(17) We will prove that the sequence $\{a_n b_n\}$ diverges to $+\infty$. Fix M, a positive real number. We will show that $\exists n_0$ s.t. $n \geq n_0 \Rightarrow M < a_n b_n$.

The sequence $\{b_n\}$ converges to $\frac{1}{10^6}$, so $\exists n_1$ such that for all $n \geq n_1$ $\frac{1}{10^7} \leq b_n$.

The sequence $\{a_n\}$ diverges to $+\infty$, so $\exists n_2$ s.t. for all $n \geq n_2$ $M10^7 \leq a_n$

Let n_0 be the maximum of n_1 and n_2. If $n \geq n_0$ then $\begin{cases} \frac{1}{10^7} \leq b_n \\ \text{and} \\ M10^7 \leq a_n. \end{cases}$ It follows that $M = M10^7 \cdot \frac{1}{10^7} \leq a_n b_n$, as desired. Thus the sequence $\{a_n b_n\}$ diverges to $+\infty$.