Bilkent University
Department of Mathematics

PROBLEM OF THE MONTH

Term: March 2012

We say that a rational number $r \in (0,1)$ is n-good if the decimal expansion of r is: $r = 0.r_1 r_2 \ldots, r_n$ and $r_i \neq 9$ for all $i = 1, 2, \ldots, n$. Let G_n be the set off all n-good numbers. Find the limit

$$\lim_{n \to \infty} \frac{|G_n|}{S_n}$$

where $|G_n|$ is the number of elements in G_n and S_n is the sum of all elements of G_n.