Ron Graham's (A006255) sequence is the least k for which there exists a strictly increasing sequence

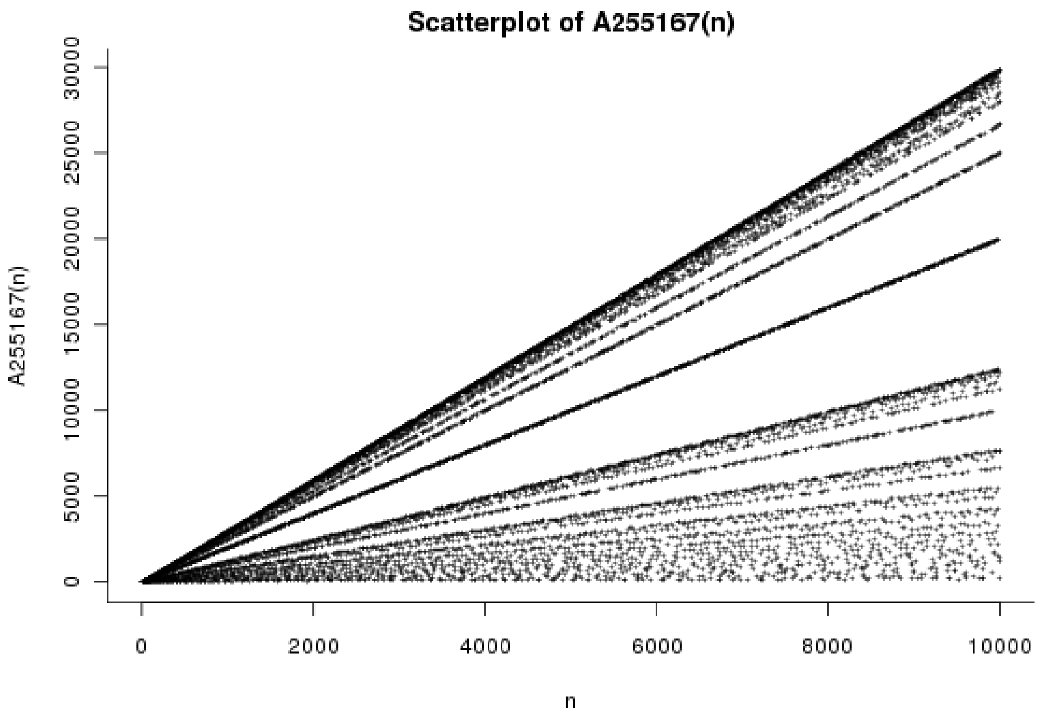
$$n = a_1 \leq a_2 \leq \ldots \leq a_T = k \text{ where } a_1 \cdot \ldots \cdot a_T \text{ is square.}$$

A006255 is bounded above by A072905, the least $k > n$ such that $k \cdot n$ is square.

**Question.** Does there exist any $n$ for which $A006255(n) = A072905(n)$. In other words, is there any non-square $n$ for which $n \cdot A006255(n)$ is square?

**Related.**

1. Does the gap $A072905(n) - A006255(n)$ have a nonzero lower bound?




**References.**

https://oeis.org/A006255

https://oeis.org/A072905

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