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**Title:** Powerful numbers in the product of consecutive integer values of a polynomial

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Let  $n$  and  $r$  be positive integers. Also let  $k$  be an odd positive integer and  $d$  be a non-negative integer. In this paper, we prove that if  $k$  has at most four distinct prime factors, then the product  $((d+1)^k + r^k)((d+2)^k + r^k) \cdots ((d+n)^k + r^k)$  is not a powerful number for  $n \geq \max\{r+d, 59-r-d\}$ . As a consequence, we prove that if  $k$  has at most four distinct prime factors, then the product  $(1^k + 1)(2^k + 1) \cdots (n^k + 1)$  is not a powerful number.

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