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Simone Sisneros-Thiry* (thiry2@illinois.edu). *Quotients of integers with restricted digit sets mod b .*

We discuss some conjectures and results about integers which can be written as a quotient of elements with a restricted set of digits in base b :

$$\sum_{j=0}^n a_j b^j, a_j \in A; \quad A = \{0, a_1, \dots, a_r\}$$

For example, if $b = 3$ and $A = \{0, 1\}$, then every integer quotient can be written as $3^m \cdot n$, where $n \in \cup_{k=0}^{\infty} (\frac{2}{3}, \frac{3}{2}) 3^k$ and $n \equiv 1 \pmod{3}$. The smallest such integer which satisfies these conditions and does *not* have such a representation is 529. The proof involves the construction of digraphs (representing finite state automata). We will discuss other values of b and digit sets $\{0, a_1, \dots, a_r\}$. (Received September 17, 2019)