PROBLEM OF THE WEEK
Solution of Problem No. 13 (Spring 2002 Series)

Problem: The medians of a given triangle T divide T into six triangles. Prove that the centroids of these triangles lie on an ellipse whose center is the centroid of T.

Solution (by the Panel)

Make an affine transformation A that turns triangle T into an equilateral triangle T'. Affine transformations turn medians into medians, centroids into centroids, ellipses into ellipses, centers of ellipses into centers. In the triangle T' the six triangles formed by the medians are congruent and their centroids have the same distance from the center of T', hence lie on a circle with center at the centroid (center) of T'. Their images under A^{-1} lie on an ellipse with center at the centroid of T.

No solutions to this problem were received.