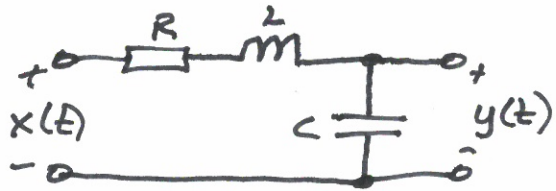


Räkneexemplet

p^o Föreläsning 6:



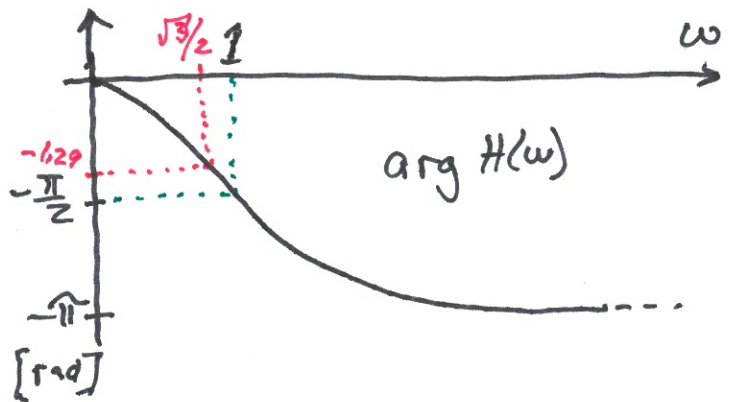
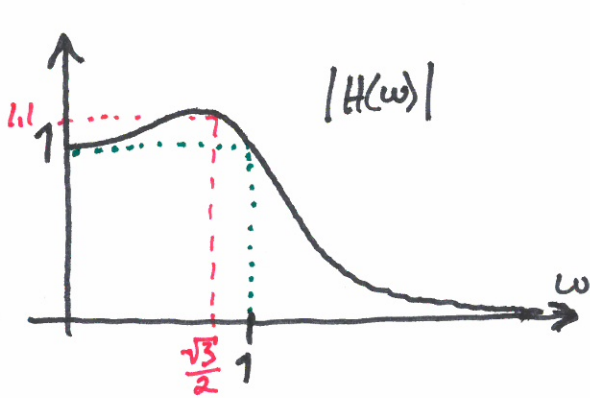
Komplexschema $\Rightarrow H(\omega) = \frac{Y(\omega)}{X(\omega)} = \frac{1}{1 - \omega^2 + j\omega}$

Skissera $|H(\omega)|$ & $\arg H(\omega)$

$\bullet H(0) = 1 = 1 \cdot e^{j0}$

$\bullet \omega \rightarrow \infty \Rightarrow \begin{cases} |H(\omega)| \rightarrow 0 \\ \arg H(\omega) \rightarrow -\pi \text{ rad} \end{cases}$

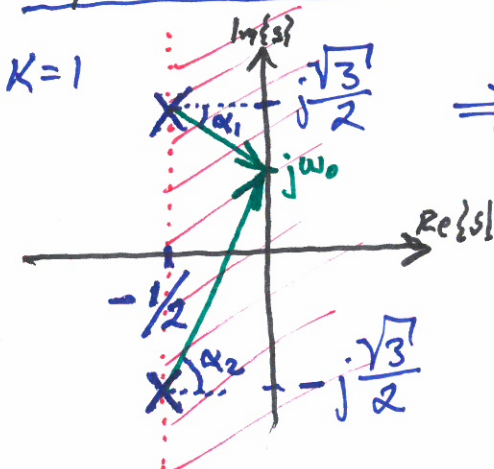
Tunnregel, systemordn. 2
 $\Rightarrow 1 - \omega^2 = 0 \Rightarrow \omega = \pm 1 \text{ rad/s}$
 $\Rightarrow H(1) = -j = 1 \cdot e^{-j\pi/2}$



Alt: Skissera $|H(\omega)|$ & $\arg H(\omega)$ utgående från pol-nollställediagram?

Operatorschema \Rightarrow

$H(s) = \frac{1}{s^2 + s + 1} = \frac{1}{(s-p_1)(s-p_2)}$



$\bullet \omega_0 = 0 \Rightarrow \begin{cases} |H(0)| = \frac{1}{1 \cdot 1} = 1 \\ \arg H(0) = -\alpha + \alpha = 0 \text{ rad} \end{cases}$

$\bullet \omega_0 \rightarrow \infty \Rightarrow \begin{cases} |H(\omega)| \rightarrow 0 \\ \arg H(\omega_0) \rightarrow -2 \cdot \frac{\pi}{2} = -\pi \text{ rad} \end{cases}$

$\bullet \omega_0 = \frac{\sqrt{3}}{2} (\approx 0,87 \text{ rad/s})$

$\Rightarrow |H(\omega_0)| = \frac{1}{0,5 \cdot \sqrt{0,5^2 + 3}} \approx 1,1$

$\arg H(\omega_0) = -0 - \arctan \frac{\sqrt{3}}{0,5} \approx -1,29 \text{ rad}$

SE GRAFERNA FÖR $|H(\omega)|$ & $\arg H(\omega)$ OVAN!