

The William Lowell Putnam Mathematical Competition

takes place Saturday, December 1, 2007.

In 2006, Stanford placed sixth.

Sign-up and Introductory Meeting
Mon. Oct. 1 5:15–5:45 pm, in 380–383N

We will also discuss times and dates of problem-solving preparatory sessions. If you can't make it and are even potentially interested, please e-mail vakil@math.stanford.edu.

For more information: <http://math.stanford.edu/~vakil/putnam07/>

Sample problems:

1. Shanille O'Keal shoots free throws on a basketball court. She hits the first and misses the second, and thereafter the probability that she hits the next shot is equal to the proportion of shots she has hit so far. What is the probability she hits exactly 50 of her first 100 shots?
2. Let n be an even positive integer. Write the numbers $1, 2, \dots, n^2$ in the squares of an $n \times n$ grid so that the k -th row, from left to right, is

$$(k-1)n+1, (k-1)n+2, \dots, (k-1)n+n.$$

Color the squares of the grid so that half of the squares in each row and in each column are red and the other half are black (a checkerboard coloring is one possibility). Prove that for each coloring, the sum of the numbers on the red squares is equal to the sum of the numbers on the black squares.

3. The horizontal line $y = c$ intersects the curve $y = 2x - 3x^3$ in the first quadrant as in the figure. Find c so that the areas of the two shaded regions are equal.

