

$$\begin{bmatrix} 4 & -1 & 0 \\ -1 & 4 & -1 \\ 0 & -1 & 4 \end{bmatrix} x = \begin{bmatrix} 2 \\ 4 \\ 10 \end{bmatrix} \quad n=3$$

$$x_i^{(k+1)} = \frac{1}{a_{ii}} \left[b_i - \sum_{j=1}^{i-1} a_{ij} x_j^{(k)} - \sum_{j=i+1}^n a_{ij} x_j^{(k)} \right]$$

$$x_i^{(k+1)} \sim - \sum_{j=1}^{i-1} x_j^{(k)} - \sum_{j=i+1}^n x_j^{(k)}$$

$$: x_1^{(1)} \sim -x_2^{(1)} - x_3^{(1)}$$

ANALOGOUS EXAMPLE

$$\begin{aligned} 4x_1 - x_2 &= 2 \rightarrow x_1^{(k+1)} = \frac{1}{4}(2 + x_2^{(k)}) \\ -x_1 + 4x_2 - x_3 &= 4 \rightarrow x_2^{(k+1)} = (4 + x_1^{(k)} - x_3) \\ -x_2 + 4x_3 &= 10 \rightarrow \end{aligned}$$

$$n=3$$

$$\begin{aligned} x_1^{(1)} &\sim -x_2^{(1)} - x_3^{(1)} \\ x_2^{(1)} &\sim -x_1^{(1)} - x_3^{(1)} \\ x_3^{(1)} &\sim -x_1^{(1)} - x_2^{(1)} \end{aligned}$$

$$\begin{bmatrix} x_1 & x_2 \end{bmatrix}$$

$$\begin{bmatrix} 2 & -1 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$

$$\begin{aligned} x_1^{(k+1)} &\sim -x_2^{(k)} \\ x_2^{(k+1)} &\sim -x_1^{(k)} \end{aligned}$$

$$\begin{bmatrix} x_1 & x_2 \\ x_1 & x_2 \end{bmatrix}$$

NOTE

CANCEL 2017 SUMMER GRAD APP
MASTER PHYSICAL THEORY

Master Physical Theory