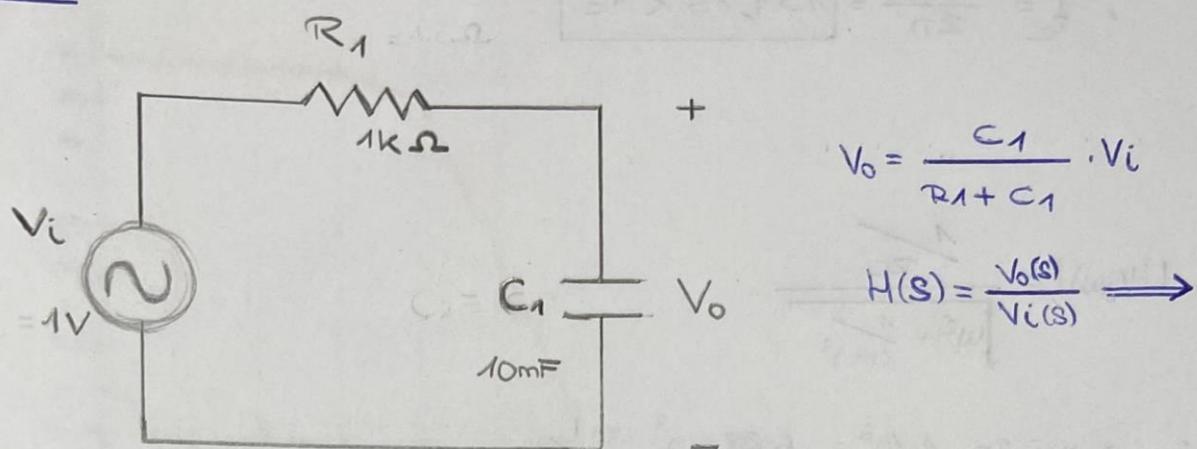


P.2. Estudi Previ.

EP.1:



$$\Rightarrow H(s) = \frac{\frac{1}{C \cdot s}}{R_1 + \frac{1}{C \cdot s}} = \frac{\frac{1}{C \cdot s}}{\frac{R_1 \cdot C \cdot s + 1}{C \cdot s}} = \frac{1}{R_1 \cdot C \cdot s + 1} = \frac{1}{s + \frac{1}{R_1 \cdot C}} \rightarrow$$

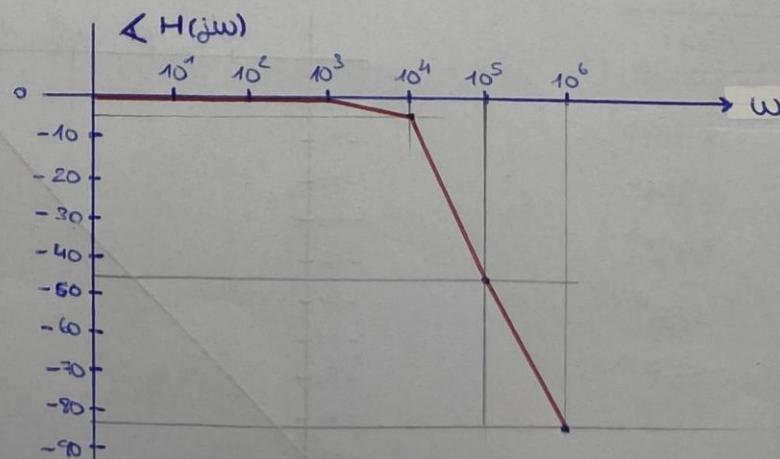
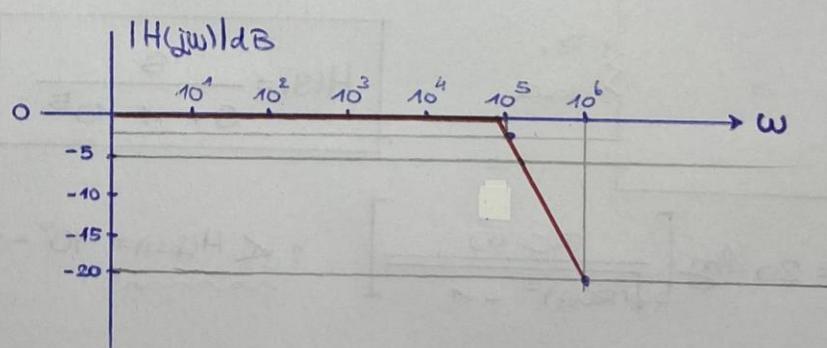
$$\Rightarrow H(s) = \frac{10^5}{s + 10^5}$$

EP.2:

$$|H(j\omega)| = \frac{1/RC}{\sqrt{\omega^2 + (1/RC)^2}}$$

- $|H(j\omega)| \text{ dB} = 20 \cdot \log |H(j\omega)|$
- $\angle H(j\omega) = -\arctg\left(\frac{\omega}{RC}\right)$

ω	$ H(j\omega) \text{ dB}$	$\angle H(j\omega)$
0	0	0°
10^1	0	0°
10^2	0	-0'1°
10^3	0	-0'5°
10^4	0	-5'7°
10^5	-3	-45°
10^6	-20	-84'3°



EP. 3:

$$\omega_C = 1 \cdot 10^5 \quad , \quad f_C = \frac{\omega_C}{2\pi} = \boxed{159,15 \text{ kHz}}$$

EP. 4:

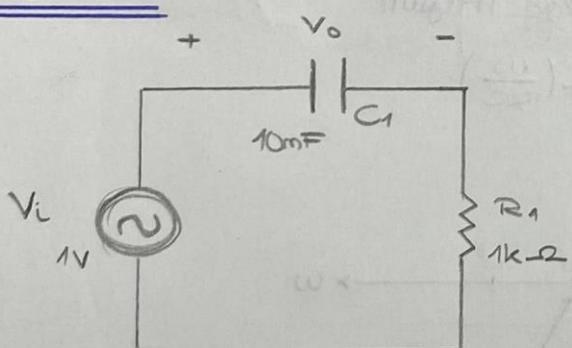
Tenim: $|H(j\omega)| = \frac{1}{\sqrt{\omega^2 + \frac{1}{(RC)^2}}}$

• 1 kHz: $\rightarrow \omega = 2\pi \cdot 1 \cdot 10^3 = \underline{6,28 \cdot 10^3 \text{ rad/s}}$
 $\rightarrow |H(j\omega)| = \underline{0,99}$

• 10 kHz: $\rightarrow \omega = \underline{62,2 \cdot 10^3 \text{ rad/s}}$
 $\rightarrow |H(j\omega)| = \underline{0,84}$

• 100 kHz: $\rightarrow \omega = \underline{628,2 \cdot 10^3 \text{ rad/s}}$
 $\rightarrow |H(j\omega)| = \underline{0,157}$

EP. 5:



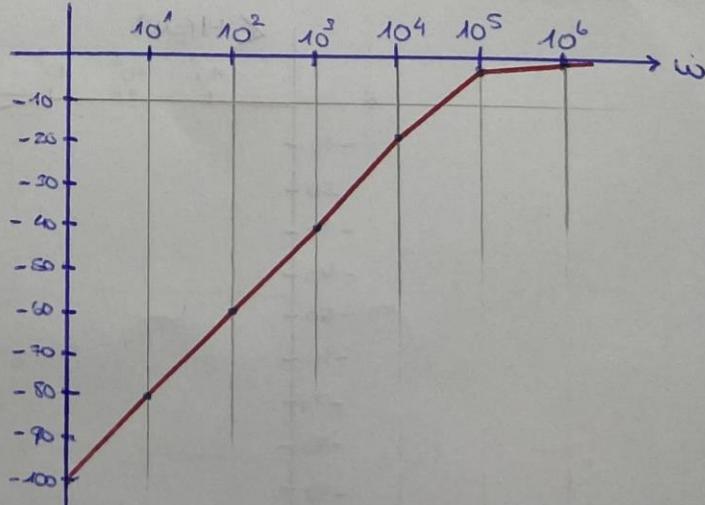
a) $H(s) = \frac{s}{s + \frac{1}{RC}} = \frac{s}{s + 1 \cdot 10^5}$

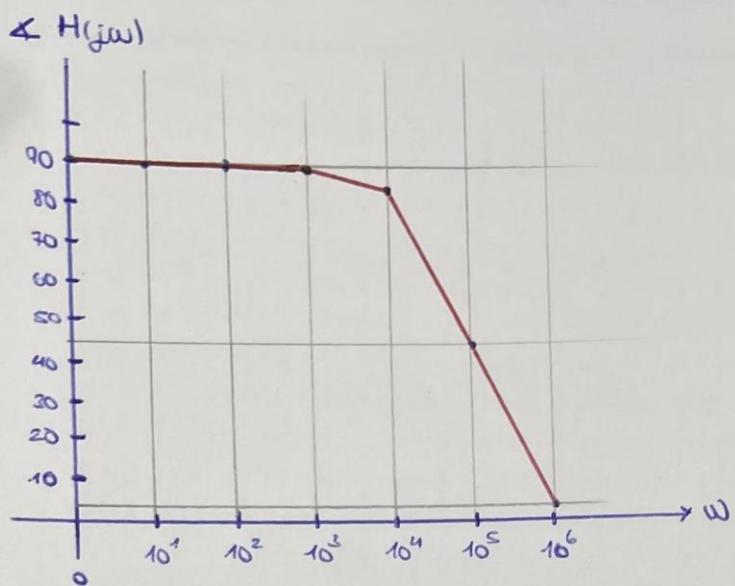
$$H(s) = \frac{s}{s + 1 \cdot 10^5}$$

f) $|H(j\omega)|_{dB} = 20 \cdot \log \left[\frac{RC \cdot \omega}{\sqrt{(RC\omega)^2 + 1}} \right] \quad \angle H(j\omega) = 90^\circ - \arctg(RC\omega)$

ω	$ H(j\omega) _{dB}$	$\angle H(j\omega)$
0	-100	90°
10^1	-80	89.9°
10^2	-60	89.9°
10^3	-40	89.4°
10^4	-20	84.2°
10^5	-3	45°
10^6	0	57°

$$|H(j\omega)|_{dB}$$





c)

$$f_c = \frac{\omega_c}{2\pi} = [159,15 \text{ kHz}]$$

d)

$$|H(j\omega)| = \frac{RC \cdot \omega}{\sqrt{(RC\omega)^2 + 1}}$$

$\sim \sim \sim \sim \sim \sim$

$$\begin{aligned} \text{• } 10 \text{ kHz} : & \rightarrow \omega = 62,8 \cdot 10^3 \\ & \rightarrow |H(j\omega)| = 0,531 \end{aligned}$$

$\sim \sim \sim \sim \sim \sim$

$$\begin{aligned} \text{• } 1 \text{ kHz} : & \rightarrow \omega = 6,28 \cdot 10^3 \\ & \rightarrow |H(j\omega)| = 0,062 \end{aligned}$$

$\sim \sim \sim \sim \sim \sim$

$$\begin{aligned} \text{• } 100 \text{ kHz} : & \rightarrow \omega = 628,2 \cdot 10^3 \\ & \rightarrow |H(j\omega)| = 0,987 \end{aligned}$$