

(1a)

$$\left(\begin{array}{cccc|c} b_1 & c_1 & \dots & 0 & d_1 \\ a_1 & b_2 & c_2 & \dots & d_2 \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ 0 & \dots & a_{n-1} & b_n & d_n \end{array} \right) = \left(\begin{array}{cccc|c} 1 & \frac{c_1}{b_1} & \dots & 0 & \textcircled{d_1} \\ 0 & b_2 - a_1 \frac{c_1}{b_1} & c_2 & \dots & d_2 \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ 0 & \dots & a_n & b_{n+1} & d_{n+1} \end{array} \right)$$

$$\begin{aligned} & \frac{a_1}{b_1} \\ & \frac{a_2 - a_1 \frac{a_1}{b_1}}{b_2 - a_1 \frac{a_1}{b_1}} \\ & \vdots \\ & \frac{a_n}{b_n} \end{aligned}$$

[illegible]

using $(n-1)$ steps to eliminate all a_i . In the main diagonal, divide the value of the pivot in n -steps

$$c_i' = \begin{cases} \frac{c_i}{b_i} & i=1 \\ \frac{c_i}{b_i - a_i c_{i-1}'} & i=2, 3, \dots, n-1 \end{cases}$$

$$d_i' = \begin{cases} \frac{d_i}{b_i} & i=1 \\ \frac{d_i - a_i d_{i-1}'}{b_i - a_i c_{i-1}'} & i=2, 3, \dots, n \end{cases}$$

$$x_i = \begin{cases} d_i' & i=n \\ d_i' - c_i' x_{i+1} & i=n-1, n-2, \dots, 1 \end{cases}$$

(Ex. 2) $\frac{dc}{dt} + \frac{1}{2} \sigma^2 s^2 \frac{d^2 c}{ds^2} + \kappa s \frac{dc}{ds} - \kappa c = 0$

$$\frac{dv}{dt} + \frac{1}{2} \sigma^2 s^2 \left(\frac{d^2 v}{s^2 dx^2} - \frac{dv}{s^2 dx} \right) + \kappa s \frac{dv}{s dx} - \kappa v = 0$$

$$\frac{dv}{dt} + \frac{1}{2} \sigma^2 \frac{d^2 v}{dx^2} - \frac{1}{2} \sigma^2 \frac{dv}{dx} + \kappa \frac{dv}{dx} - \kappa v = 0$$

$$\frac{dv}{dt} + \frac{1}{2} \sigma^2 \frac{d^2 v}{dx^2} + \left(\kappa - \frac{1}{2} \sigma^2 \right) \frac{dv}{dx} - \kappa v = 0$$