Lec 3

Wednesday 23. September 2020 13.32

$$e^{At} = \mathcal{L}^{-1}\{(sI - A)^{-1}\}$$

$$e^{At} = \mathcal{L}^{-1}[(sI - A)^{-1}]$$

$$= \mathcal{L}^{-1}\left\{\frac{adj(sI - A)}{det(sI - A) = 0}\right\}$$

$$TT^{-1} = I$$

$$det(TT^{-1}) = det(T)\cdot det(T^{-1}) = 1$$

$$\Rightarrow det(T^{-1}) = \frac{1}{det(T)}$$

$$det(\lambda I - TAT^{-1}) =$$

$$det[\lambda TT^{-1} - TAT^{-1}]$$

$$= det\{T(\lambda I - A)T^{-1}\}$$

$$= det(T)\cdot det(\lambda I - A)\cdot det(T^{-1})$$

$$= \underbrace{det(T)\cdot\frac{1}{det(T)}}_{1}\cdot det(\lambda I - A)$$

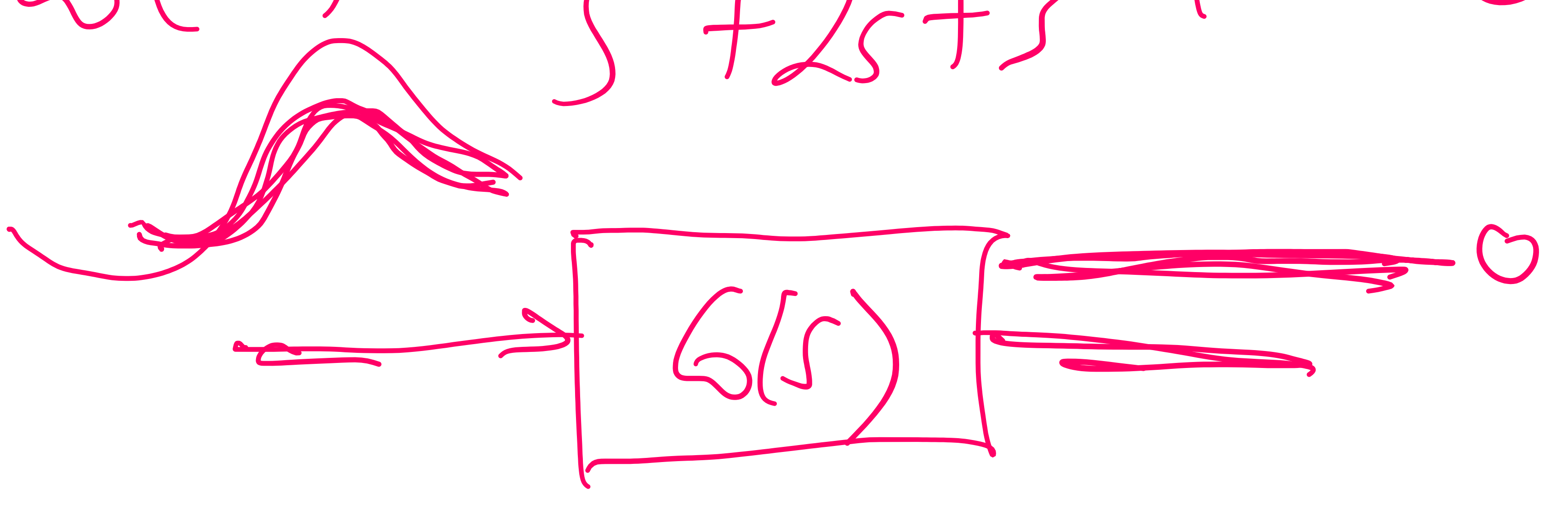
$$\underbrace{\begin{bmatrix} \cdot & \cdot \\ \cdot & \cdot \end{bmatrix}}_{A} \qquad det(A) \neq 0$$

$$\underbrace{\begin{bmatrix} \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot \end{bmatrix}}_{2\times 3} \qquad rank(A) = 2$$

$$\begin{bmatrix} \cdot & \cdot \\ \cdot & \cdot \\ \cdot & \cdot \\ \cdot & \cdot \end{bmatrix}$$

$$G(s) = \frac{s+1}{s^2+2s+3}$$ zero

+zero



$$A = A^*$$

$$\underbrace{(\underset{1\times n}{x^*}\,\underset{n\times n}{A}\,\underset{n\times 1}{x})}_{1\times 1}{}^* = x^* A^* x = x^* A x$$

$$x^* A x > 0$$