2-D

$a_{n+2} = -4a_{n+1} + 5a_n, n \geq 0$
$a_0 = 2, a_1 = 8$

Scribe

$a_{n+2} = -4a_{n+1} + 5a_n \quad n \geq 0 \qquad a_0 = 2 \quad a_1 = 8$

$x^2 + 4x - 5 = 0$

$(x + 5)(x - 1)$

$r_1 = -5 \quad \wedge \quad r_2 = 1$

$a_n = K_1 r_1^n + K_2 r_2^n$

$* \; 2 = (-5)^2 K_1 + K_2$

$2 = 25 K_1 + K_2 \quad ①$

$* \; 8 = (-5)^8 K_1 + K_2$

$8 = 390625 K_1 + K_2 \quad ②$

$-① \Rightarrow \quad -2 = -25 K_1 - K_2$

$② \Rightarrow \quad 8 = 390625 K_1 + K_2$

$6 = 390600 K_1$

$K_1 = \frac{6}{390600}$

Reemplazo en ①

$2 = 25 \cdot \left(\frac{6}{390600}\right) + K_2$

$2 = \frac{1}{2604} + K_2 \Rightarrow K_2 = \frac{5207}{2604}$

3 – A

a) $a_{n+1} - 1.5a_n = 0, n \geq 0$

3 - a.

$a_{n+1} - 1,5a_n = 0 \quad , \quad n \geq 0$

$a_n = 1 \times (1,5)^n$

4 – 6

$$a_n - 6a_{n-1} + 9a_{n-2} = 0, \quad n \geq 2, \quad a_0 = 5, \quad a_1 = 12$$

nombre = sara

len(nombre) = 4

condiciones iniciales

$a_0 = 5$, $a_1 = 12$

$a_0 \cdot 4 = 20$, $a_1 \cdot 4 = 48$

$a_n - 6a_{n-1} + 9a_{n-2} = 0$

$x^2 - 6x + 9 = 0$

$(x-3)(x-3) = 0$

$r = 3$

$a_n = k_1 r^n + k_2 \cdot n \cdot r^n$

$20 = k_1 (3)^{20} + k_2 \cdot 20 \cdot (3)^{20}$ ①

$48 = k_1 (3)^{48} + k_2 \cdot 48 \cdot (3)^{48}$ ②

Utilizamos Calmatrix

$$k_1 = \frac{1830143396396800}{18612170051270252301 4509}$$

$$k_2 = -\frac{3812798742 4931}{186121700512702523014509}$$

$$x_1 = \frac{1830143396396800}{18612170051270252301 4509}$$

$$x_2 = \frac{-38127987424931}{18612170051270252301 4509}$$

Colab:

https://colab.research.google.com/drive/1SwYTsRUYtQAz6HeQ_ilirmcD08Kf-wfk?usp=sharing