Anatomy of a Number
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Congruences of sum of digits of polynomial values

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Abstract

For $q \geq 2$ q and n a positive integer, we denote by $s_q(n)$ the sum of digit of n in basis q. Let $f \in Z[x]$ such that $f(n) \geq 0$ forall $n > 0$. We suppose that d, the degre of f is greater than 2. Let a and m be two integers such that $(m, q-1) = 1$. We prove that there exists $C = C(f, q, m) > 0$ such that for $N > N_0$ there exists at least $CN^{2/d!}$ integers $n < N$ such that $m | s_q(f(n)) - a$. When $f(n) = n^2$, $q = m = 2$, we prove that $C = 1/20$ is admissible.

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