

LINEAR RECURSION PROBLEM: (from quantum mechanics) How does u_n grow if $u_{n+1} + u_{n-1} = u_n$ and $u_0 = 0, u_1 = 1$. Plot $(x_n, y_n) = (u_n, u_{n-1})$ for different initial conditions like for example $(2, 0), (0, 4)$.

The map is now

$$\begin{bmatrix} x \\ y \end{bmatrix} \mapsto \begin{bmatrix} 1 & -1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix}$$

