Punto 1

$x_0 = 4\sin^2\theta$

$x_{n+1} = 4x_{n-1} - (x_{n-1})^2$

Primera

Para $n=0$

$x_0 = 4\sin^2\theta$

Para $n=1$

$x_1 = 16\sin^2\theta\cos^2\theta$

Para $n=2$

$x_2 = 4(16\sin^2\theta\cos^2\theta - (16\sin^2\theta\cos^2\theta))^2$

$x_n = 4\sin^2((2n+1)\theta)$

Son recursivas porque conducen a una expresion general

Primera $= 4\sin^2((2n+1)\theta)$

Segunda $= \sin^2((2n+1)\theta)$

$\theta \in [0, \frac{\pi}{2}]$

R Segunda

$x_{n+1} = 4x_n - 4x_n^2$.

$x_0 = \sin^2\theta$

Para $x=0$

$x_0 = \sin^2\theta$

Para $x=1$

$x_1 = 4\sin^2\theta\cos^2\theta$

Para $x=2$

$x_2 = 4(4\sin^2\theta\cos^2\theta) - 4(4\sin^2\theta\cos^2\theta)^2$

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Punto 5

Tenemos $Ax = b$

$$A = \begin{pmatrix} A_{00} & 0 & 0 & \cdots & 0 \\ A_{10} & A_{11} & 0 & \cdots & 0 \\ \vdots & & & \ddots & 0 \\ & & & & \vdots \\ A_{N0} & & & & A_{NN} \end{pmatrix}$$

Descomponemos la matriz como

$$A_{00} x_0 = b_0$$
$$A_{10} x_0 + A_{11} x_1 = b_1$$
$$\cdots\cdots$$

Sustitucion hasta adelante

$$x_0 = \frac{b_0}{A_{00}}$$

$$x_1 = \frac{b_1 - A_{10} x_0}{A_{11}}$$

$$\cdots\cdots$$

Expresion

$$A_{ii} x_i = b_i - \sum_{j=0}^{i-1} A_{ij} x_j$$

$$x_i = \frac{b_i \sum_{j=0}^{i-1} A_{ij} x_j}{A_{ii}}$$

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Punto 6

igual que el Puntos

$Ax = b$

$$A = \begin{pmatrix} A_{00} & \cdots & \cdots & 0 \\ \vdots & \ddots & \cdots & 0 \\ \vdots & & \ddots & 0 \\ \vdots & \cdots & \cdots & A_{nn} \end{pmatrix}$$

Se expresa

$$A_{00}x_0 + A_{01}x_1 + A_{02}x_2 \ldots\ldots + A_{0n}x_n = b_0$$

$$\vdots$$

$$A_{nn}x_n = b_n$$

Resolviendo

$$x_n = \frac{b_n}{A_{nn}}$$

$$x_{n-1} = \frac{b_{n-1} A_{(n-1)n} x_n}{A_{(n-1)(n-1)}}$$

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Expresion general

$$A_{ii} x_i + \sum_{j=i+1}^{n} A_{ij} X_j = b_i$$

$$\Downarrow$$

$$X_i = \frac{b_i - \sum_{j=i+1}^{n} A_{ij} x_j}{A_{ii}}$$

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