

The Second Annual
UTAH MATH OLYMPIAD

for mathematically motivated high school students

Saturday, March 22, 2014
3:00 – 6:00 pm
held at the University of Utah & BYU

Participation is free!
Register online at www.utmath.org by **March 15**.
Prize money will be distributed to the top scorers.

Please direct questions to contact@utmath.org,
or refer to our website for more information.

Pre-Contest

A $m \times n$ matrix of nonnegative real numbers is called “balanced” if the average of the values in any row or column is equal to 1. Find the maximum possible value of the **minimum nonzero element** in a balanced 4×5 matrix.

$$\begin{bmatrix} 1.5 & 1.75 & 1.75 & 0 & 0 \\ 0 & 1.25 & 1.25 & 1.25 & 1.25 \\ 1.5 & 0 & 0 & 1.75 & 1.75 \end{bmatrix}$$

Example of a balanced 3×5 matrix with
minimum nonzero element 1.25.

To enter the pre-contest, submit a complete solution (not just an answer) to contact@utmath.org. There will be a prize for the best solution. Further details are posted at www.utmath.org.

University of Utah
LeRoy Cowles Building
Room 219

Brigham Young University
Talmage Building
Room TBA

