Critério de Sassenfeld: $S_1 = \dfrac{1}{|\, a_{11}\,|}\,(|\, a_{12}\,| + |\, a_{13}\,| + |\, a_{14}\,| + \cdots + |\, a_{1n}\,|)$,

$S_2 = \dfrac{1}{|\, a_{22}\,|}\,(|\, a_{21}\,|S_1 + |\, a_{23}\,| + |\, a_{24}\,| + \cdots + |\, a_{2n}\,|)$, $\qquad S_3 = \dfrac{1}{|\, a_{33}\,|}\,(|\, a_{31}\,|S_1 + |\, a_{32}\,|S_2 + |\, a_{34}\,| + \cdots + |\, a_{3n}\,|), \cdots$

$\cdots \quad S_n = \dfrac{1}{|\, a_{nn}\,|}\,(|\, a_{n1}\,|S_1 + |\, a_{n2}\,|S_2 + \cdots + |\, a_{nn-1}\,|S_{n-1})$

Método de Newton para sistemas: $x_{i+1} = x_i - \left[\frac{f\, g_y - g\, f_y}{|\, J\,|}\right]_i$, $y_{i+1} = y_i - \left[\frac{g\, f_x - f\, g_x}{|\, J\,|}\right]_i$

$|\, J\,| = (f_x\, g_y - f_y\, g_x)_i$

Interpolação polinomial (Lagrange): $p_n(x) = y_0 L_0(x) + y_1 L_1(x) + \cdots + y_n L_n(x)$

$L_k(x) = \dfrac{(x-x_0)(x-x_1)\ldots(x-x_{k-1})(x-x_{k+1})\ldots(x-x_n)}{(x_k-x_0)(x_k-x_1)\ldots(x_k-x_{k-1})(x_k-x_{k+1})\ldots(x_k-x_n)}$

Interpolação polinomial (Newton - diferenças divididas):

$p_n(x) = d_0 + d_1\,(x-x_0) + d_2\,(x-x_0)(x-x_1) + \cdots + d_n\,(x-x_0)(x-x_1)\ldots(x-x_{n-1})$ onde $d_k = f[x_k, x_{k-1}, \ldots, x_0]$

$f[x_i] = f(x_i), \quad f[x_{i+1}, x_i] = \dfrac{f(x_{i+1}) - f(x_i)}{x_{i+1} - x_i}, \quad f[x_{i+2}, x_{i+1}, x_i] = \dfrac{f[x_{i+2}, x_{i+1}] - f[x_{i+1}, x_i]}{x_{i+2} - x_i}$

Interpolação polinomial (Newton - diferenças simples):

$p_n(x) = y_0 + \dfrac{x-x_0}{h}\,\Delta y_0 + \dfrac{(x-x_0)(x-x_1)}{2!\,h^2}\,\Delta^2 y_0 + \cdots + \dfrac{(x-x_0)(x-x_1)\ldots(x-x_{n-1})}{n!\,h^n}\,\Delta^n y_0$

$\Delta y_i = y_{i+1} - y_i, \quad \Delta^2 y_i = \Delta y_{i+1} - \Delta y_i = y_{i+2} - 2\,y_{i+1} + y_i, \quad \Delta^k y_i = \Delta^{k-1} y_{i+1} - \Delta^{k-1} y_i$

Estimativas de erro para o polinômio interpolador:

$|\, E_n(x)\,| \le |\,(x-x_0)\,(x-x_1)\,(x-x_2)\ldots(x-x_n)\,|\, \max\limits_{x\in I} \dfrac{|\, f^{(n+1)}(x)\,|}{(n+1)!}$,

$|\, E_n(x)\,| \approx |\,(x-x_0)\,(x-x_1)\ldots(x-x_n)\,|\,|\, f[x_{n+1}, x_n, \ldots, x_0]\,|$,

$|\, E_n(x)\,| \approx |\,(x-x_0)\,(x-x_1)\ldots(x-x_n)\,| \left|\, \dfrac{\Delta^{n+1} y_0}{(n+1)!\,h^{n+1}} \,\right|$

Spline Cúbica

$S_i(x) = f(x_i) + (x-x_i)(c_i + (x-x_i)(b_i - (x-x_i)a_i))$

$z_{i-1} + 4z_i + z_{i+1} = \frac{6}{h^2}(y_{i+1} - 2y_i + y_{i-1})$, para $i = 1, 2, \ldots, n-1$ e $z_0 = z_n = 0$

$a_i = \frac{1}{6h}(z_{i+1} - z_i)$

$b_i = \frac{z_i}{2}$

$c_i = -\frac{h}{6} z_{i+1} - \frac{h}{3} z_i + \frac{y_{i+1} - y_i}{h}$

Mínimos quadrados: $g(x) = \sum_{k=0}^{m} a_k\, g_k(x)$

Ajustamento a um polinômio de grau p:

$$\begin{bmatrix} n+1 & \sum\limits_{i=0}^{n} x_i & \ldots & \sum\limits_{i=0}^{n} x_i^p \\ \sum\limits_{i=0}^{n} x_i & \sum\limits_{i=0}^{n} x_i^2 & \ldots & \sum\limits_{i=0}^{n} x_i^{p+1} \\ \vdots & \vdots & & \vdots \\ \vdots & \vdots & & \vdots \\ \sum\limits_{i=0}^{n} x_i^p & \sum\limits_{i=0}^{n} x_i^{p+1} & \ldots & \sum\limits_{i=0}^{n} x_i^{2\,p} \end{bmatrix} \begin{bmatrix} a_0 \\ a_1 \\ \vdots \\ a_p \end{bmatrix} = \begin{bmatrix} \sum\limits_{i=0}^{n} y_i \\ \sum\limits_{i=0}^{n} x_i\, y_i \\ \vdots \\ \vdots \\ \sum\limits_{i=0}^{n} x_i^p\, y_i \end{bmatrix}$$