Let \( A \in \mathbb{R} \) and let \((a_n)\) be the following recursively defined sequence:

\[
\begin{align*}
    a_1 & = A \\
    a_{n+1} & = \frac{1}{4 - a_n}
\end{align*}
\]

Investigate the convergence behavior of this sequence, i.e. find out for which \( A \in \mathbb{R} \) the sequence converges, and if yes, what the limit is.

Suggestions:

- Try \( A = 3 \) as an example.
- Consider the difference \( a_{n+1} - a_n \) and write it as a function \( f(a_n) \). Sketch \( f \) and find the open intervals where this function is positive and negative.
- To prove convergence, establish bounds and increasing or decreasing behavior.