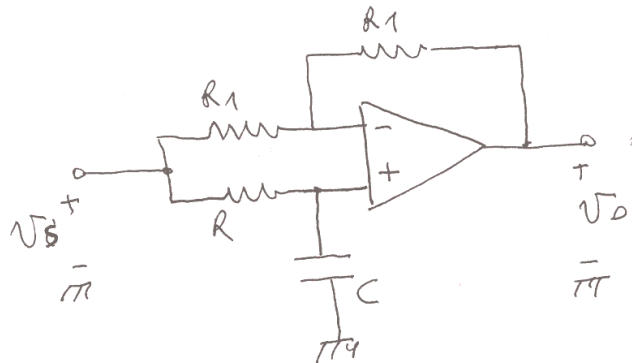
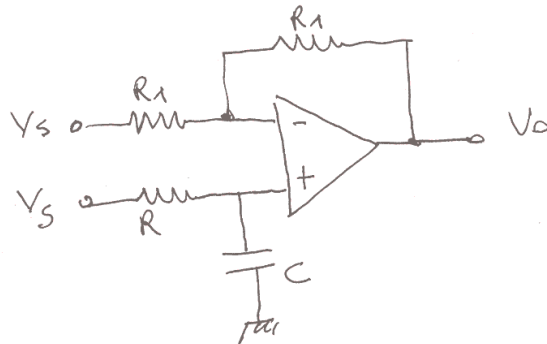


Esempio 6 Tracciare i diagrammi di Bode 1/2
del seguente circuito (op. ideale)

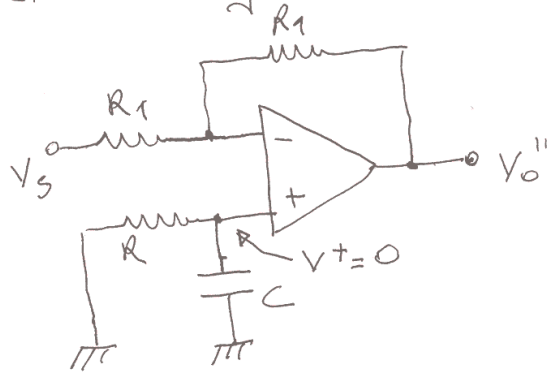
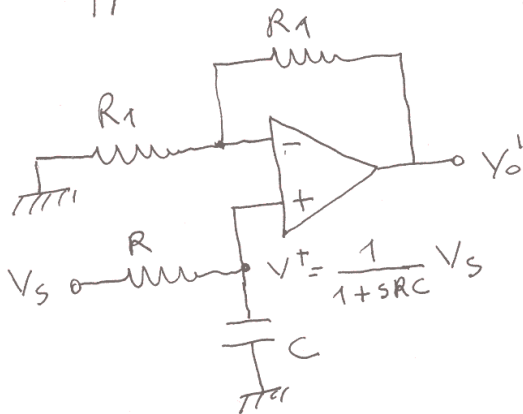


Soluzione

Si può considerare lo schema equivalente



e applicare la sovrapposizione degli effetti.



$$V_O' = \left(1 + \frac{R_1}{R_1}\right) V^+ = 2 \cdot \frac{1}{1+sRC} V_S$$

$$V_O'' = -\frac{R_1}{R_1} V_S = -V_S$$

$$\boxed{V_O = V_O' + V_O'' = \left(\frac{2}{1+sRC} - 1\right) V_S = \frac{1-sRC}{1+sRC} V_S}$$

(segue Esercizio 6)

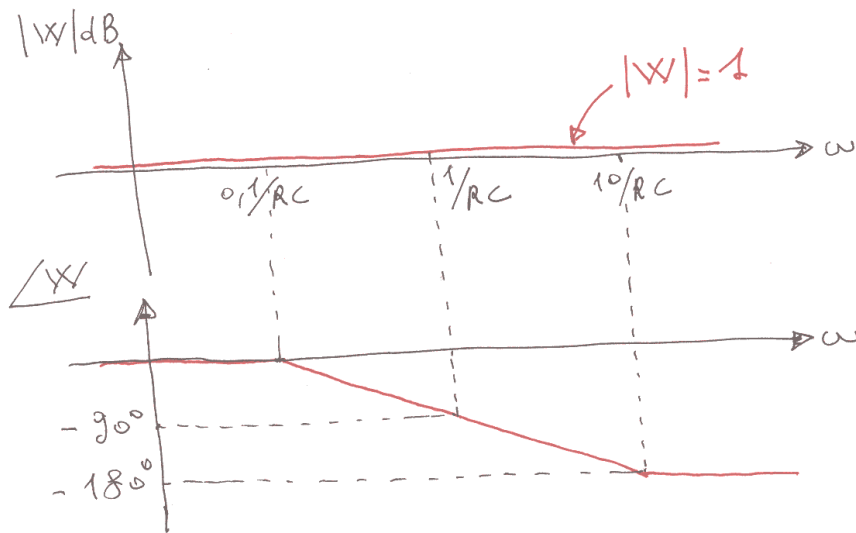
2/2

Posto $\omega_1 = \frac{1}{RC}$ ed $s = j\omega$

$$W(j\omega) = \frac{1 - \frac{j\omega}{\omega_1}}{1 + \frac{j\omega}{\omega_1}}$$

$$|W|_{dB} = 20 \log \frac{\sqrt{1 + \left(\frac{\omega}{\omega_1}\right)^2}}{\sqrt{1 + \left(\frac{\omega}{\omega_1}\right)^2}} = 20 \log 1 = 0 \text{ dB}$$

$$\angle W = -\arctan \frac{\omega}{\omega_1} - \arctan \frac{\omega}{\omega_1} = -2 \arctan \frac{\omega}{\omega_1}$$



Essendo $|W|=1$ l'ampiezza della sinusoidale di uscita ($V_o = |W| V_s$) coincide con quella dell'ingresso per qualunque valore di ω (para tutto). La fase varia da 0° a -180° per ω variabile nelle due decade centrate su $\omega_1 = \frac{1}{RC}$.