

$$\begin{aligned}
 \Delta e &= e_{n+1} - e_n = \frac{c_{n+1}}{a_{n+1}} - \frac{c_n}{a_n} = \frac{c_{n+1}a_n - c_na_{n+1}}{a_{n+1}a_n} = \frac{c_{n+1}a_n - c_na_n + c_na_n - c_na_{n+1}}{a_{n+1}a_n} \\
 &= \frac{a_n(c_{n+1} - c_n) - c_n(a_{n+1} - a_n)}{a_{n+1}a_n} = \frac{a_n\Delta c_n - c_n\Delta a_n}{a_{n+1}a_n} < 0,
 \end{aligned}$$