PROBLEMS AND SOLUTIONS

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It is with great sadness that we report the death of Professor James Bruening on September 9, 2007, following a lengthy bout with cancer. Jim served as the Problems Editor for the past four years, and it was a pleasure and honor to work with him. His dedication and service will be missed by all who knew him. In recognition of his contributions, we dedicate the Problems and Solutions for 2008 to his memory.

—Lowell Beineke, *CMJ* Editor, and Shing So, Problems Editor

This section contains problems that challenge students and teachers of college mathematics. We urge you to participate actively by submitting solutions and by proposing problems that are new and interesting. To promote variety, the editors welcome problem proposals that span the entire undergraduate curriculum.

Whenever possible, a proposed problem should be accompanied by a solution, appropriate references, and any other material that would be helpful to the editors. Each proposal or solution should be typed or printed neatly on separate sheets of paper, with your name and affiliation (if desired) on each page. Include a self-addressed, stamped envelope or postcard (preferred) if you want us to acknowledge the receipt of your contribution.

Solutions to the problems in this issue must be postmarked no later than June 15, 2008 and may be mailed to **Shing So** at the address provided above (preferred) or sent via e-mail (as a pdf, TeX, or Word attachment) to so@ucmo.edu.

Proposed problems may be mailed to **Curtis Cooper** at the University of Central Missouri address or as an attachment (pdf, TEX, or Word file) to an e-mail to cooper@ucmo.edu. Proposers should submit problems only if the proposed problem is not under consideration by another journal.

PROBLEMS

871. *Proposed by Greg Oman, Ohio State University, Columbus, Ohio.*

Determine all positive integers n for which the equation $x(x+n) = y^2$ has a solution in positive integers x and y.

872. *Proposed by José Luis Díaz-Barrero, Universidad Politécnica de Cataluña, Barcelona, Spain.*

Prove that, for every positive n,

$$\left(\sum_{k=0}^{n} \frac{2(-1)^k}{(n-k)!\,(n+k)!}\right)^{1/n} \geq \frac{6}{(n+1)(2n+1)}.$$