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Perfect powers with few binary digits and related Diophantine problems

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Abstract. We prove that, for any fixed base $x \geq 2$ and sufficiently large prime q , no perfect q -th power can be written with 3 or 4 digits 1 in base x . This is a particular instance of rather more general results, whose proofs follow from a combination of refined lower bounds for linear forms in Archimedean and non-Archimedean logarithms.

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