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$$A_i y_{i-1} - B_i y_i + C_i y_{i+1} + D_i = 0$$

$$A_i = \frac{k_{i-1} + k_i}{2}$$

$$B_i = \frac{k_{i-1} + k_i}{2} + \frac{k_{i+1} + k_i}{2} + p_i h_2$$

$$C_i = \frac{k_i + k_{i+1}}{2}$$

$$D_i = f_i h^2$$

где $h = \frac{\ell}{N}$

$$A_i' = \frac{\partial G_i}{\partial y_{i-1}}$$

$$B_i' = -\frac{\partial G_i}{\partial y_i}$$

$$C_i' = \frac{\partial G_i}{\partial y_{i+1}}$$

$$D_i' = G_i, \quad G = A_i y_{i-1} - B_i y_i + C_i y_{i+1} + D_i$$

Метод прогонки

$$\xi_i = \frac{C_{i-1}'}{B_{i-1}' - A_{i-1}' \xi_{i-1}}$$

$$\eta_i = \frac{A_{i-1}' \eta_{i-1} + D_{i-1}'}{B_{i-1}' - A_{i-1}' \xi_{i-1}}$$

$$\Delta y_N = \frac{A_N' \eta_N + D_N'}{B_N' - A_N' \xi_N}$$

$$\Delta y_i = \xi_{i+1} \Delta y_{i+1} + \eta_{i+1}, \quad i = \overline{0 \ldots N-1}$$