# PROBLEM OF THE WEEK 

Solution of Problem No. 14 (Fall 2004 Series)

Problem: Let $K$ be any circle, and let $A, B$ be distinct points on $K$. Describe the locus of the centroids of all triangles $A B C$ with $C \in K$.

Solution (by Georges Ghosn, Quebec)
The centroid $G$ of the triangle $A B C$ is the image of $C$ in the homothety with homothetic center $I$ the middle point of $A B$ and semilitude ratio $\frac{1}{3} \cdot\left(\overrightarrow{I G}=\frac{1}{3} \overrightarrow{I C}\right)$

So the locus of $G$ is the circle $K^{\prime}$ image of $K$ by this homothety. $K^{\prime}$ has the centroid of $O A B$ as a center and a radius equal $\frac{1}{3}$ the radius of $K .(O$ is the center of $K)$

Also solved by:

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