03 Sequences satsifying linear recursions

A sequence $(x_n)_{n\geq 0}$ satisfies a linear recursion of order k if and only if there exist constants $a_i, i = 0 : k$, with $a_k \neq 0$, such that:

$$\sum_{i=0}^{k} a_i x_{n+i} = 0, \forall n \geq 0$$