Problem No. 5 (Spring 2005 Series)

Suppose \( \{a_n\}_{n=1}^{\infty} \) be recursively defined by \( a_0 > 1, a_1 > 0, a_2 > 0 \),

\[
a_{n+3} = \frac{1 + a_{n+1} + a_{n+2}}{a_n}, \quad \text{for} \quad n = 0, 1, 2, \ldots
\]

Show that \( a_n \) has period 8, i.e.

\[
a_{n+8} = a_n \quad \text{for any} \quad n \geq 0.
\]