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## Asymptotic Notation

Prove or contradict each claim.

1.  $2^{n+10} = O(2^n)$

2.  $2^{10n} = O(2^n)$

3. for every  $k \geq 1$ ,  $n^k$  is **not**  $O(n^{k-1})$

4.  $21n (\log_2(n) + 1) = \Theta(n \log_2 n)$