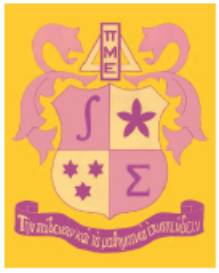

DEPARTMENT OF MATHEMATICS

Math Club

Problem of the Fortnight

An *arithmetic sequence* is one in which any two consecutive terms have the same difference. For example $2, 5, 8, 11$ is a four term arithmetic sequence whose difference is 3. A *geometric sequence* is one in which any two consecutive terms have the same ratio. For example $3, 6, 12, 24$ is a four term geometric sequence whose ratio is 2.

Suppose we have a 100 by 100 grid and in each square there is a positive number. The numbers in each row form an arithmetic sequence, and the numbers in each column form a geometric sequence. Prove that all of the geometric sequences in the columns must have the same ratio. A 3 by 3 example is shown below.

2	5	8
6	15	24
18	45	72

Please turn in your solutions to Patrick Bennett, by noon on **Friday, February 1**. Strive for clarity, neatness and legibility! Solutions may be turned into the Math Dept office in 3319 Everett Tower. Electronic submissions may be sent to **patrick.bennett@wmich.edu**. Please include your name and email address. If you are currently taking a math class, please include the instructor's name and the course number.

http://www.wmich.edu/mathclub