1.2

$$a_j^{n+1} = a_j^n - c\left(a_j^{n+1} - a_{j-1}^{n+1}\right)$$

$$a_j^{n+1}(1+c) = a_j^n + c\,a_{j-1}^{n+1}$$

system of equations

$$a_j^{n+1}(1+c) - a_{j-1}^{n+1}\,c = a_j^n$$

$$\begin{cases} a_0^{n+1}(1+c) - a_0^n = 0 \\ a_1^{n+1}(1+c) - a_0^{n+1}\,c - a_1^n = 0 \\ a_{tmax}^{n+1}(1+c) - a_{tmax-1}^{n+1}\,c - a_{tmax}^n = 0 \end{cases}$$

$$M = \begin{pmatrix} 1+c & 0 & & & -c \\ -c & 1+c & 0 & & \\ 0 & -c & 1+c & 0 & 0 \\ 0 & 0 & -c & 1+c & \\ & & & & 1+c \end{pmatrix} \Rightarrow a^{n+1} M = a^n$$