Algorithm 1 Tridiagonal matrix algorithm (Thomas algorithm)

function THOMAS($\mathbf{a}, \mathbf{b}, \mathbf{c}, \mathbf{d}$) ▷ Vectors

$\hat{c}_1 \leftarrow \dfrac{c_1}{b_1}$

$\hat{d}_1 \leftarrow \dfrac{d_1}{b_1}$

for $i = 2, 3, \ldots, n-1$ **do** ▷ Forward sweep

$\hat{c}_i \leftarrow \dfrac{c_i}{b_i - a_i\,\hat{c}_{i-1}}$

$\hat{d}_i \leftarrow \dfrac{d_i - a_i\,\hat{d}_{i-1}}{b_i - a_i\,\hat{c}_{i-1}}$

$x_n \leftarrow \hat{d}_n$

for $i = n-1, n-2, \ldots, 1$ **do** ▷ Backwards substitution

$x_i \leftarrow \hat{d}_i - \hat{c}_i\,x_{i+1}$

return x