

Z 6

$$a_n > 0$$

$$\begin{cases} a_0 = 2 \\ a_n^2 = 2a_{n-1}^2 + 1 \end{cases}$$

$$b_n := a_n^2$$

$$\begin{cases} b_0 = 4 \\ b_n = 2b_{n-1} + 1 \end{cases}$$

$$E \langle b_n \rangle = \langle b_{n+1} \rangle = \langle 2b_{n-1} \rangle + \langle 1 \rangle$$

Anihilator: $(E-2)(E-1)$

$$b_n = \alpha 2^n + \beta$$

$$b_0 = \alpha + \beta = 4$$

$$b_1 = 2\alpha + \beta = 9$$

$$2\alpha + \beta - (\alpha + \beta) = 9 - 4$$

$$\alpha = 5, \beta = -1$$

$$b_n = 5 \cdot 2^n - 1 = a_n^2$$

$$a_n = \sqrt{5 \cdot 2^n - 1}$$