Extra homework 2

1. Let $\alpha \in (0,1)$ and $x_1, x_2 \in \mathbb{R}$. Study the convergence of the sequence (x_n) given by

$$x_{n+2} = \alpha x_{n+1} + (1-\alpha)x_n, \quad \forall n \in \mathbb{N}.$$

2. Give an example of a sequence having the set of limit points equal to $[0,1]$. Justify.

These questions are extra. You will get bonus points for solving them.
Solutions should be uploaded on Teams before the next lecture.