The William Lowell Putnam Mathematical Competition

takes place Saturday, December 1, 2012.
In 2011, the Stanford team placed fourth.

Sign-up and Introductory Meeting
Mon. Sept. 24, 6:00 pm, in Bldg. 380 − Room 380Y

We will also meet regularly on Monday evenings from 6PM for the problem-solving preparatory sessions (a.k.a. the Polya Problem-Solving Seminar, or as the 1 credit course Math 193). If you can't make it and are even potentially interested, please e-mail ksound@math.stanford.edu.
For more information: http://math.stanford.edu/~ksound/Polya.html

Sample problems:
1. 1992A1. Prove that $f(n) = 1 - n$ is the only integer-valued function defined on the integers that satisfies the following conditions:

(i) $f(f(n)) = n$, for all integers n;

(ii) $f(f(n + 2) + 2) = n$ for all integers n;

(iii) $f(0) = 1$.

2. Suppose you color each point on your table red, white or blue. Must there necessarily be two points of the same color exactly one inch apart?

3. 1987A2. The sequence of digits

$$1234567891011121314151617181920 21 \ldots$$

is obtained by writing the positive integers in order. If the $10^{n\text{th}}$ digit in this sequence occurs in the part of the sequence in which the m-digit numbers are placed, define $f(n)$ to be m. For example, $f(2) = 2$ because the 100th digit enters the sequence in the placement of the two-digit integer 55. Find, with proof, $f(1987)$.