PROBLEM OF THE WEEK
Solution of Problem No. 9 (Spring 2012 Series)

Problem: Prove there is no distance preserving map from a spherical cap to the plane.

Solution: (by Hubert Desprez, Paris, France)

Let \( \varphi : \pi \to \pi' \) such a map, and \( (C) \) a circle as boundary of cap of sphere, and \( (ABC) \) an equilateral triangle in \( (C) \).

\[ OA = OB = OC \] and \( PA = PB = PC \) imply that \( O' \) and \( P' \) are both circumcenters of triangle \( A'B'C' \): a contradiction with \( O'P' = OP > 0 \), so there is no such \( \varphi \).

The problem was also solved by:

Undergraduates: Kaibo Gong (Sr. Math)

Graduates: Dat Tran (Math), Yu Tsumura (Math), Tairan Yuwen (Chemistry)

Others: Manuel Barbero (New York), Gruian Cornel (Cluj-Napoca, Romania), Tom Engelsman (Tampa, FL), Talal Al Fares (Hasbaya, Nabatieh, Lebanon), Elie Ghosn (Montreal, Quebec), Steven Landy (Physics Faculty, IUPUI), Sorin Rubinstein (TAU faculty, Israel), Steve Spindler (Chicago)