Problem of the three weeks
November 2009

We are pleased to inform that Tim Courrejou wrote the best* solution for the October 2009 Problem of the Month, and that we have decided to give Michael Watkins a honorable mention for his solution. They have won the right to brag, and be correct in any mathematical discussion** that is held in November 2009. Congratulations Tim and Michael!

We thank to all those who wrote solutions to last month's problem. We encourage you to keep submitting your solutions.

You will have until **November** 24^{th} to solve the problem below (note the short 'month'). Solutions can be either

1. written neatly on a sheet of paper and dropped in the mailbox outside PB 352, or
2. typed up using your favorite text editing software (LaTeX preferred) and then turned in via email at either asabuwala@csufresno.edu or ovega@csufresno.edu.

At the end of the month, we will review all your solutions and post the names of the individuals who have turned in complete correct solutions, and who wrote the best* solution.

Bragging rights winners, solutions, past (and future) problems of the month, etc can be found on

$$http://csufresno.edu/math/news_and_events/pom.shtml$$

Problem for November 2009.

It is clear that any number such as

$$\begin{aligned} 333 &= 3(111) \\ 555555555 &= 5(111111111) \\ 4444 &= 4(1111) \\ 7777777777777777777 &= 7(11111111111111111111) \end{aligned}$$

cannot be prime, however 11 is prime, so a number formed by n consecutive 1's could be prime!

Show that if

$$111111111111\cdots111111111111$$

(n ones in a row) is prime then n must be prime.

* A solution will be considered better than other in terms of being correct, thoroughness of the explanation, beauty of the idea used, etc.

** Exams, quizzes, homework not included. Not valid where voided and with non-participating professors.