Sustitucion hacia adelante.

Para un sistema lineal:

$$E_1 = a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n = b_1$$
$$E_2 = a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n = b_2$$
$$\vdots \qquad \vdots \qquad \vdots$$
$$E_n = a_{n1} + a_{n2} + \dots + a_{nn}x_n = b_n$$

Se plantea la matriz ampliada A:

$$A = [A, b] = \left(\begin{array}{cccc|c} a_{11} & a_{12} & \cdots & a_{1n} & a_{1,n+1} \\ a_{21} & a_{22} & \cdots & a_{2n} & a_{2,n+1} \\ \vdots & \vdots & & \vdots & \vdots \\ a_{n1} & a_{n2} & \cdots & a_{nn} & a_{n,n+1} \end{array}\right)$$

donde: $a_{1,n+1} = b_i$

Usando metodos de eliminacion se obtiene el sistema diagonal

$$A^{(f)} = \left(\begin{array}{cccc|c} a_{11} & 0 & \cdots & 0 & a_{1,n+1} \\ a_{21} & a_{22} & \cdots & 0 & a_{2,n+1} \\ \vdots & \vdots & & \vdots & \vdots \\ a_{n1} + & a_{n2} & \cdots & a_{nn} & a_{n,n+1} \end{array}\right)$$

Tal que:

$$x_1 = \frac{b_1}{a_{11}} \quad , \quad Y_2 = \frac{b_2 - a_{21}x_1}{a_{22}}$$

Continuando este proceso para x_n:

$$x_k = \frac{b_n - \sum_{j=1}^{k-1} a_{ij}x_j}{I_{kk}} \qquad \begin{array}{l} k = 1, 2, 3, \dots n-1 \\ j = 1, 2, 3, \dots n-1 \end{array}$$