

Mathematics Competition

Problem #3 of five - October 18 to November 1, 2013

A room has the shape of a cube with size $10 \times 10 \times 10$. 2013 butterflies are flying around in this room. Prove that at every instant, three or more butterflies are inside a $1 \times 1 \times 1$ cube in the room. Note: Think of each butterfly as a point.

Direct any questions to Gregory Galperin, OM 3361, or Keith Wolcott, OM 3341

Rules and Awards

- Any undergraduate currently enrolled at EIU is eligible to participate.
- Each solution is to be the work of one individual and is to be submitted with the solver's name, year in school, email address, local address and home address.
- Each solution is to be written or typed and is due in the main Mathematics Department office (OM3611) by **2:00 p. m., Friday, November 1.**
- Entries will be judged on the basis of clarity of exposition and elegance of solution.
- Up to \$40 will be distributed as prize money for each problem. It will be distributed based on the quality of the solutions, but roughly, an award of \$10 will be awarded for the best solutions and \$5 will be awarded for partial solutions. In the case that there are many correct solutions, we will have a drawing for the prizes and in case no award is made, the prize money will be added to the next problem's prize fund.
- **Challenges, solutions, names of all solvers, and comments will be posted on the Challenge of the Week homepage:**
<http://www.eiu.edu/math/challenge.php>