Jose Arnaldo B. Dris and Florian Luca
A Note on Odd Perfect Numbers,
Fibonacci Quart. **54** (2016), no. 4, 291–295.

Abstract

In this note, we show that if N is an odd perfect number and q^α is some prime power exactly dividing it, then $\sigma(N/q^\alpha)/q^\alpha > 5$. In general, we also show that if $\sigma(N/q^\alpha)/q^\alpha < K$, where K is any constant, then N is bounded by some function depending on K.