Addisionele gegewens/*Additional information*

$$e^{-at} \quad \Leftrightarrow \quad \frac{1}{s+a} \qquad\qquad t\,e^{-at} \quad \Leftrightarrow \quad \frac{1}{(s+a)^2}$$

$$e^{-at}\sin\omega t \quad \Leftrightarrow \quad \frac{\omega}{(s+a)^2+\omega^2} \qquad\qquad e^{-at}\cos\omega t \quad \Leftrightarrow \quad \frac{s+a}{(s+a)^2+\omega^2}$$

$$\sin\omega t \quad = \quad \frac{1}{2j}\left(e^{j\omega t}-e^{-j\omega t}\right) \qquad\qquad \cos\omega t \quad = \quad \frac{1}{2}\left(e^{j\omega t}+e^{-j\omega t}\right)$$

$$\mathbf{\Phi}(t)=e^{\mathbf{A}t}=Laplace^{-1}\left\{\left[s\mathbf{I}-\mathbf{A}\right]^{-1}\right\} \qquad \Delta_{OL}(s)=\left|s\mathbf{I}-\mathbf{A}\right|=s^n+\alpha_1 s^{n-1}+\ldots+\alpha_{n-1}s+\alpha_n$$

$$\mathbf{x}(t)=\mathbf{\Phi}(t)\mathbf{x}(0)+\int_0^t \mathbf{\Phi}(t-\tau)\mathbf{b}\,u(\tau)\,d\tau \qquad\qquad \mathbf{X}(s)=\mathbf{\Phi}(s)\mathbf{x}(0)+\mathbf{\Phi}(s)\mathbf{b}\,\mathbf{U}(s)$$

$$\mathbf{A}=\begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \qquad\qquad \mathbf{A}^{-1}=\frac{cof[\mathbf{A}]^T}{|\mathbf{A}|}=\frac{adj[\mathbf{A}]}{|\mathbf{A}|}$$

$$cof[\mathbf{A}]=\begin{bmatrix} a_{22}a_{33}-a_{23}a_{32} & a_{23}a_{31}-a_{21}a_{33} & a_{21}a_{32}-a_{22}a_{31} \\ a_{13}a_{32}-a_{12}a_{33} & a_{11}a_{33}-a_{13}a_{31} & a_{11}a_{32}-a_{12}a_{31} \\ a_{12}a_{23}-a_{13}a_{22} & a_{13}a_{21}-a_{11}a_{23} & a_{11}a_{22}-a_{12}a_{21} \end{bmatrix}$$

$$|\mathbf{A}|=a_{11}(a_{22}a_{33}-a_{23}a_{32})-a_{12}(a_{21}a_{33}-a_{23}a_{31})+a_{13}(a_{21}a_{32}-a_{22}a_{31})$$

$$\mathbf{U}_c^{-1}=\begin{bmatrix} \alpha_3 & \alpha_2 & \alpha_1 & 1 \\ \alpha_2 & \alpha_1 & 1 & 0 \\ \alpha_1 & 1 & 0 & 0 \\ 1 & 0 & 0 & 0 \end{bmatrix}$$ vierde orde stelsel / fourth order system

$$N=\left(-\mathbf{c}\left[\mathbf{A}-\mathbf{bk}\right]^{-1}\mathbf{b}\right)^{-1}$$