

38: No 5      May / Mai 2012

Published by:

Canadian Mathematical Society  
Société mathématique du Canada  
209 - 1725 St. Laurent Blvd.  
Ottawa, ON K1G 3V4, Canada  
Fax/Télé. : 613 733 8994

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### SYNOPSIS

166 Department Highlight No. 1: *The School of Mathematics and Statistics, Carleton University*

In this first installment of this new column, programs and activities of the School of Mathematics and Statistics, Carleton University in Ottawa are highlighted.

168 Skoliad: No. 140      *Lily Yen and Mogens Hansen*

Solutions to the National Bank of New Zealand Junior Mathematics Competition, 2010 given in Skoliad 131 at [2011:65 – 71] are presented.

174 The Contest Corner: No. 5      *Shawn Godin*

177 The Olympiad Corner: No. 303      *Nicolae Strungaru*

177      The Olympiad Corner Problems: OC81–OC85

178      The Olympiad Corner Solutions: OC21–OC25

182 Book Reviews      *Amar Sodhi*

182      *Voltaire's Riddle: Micromégas and the Measure of All Things*  
by Andrew Simoson

183 Focus On . . . : No. 2      *Michel Bataille*

In this second installment, long time *Cruz* contributor Michel Bataille uses geometric ideas to deal with algebraic problems. Enjoy!

186 Problem of the Month: No. 1      *Shawn Godin*

This is the first installment of an old *Mayhem* column, reformatted for *Cruz*. We look at a seemingly obvious problem of drawing a line in a plane in such a way as to separate one million points into two groups of equal number.

188 About the Japanese Theorem

*Nicușor Minculete, Cătălin Barbu and Gheorghe Szöllösy*

The authors present several new proofs of the Japanese Theorem, which relates the radii of several incircles related to triangles formed with the vertices of a cyclic quadrilateral. Applications of the Japanese Theorem are also explored. Enjoy!

194 Problems: 3724, 3741–3750

This month's "free sample" is:

**3741.** *Proposed by Péter Ivády, Budapest, Hungary.*

Find the largest value of  $a$  and the smallest value of  $b$  for which the inequalities

$$\frac{ax}{a+x^2} < \sin x < \frac{bx}{b+x^2},$$

hold for all  $0 < x < \frac{\pi}{2}$ .

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**3741.** *Proposé par Péter Ivády, Budapest, Hongrie.*

Trouver la valeur maximale de  $a$  et la valeur minimale de  $b$  pour lesquelles les inégalités

$$\frac{ax}{a+x^2} < \sin x < \frac{bx}{b+x^2},$$

sont satisfaites pour tout  $0 < x < \frac{\pi}{2}$ .

198 Solutions: 2597, 3641–3650