Cui, Zhen

Let \( s(n) \) denote the sum of the base 10 digits of the positive integer \( n \), and let \( a \) be any fixed positive number. In this paper, the author gets an asymptotic formula for the sum \( \sum_{n<x} s(n)^a \) and gives the main terms and the coefficients to arbitrary order. The estimate is a generalization of the result of Yu Xiuyuan and Cui Zhen [Acta Math. Sin. 41, 881-888 (1998; Zbl 1020.11060)], where an asymptotic formula of the same type for the case \( a = k \in \mathbb{N} \) was obtained.

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