Putnam E.03

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1 Problems

Putnam 1979/A1. Find the set of positive integers with sum 1979 and maximum possible product.

Putnam 1979/A2. For which reals C can we find a continuous function $f : \mathbb{R} \to \mathbb{R}$ such that $f(f(x)) = Cx^9$ for all x?

Putnam 1979/A3. Let the sequence a_n be defined by $a_1 = \alpha$, $a_2 = \beta$, and $a_{n+2} = \frac{a_n a_{n+1}}{2a_n - a_{n+1}}$, and suppose that α and β are chosen so that $a_{n+1} \neq 2a_n$. For which α and β are infinitely many a_n integral?