*

110 Problems : 2713—2723

This month's “free sample” is :

2715. *Proposé par Toshio Seimiya, Kawasaki, Japan.*

Soit O le centre du cercle inscrit à un quadrilatère convexe $ABCD$. Si E et F sont respectivement les centres des cercles inscrits aux triangles ABC et ADC , montrer que A, O et le centre du cercle circonscrit au triangle AEF sont sur une droite.

.....

Suppose that the convex quadrilateral $ABCD$ has an incircle with centre O . Let E and F be the incentres of $\triangle ABC$ and $\triangle ADC$, respectively.

Prove that A, O and the circumcentre of $\triangle AEF$ are collinear.

115 Solutions: 2605, 2607, 2612–2615, 2617–2618, 2620