

CMPE-242

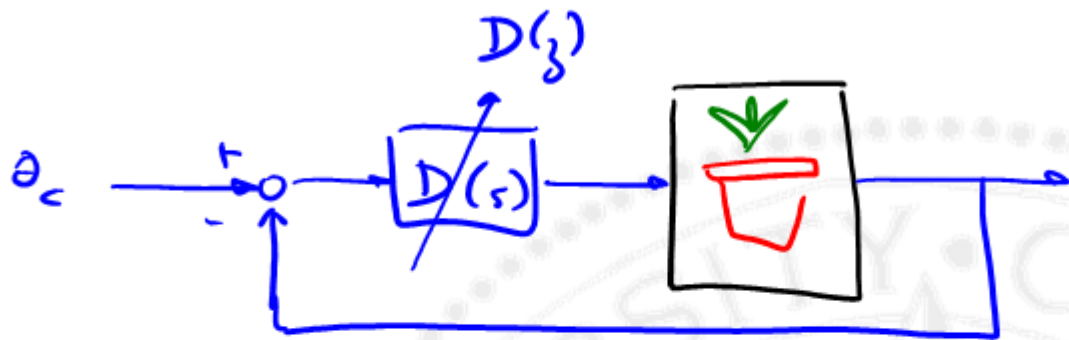
Applied Feedback Control

Gabriel Hugh Elkaim



Office Hours

08/may/2017



PM \sim 50° $\omega_{40} = 19.3$

$\Delta\phi = -\frac{\omega T}{2}$ 5cm for T.

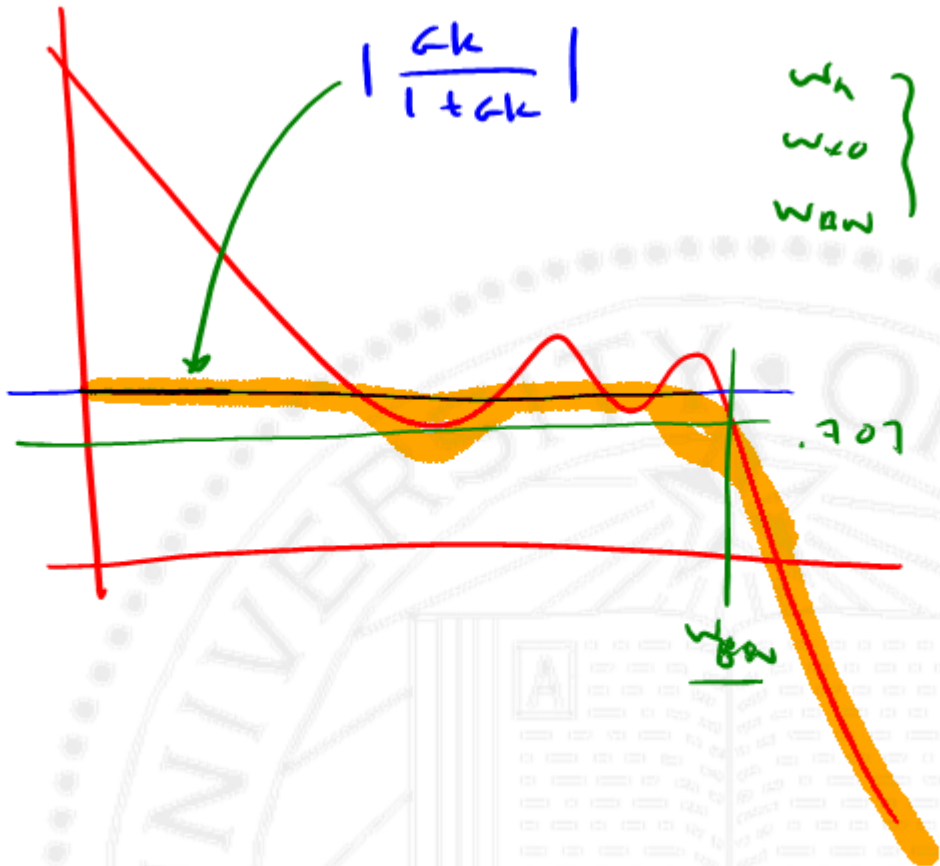


$\log |GK|$

$$\left| \frac{Gk}{1+Gk} \right|$$

w_h
 w_{c0}
 w_{aw} } SAME

1



$\log w$



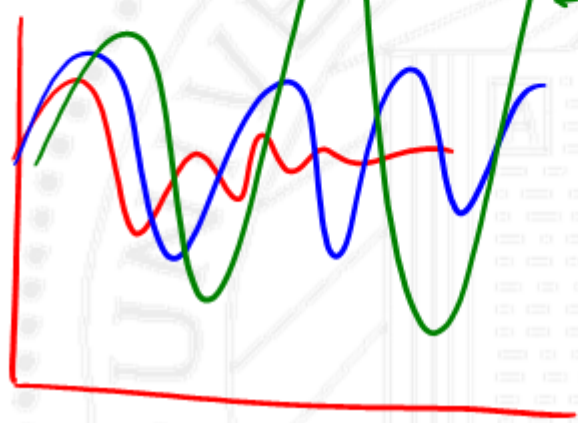
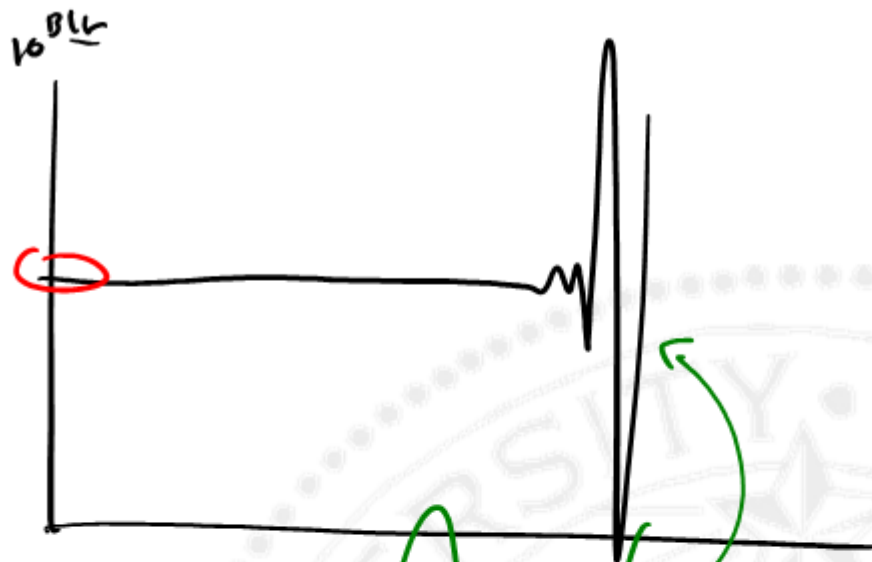
$$D(z) = D(s) \Big|_{\text{Tustin, } e^{-T}}$$

$$G(z) = G(s) \Big|_{\text{Zoh, } e^{-T}} \leftarrow \mathcal{Z} \left\{ \frac{z^{-1}}{s} \frac{G(s)}{s} \right\}$$



STEP (FEEDBACK $(D(z)G(z), 1)$)





$$G(s) \rightarrow T$$

$D(s)$ directly.

$$D(s) \leftarrow D(s) \Big|_{T \text{ Justin}}$$

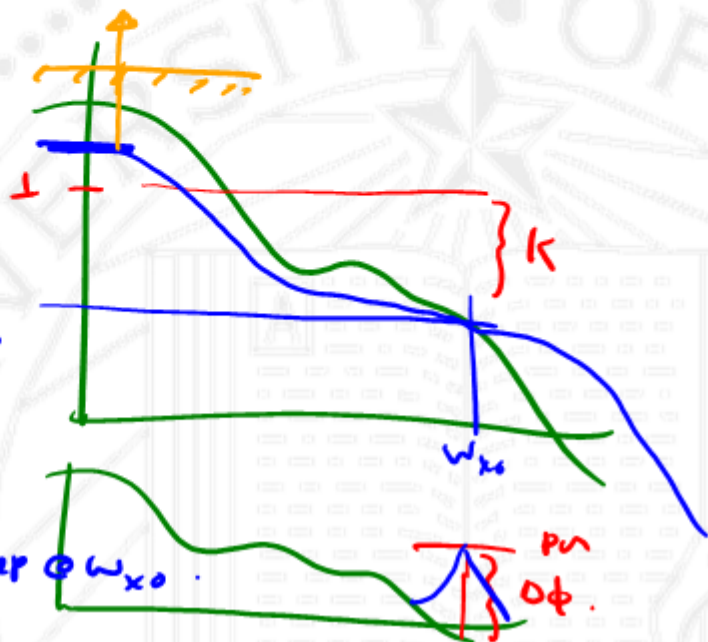
dbode

$D(s)$ - LEAD @ ω_{x0}

$$D(s) = D(s) \Big|_{T \text{ Justin}}$$

$T \text{ Justin}$

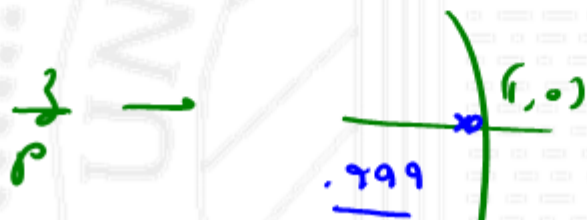
PNMMP @ ω_{x0}

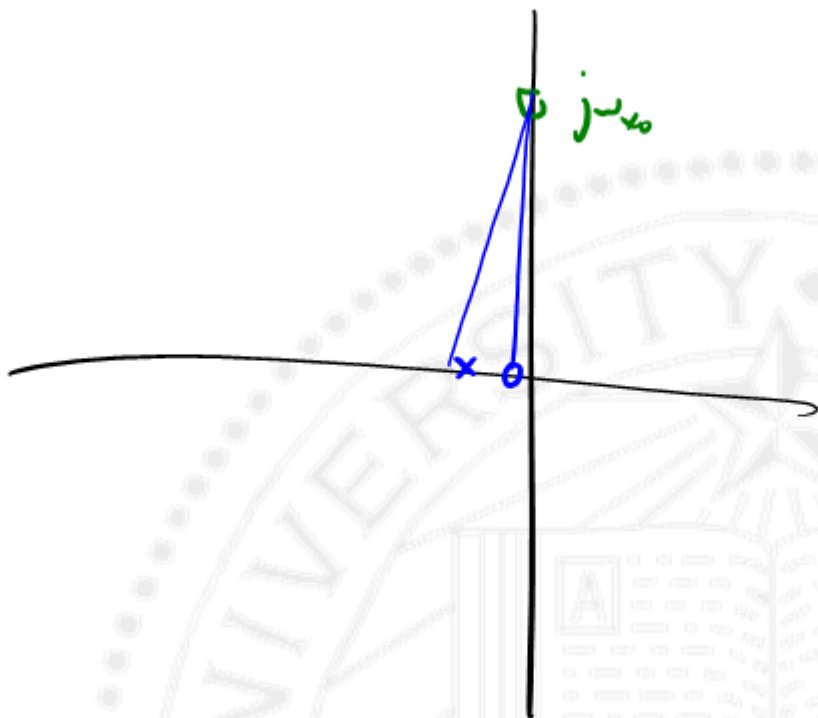


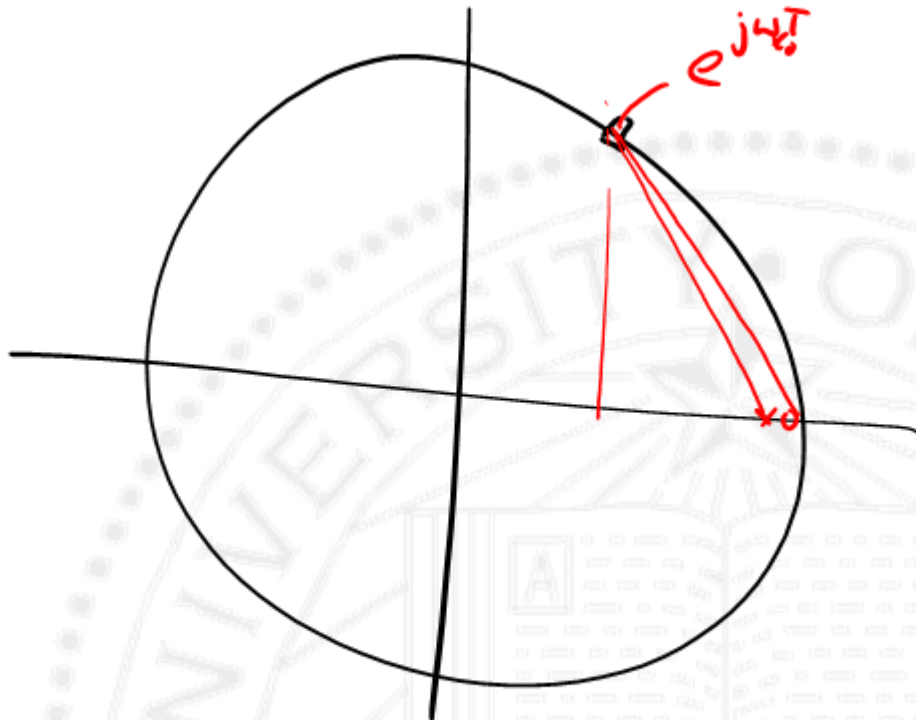
dBode | ω_c — (b) — $\frac{1}{s}$

$\ln(s) \rightarrow$ DC gain $H(s) \Big|_{s=0}$

$\ln(z) \rightarrow$ DC gain $H(z) \Big|_{z=1}$ $\frac{z^+ \dots}{z^- 1}$

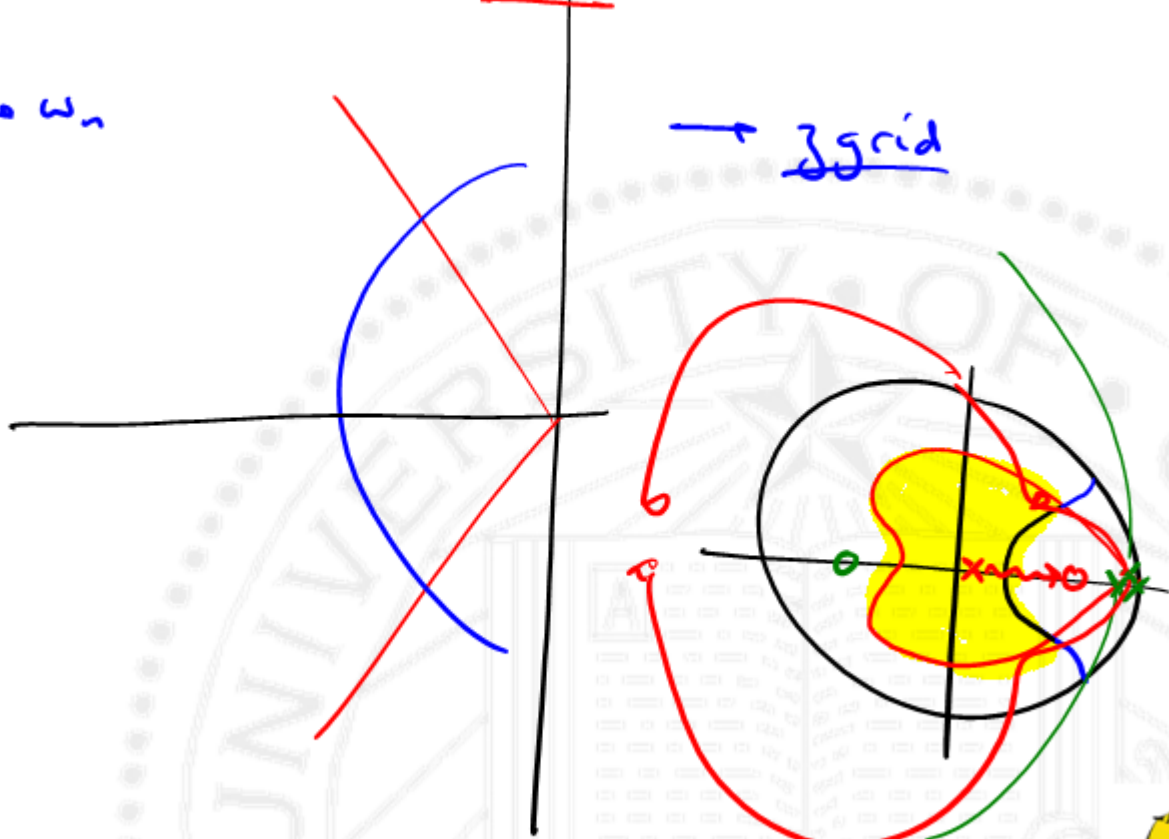






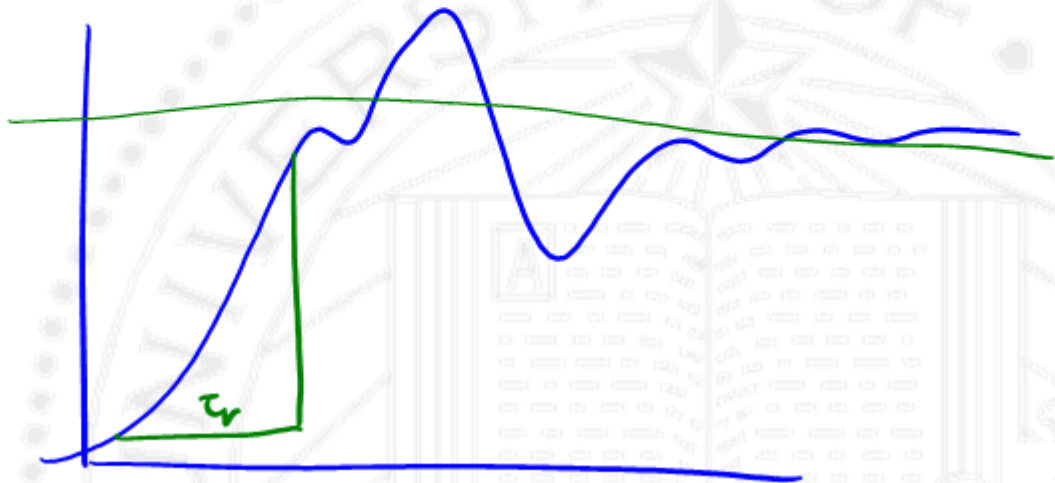
$$\frac{PM \approx J}{100} \rightarrow 80 \sim \underline{J = .5}$$

$$\omega_{c0} \rightarrow \omega_n$$

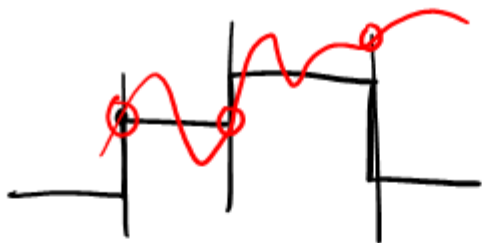


$$\Delta\phi = -\frac{\omega T}{2} \quad \times T$$

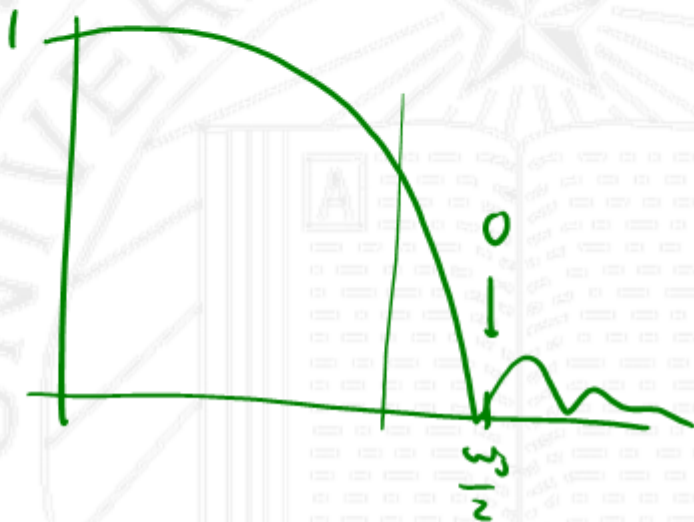
$$\tau_r \approx 0.25 \rightarrow \omega_n \approx \underline{7.2}$$

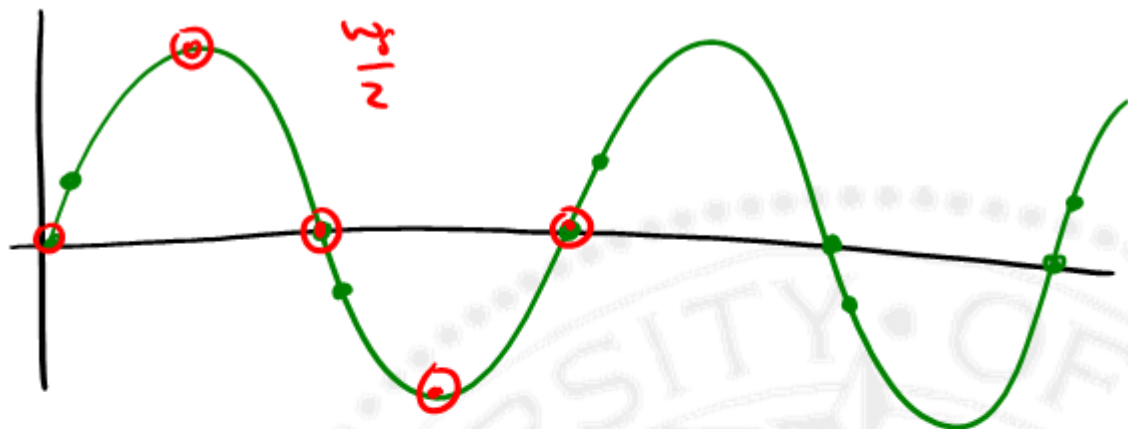


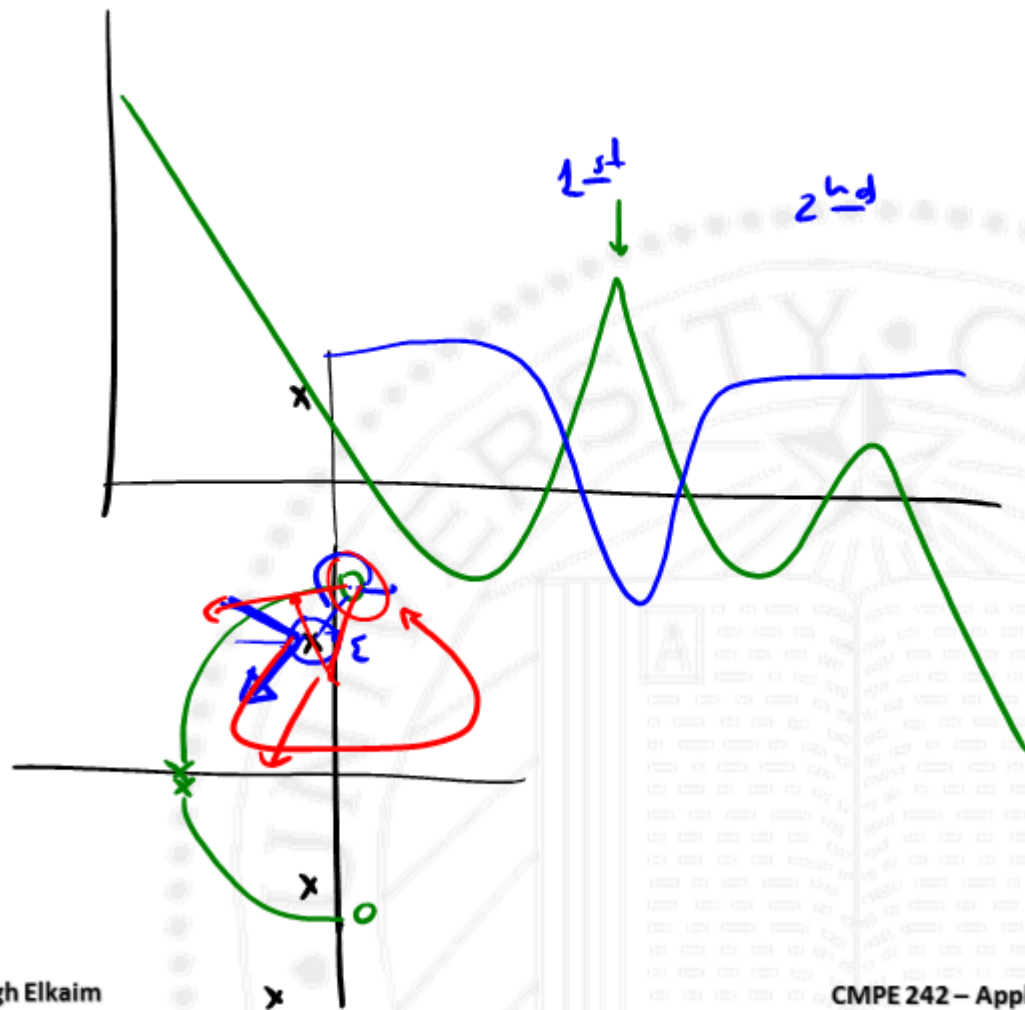
u_k

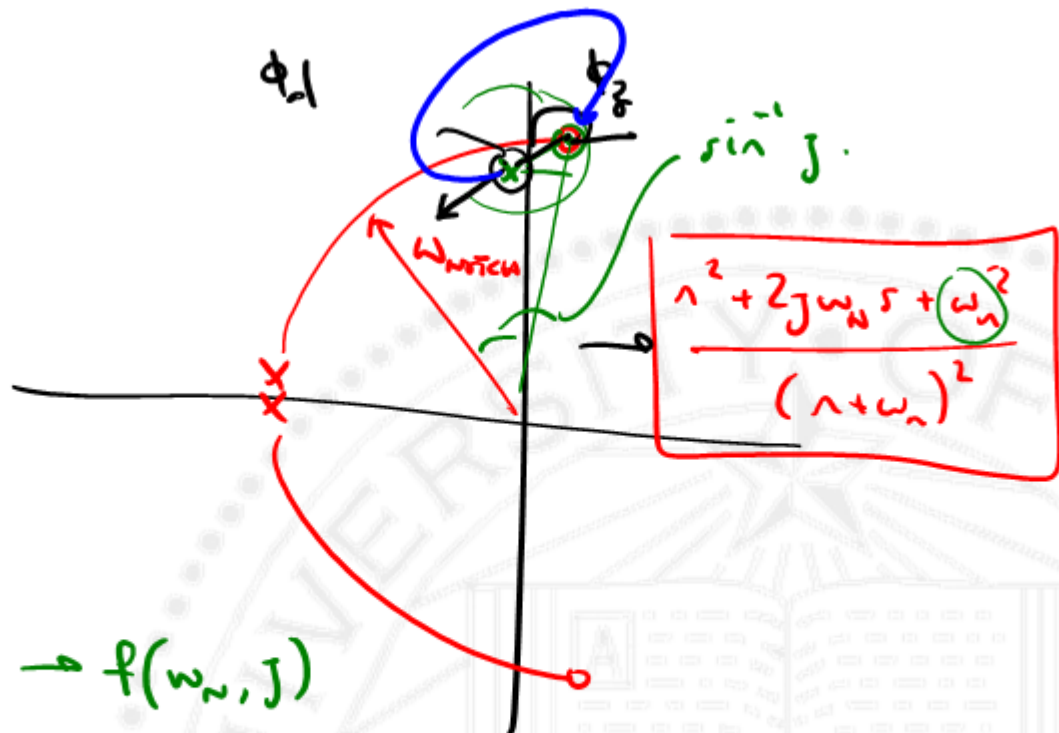


$$\mathcal{F}\{u_k\} = \text{sinc}\left(\frac{\omega}{\omega_s}\right)$$





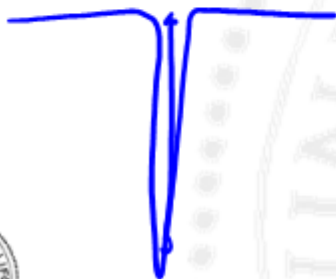
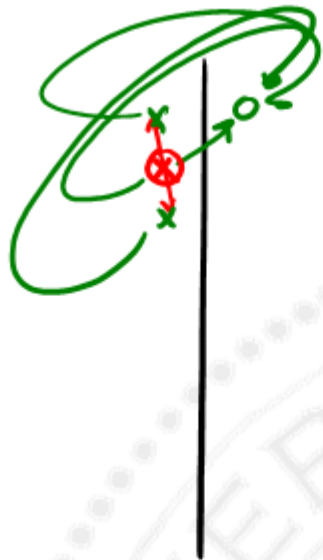




$$o \rightarrow f(\omega_n, j)$$

$$o = (-j\omega_n \pm \sqrt{1-j^2}\omega_n j)$$







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