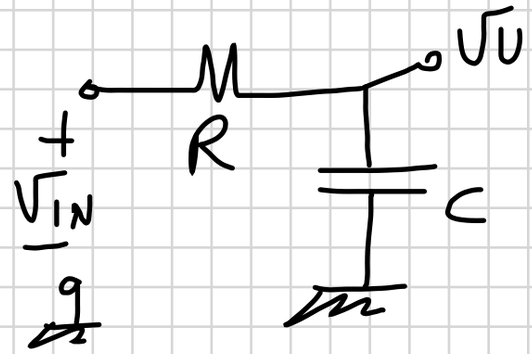
LP $f_p = 1\,kHz$ $A_V = 3$

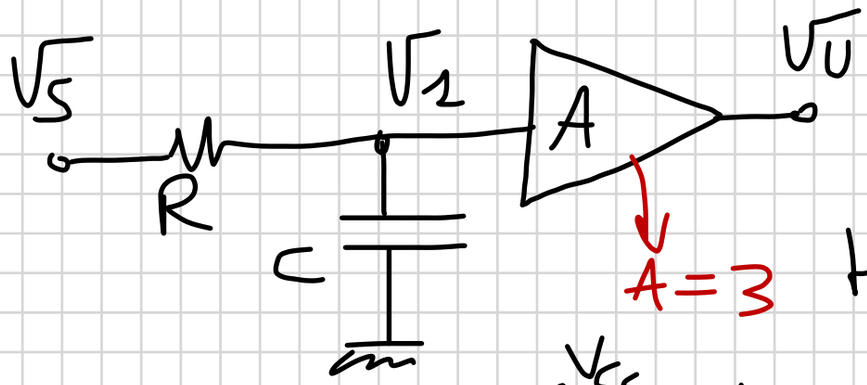


$\omega_p = 6{,}28\ krad/seg$

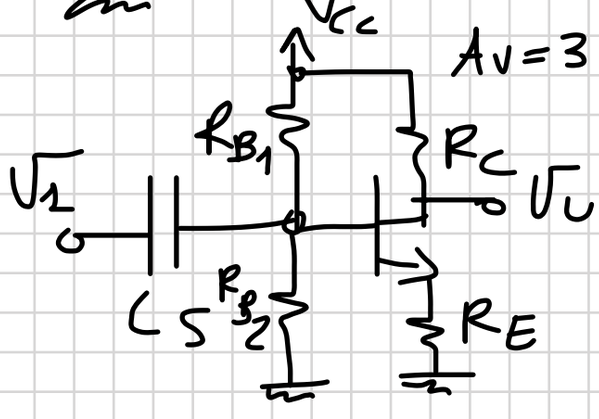
$\omega_p = \frac{1}{RC}$

$$V_U = \frac{\frac{1}{Cs}}{\frac{1}{Cs} + R} V_{IN}$$

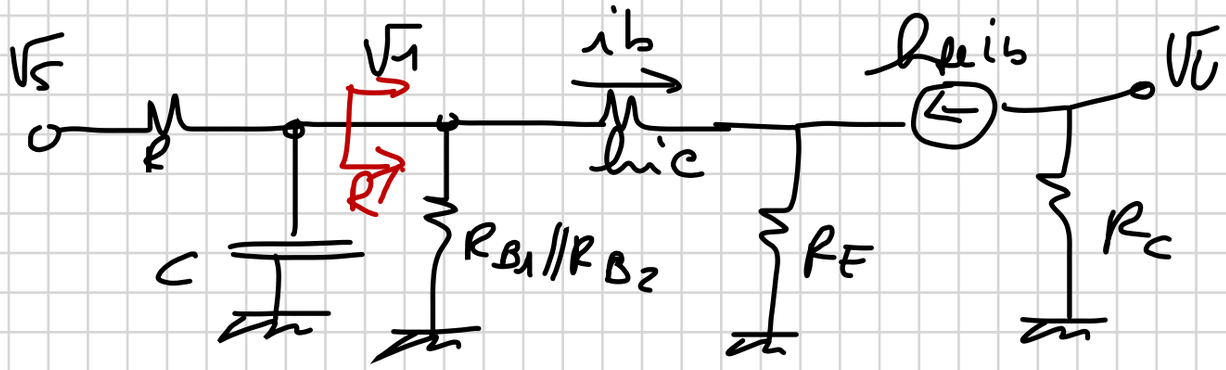
$$H(s) = \frac{1}{\frac{s}{\omega_p} + 1}$$



$H(j) = \frac{V_U}{V_S} = \frac{A_V}{\frac{s}{\omega_p} + 1}$

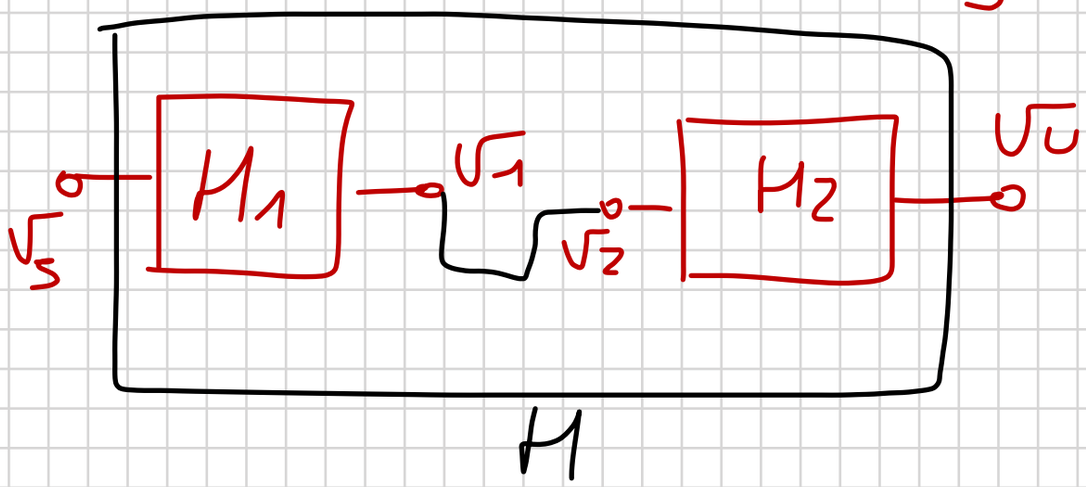


$A_V = 3$; $\omega_p = 6{,}28\ rad/seg$



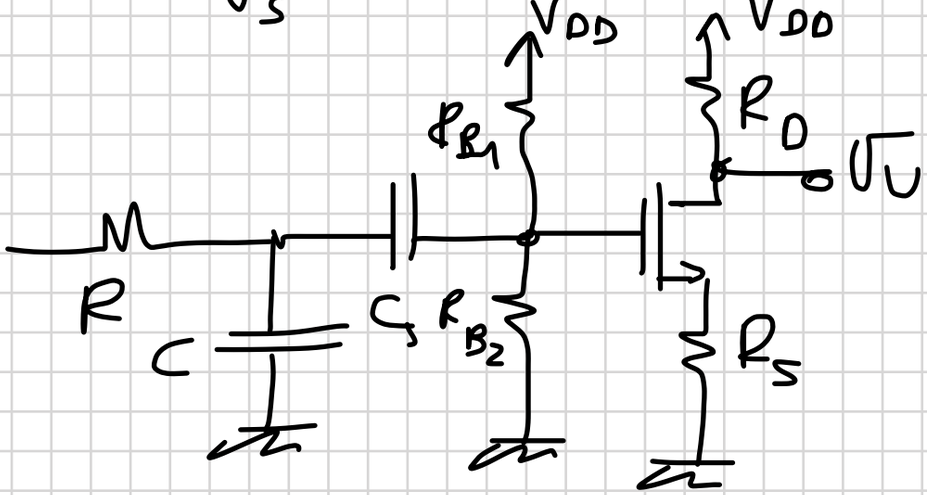
$$R_{VC} = R // R'$$

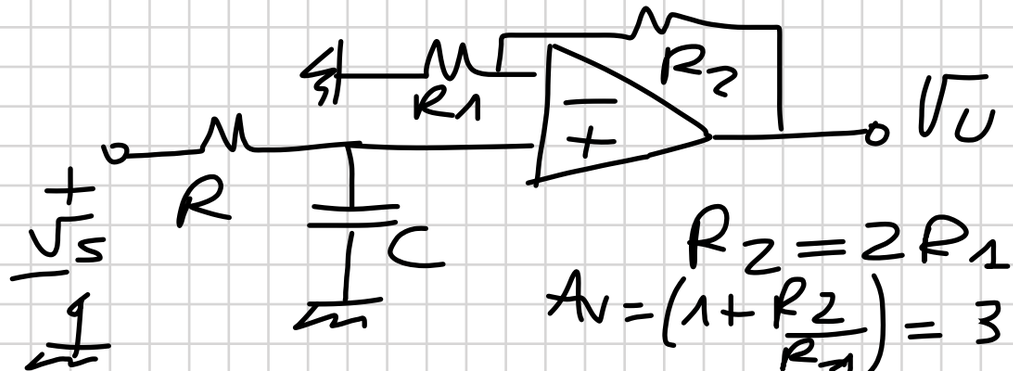
$$R' = R_{B1} // R_{B2} // [h_{ic} + R_E (h_{fe} + 1)]$$



H

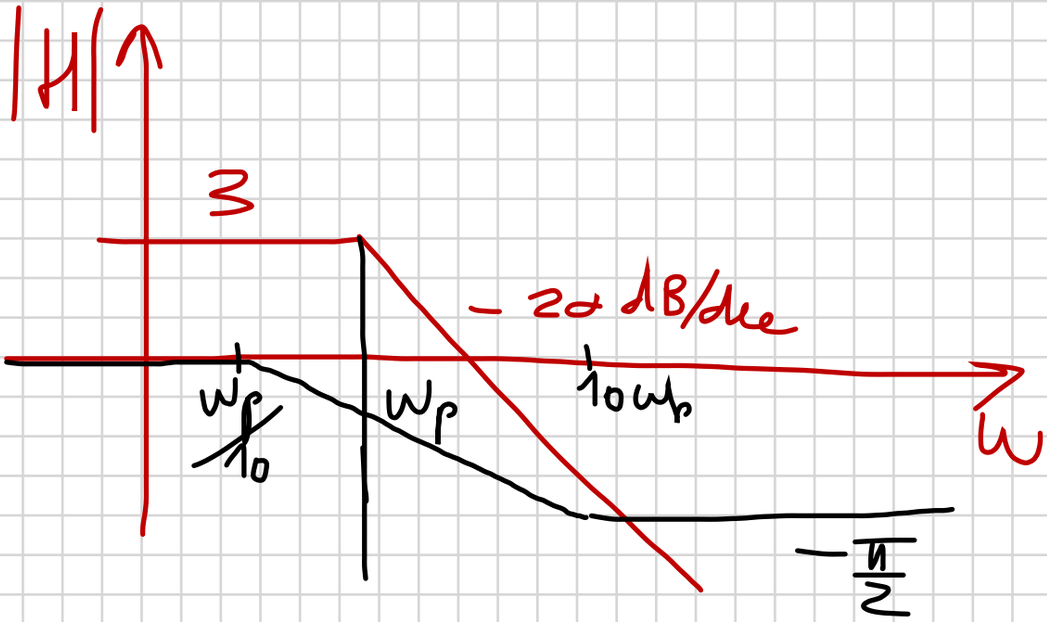
$$H = \frac{V_U}{V_s} \neq H_1 H_2$$

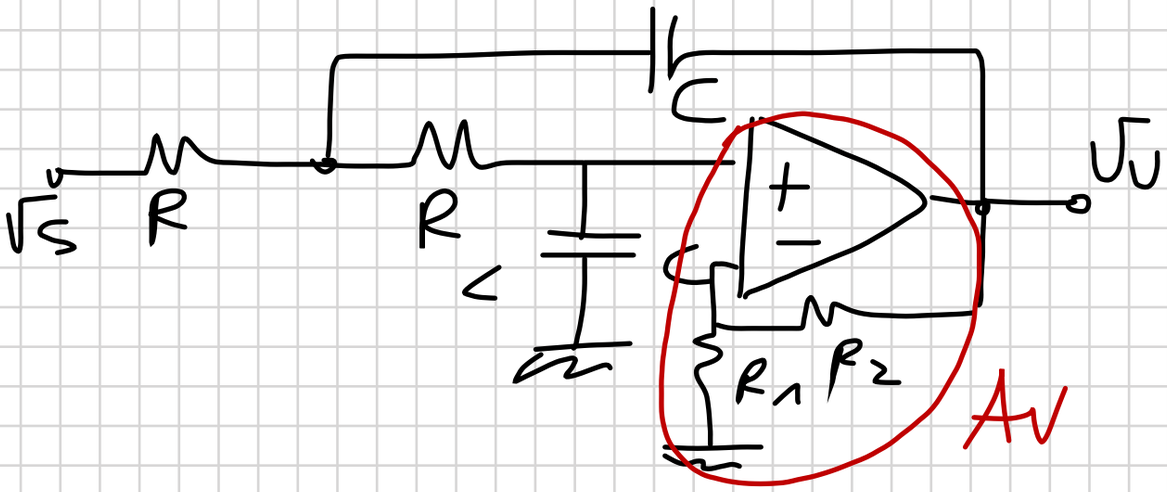




$$R_2 = 2R_1$$

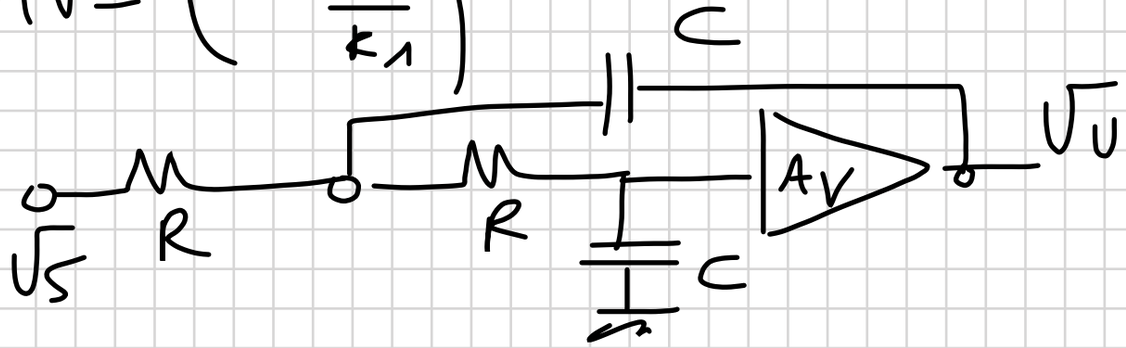
$$A_V = \left(1 + \frac{R_2}{R_1}\right) = 3$$





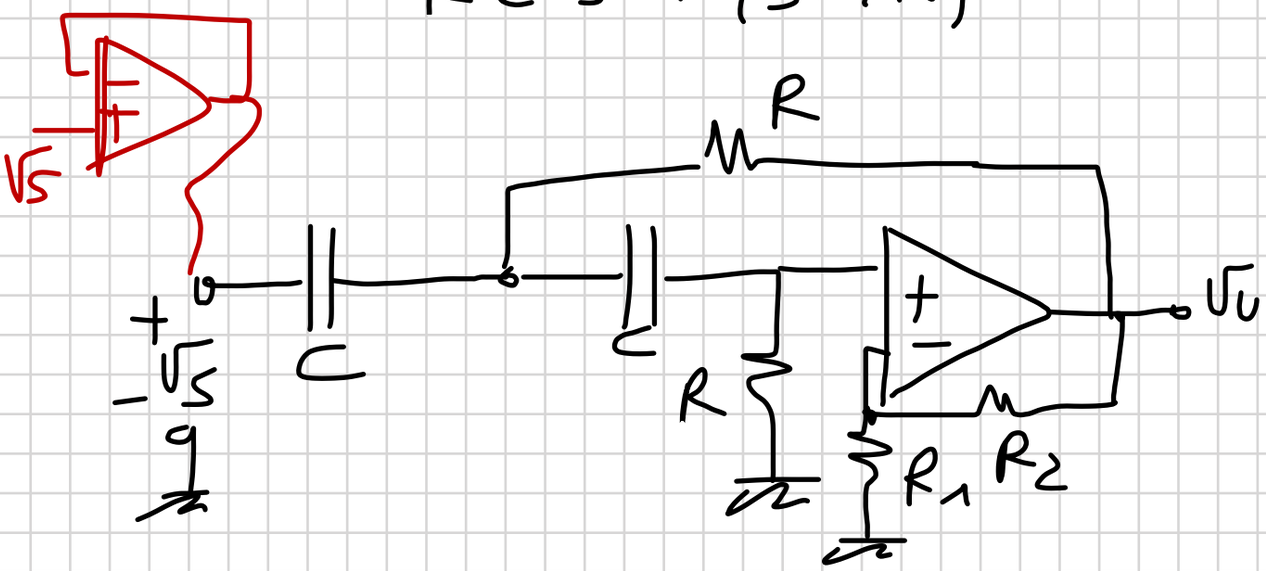
$$H(s) = \frac{V_U}{V_S} = \frac{A_V}{(RCs)^2 + (3 - A_V)RCs + 1}$$

$$A_V = \left(1 + \frac{R_2}{R_1}\right)$$



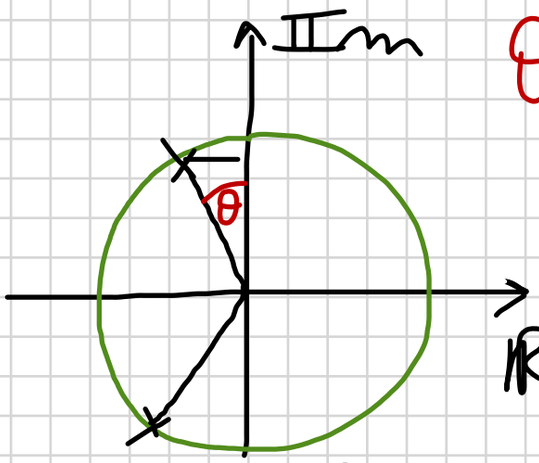
$$R \rightarrow \frac{1}{Cs} \qquad \frac{1}{Cs} \rightarrow R$$

$$H(s) = \frac{R^2C^2s^2 \cdot Av}{R^2C^2s^2 + (3 - Av)RCs + 1}$$



26 dB $\quad |W_p| = W_0 = 1 \text{ krad/sec}$

$$\angle W_p = \pm \frac{2\pi}{3}$$



$$\theta = \frac{\pi}{6}$$

$$S_t = -W_0 \sin\theta \pm j W_0 \cos\theta$$

C

$$(S-C)(S-C^*)=0$$

$$S^2-(C+C^*)S+|C|^2=0$$

$$\rightarrow S^2-2\,\mathrm{Re}\{C\}S+|C|^2=0$$

$$\rightarrow S^2+(3-A_V)\omega_0 S+\omega_0^2$$

$$\omega_0=|C|^2=1\ \text{krad/sec}=\frac{1}{RC}$$

$$(3-A_V)\omega_0=-2\,\mathrm{Re}\{C\}$$

$$A_V=2$$