Challenge of the Week

Challenge of the Week # 6 - October 2 to October 16, 2009

Let n be an integer.

1. Show that if n is not a multiple of three, then $n^6 - 1$ is an integral multiple of 9.
2. Show that if n is not a multiple of two, then $n^8 - 1$ is an integeral multiple of 16.

Direct any questions concerning this week's challenge to Kamlesh Parwani, OM 3351

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, October 16.
- Entries will be graded on the basis of clarity of exposition and elegance of solution.
- An award of $20 will be given for the best solution. In the case of a two-way tie, the award will be split. If there are more than two 'best' solutions, a drawing will be held for the award. In case no award is made for this week's challenge, $20 will be added to the next week's award.
- Names of all solvers will be posted on the Challenge of the Week bulletin board and on the Challenge of the Week homepage: http://www.ux1.eiu.edu/~dmbroline/chalweek/index.html