$$T(n) = 3T(n-1) + 8T(n-3), \quad \begin{array}{l} T(0) = 0 \\ T(1) = 0 \\ T(2) = 1 \end{array}$$

$$\underline{1\,T(n) - 3T(n-1) - 8T(n-3) = 0}$$

$$1\,X_0^3 - 3X_1^2 - 0\,X_2^1 - 8X_3^0 = 0$$

$T(n-2)$

$\nearrow$

$\neg$ Seguido

$$\underline{X^3 - 3X^2 - 8 = 0}$$

Pol. Carac

Ruffini

$$\underline{(x-3)(x+3)(x-2) = 0}$$

$r_i^n \cdot n^{m-1}$

$$\begin{cases} r_1 = 3 & m_1 = 1 \longrightarrow 3^n \\ r_2 = \underline{-3} & m_2 = 1 \longrightarrow (-3)^n \\ r_3 = 2 & m_3 = 1 \longrightarrow 2^n \end{cases}$$

$(-3)^n \cdot n^0$
$(-3)^n \cdot n^1$
$(-3)^n \cdot n^2$

Raíces

$$\underline{T(n) = a \cdot 3^n + b \cdot (-3)^n + c \cdot 2^n}$$

Sol. Parcial

$$[1] \begin{cases} T(0) = a \cdot 3^0 + b(-3)^0 + c \cdot 2^0 = a + b + c \\ T(0) = 0 \end{cases}$$

$$a + b + c = 0$$

$$T(n) \begin{cases} T(1) = 3a - 3b + 2c \\ T(1) = 0 \end{cases}$$

$$\begin{cases} a + b + c = 0 \\ 3a - 3b + 2c = 0 \\ 9a + 9b + 4c = 1 \end{cases} \rightsquigarrow (a, b, c) = (1, 3, 0)$$

$$T(n) = 1 \cdot 2^n + 3 \cdot (-3)^n + 0 \cdot 3^n$$

$$\underline{T(n) = 2^n + 3(-3)^n}$$

Sol. General

Si el término dominante es negativo:

EL EJERCICIO está HORRIBLE.

$$¿ \; T_2(n) = 2^n - 3^n \; ?$$

$$T(n) = 2T(n-2) + T(n-1) + 3^n (\log(n))$$

$T(0) = 0$
$T(1) = 1$
$T(2) = 1$

$$\left((x-2) \cdot (x-1) \right) (x-3)^{1+1} = 0$$

$$(x-2)(x-1)(x-3)^2 = 0$$

$$\begin{cases} r_1 = 2 & m_1 = 1 \rightarrow 2^n \\ r_2 = 1 & m_2 = 1 \rightarrow 1 \\ r_3 = 3 & m_3 = 2 \rightarrow 3^n, \; 3^n \cdot n \end{cases}$$

$$T(u) = a2^n + b + c3^n + d3^n \cdot n$$

1: $T(0) \rightarrow$

2: $T(1) \rightarrow$

3: $T(2) \rightarrow$

4: $T(3) = 2T(1) + 1T(2)$