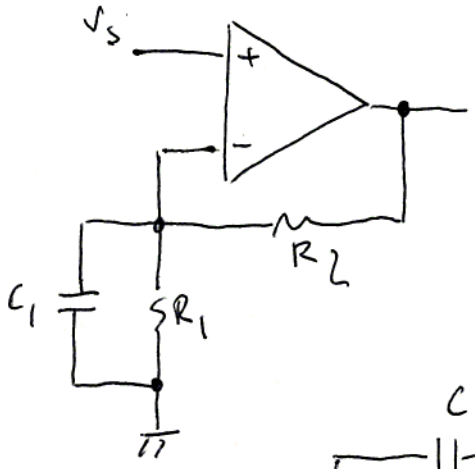
(A)

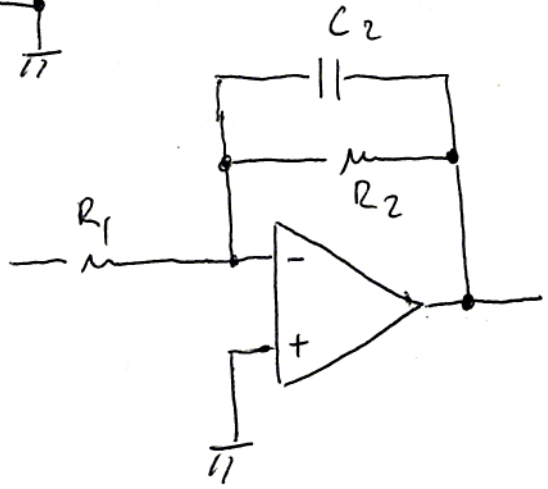


$R_1 = 2{,}5\,\Omega$

$R_2 = 10\,\Omega$

$C_1 = 1\,F$

(B)



$R_2 = 10\,\Omega$

$C_2 = 1\,F$

$R_1 = 2\,\Omega$

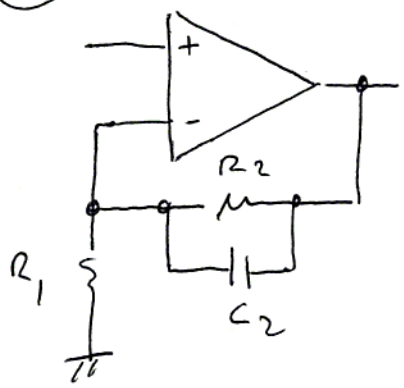
PER I DUE CIRCUITI DETERMINARE:

1) L'ESPRESSIONE DELLA FUNZIONE DI TRASFERIMENTO

2) EVENTUALI POLI E ZERI

3) GUADAGNO A FREQUENZE MOLTO BASSE $(\omega \to 0)$
E GUADAGNO A FREQUENZE MOLTO ALTE $(\omega \to \infty)$

(A)

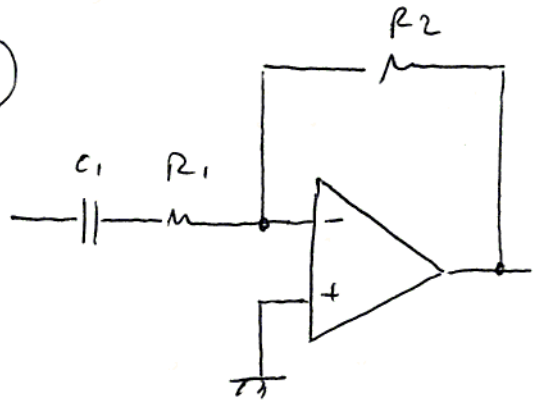


$R_1 = 2{,}5\ \Omega$

$R_2 = 10\ \Omega$

$C_2 = 1\ F$

(B)



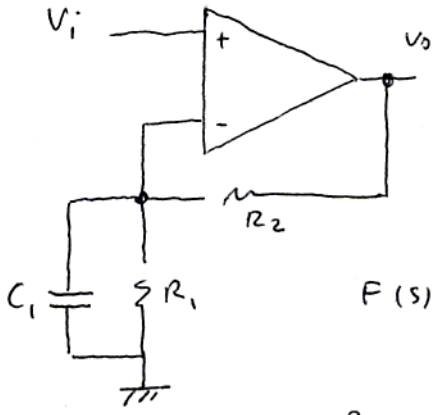
$R_1 = 2{,}5\ \Omega$

$R_2 = 10\ \Omega$

$C_1 = 1\ F$

PER I DUE CIRCUITI DETERMINARE:

1) L'ESPRESSIONE DELLA FUNZIONE DI TRASFERIMENTO
2) EVENTUALI POLI E ZERI
3) GUADAGNO A FREQUENZE MOLTO BASSE ($\omega \to 0$)
   E GUADAGNO A FREQUENZE MOLTO ALTE ($\omega \to \infty$)



$R_1 = 2{,}5\ \Omega$

$R_2 = 10\ \Omega$

$C_1 = 1\ F$

$$F(s) = \frac{V_o}{V_i} = \frac{Z_1 + Z_2}{Z_1}$$

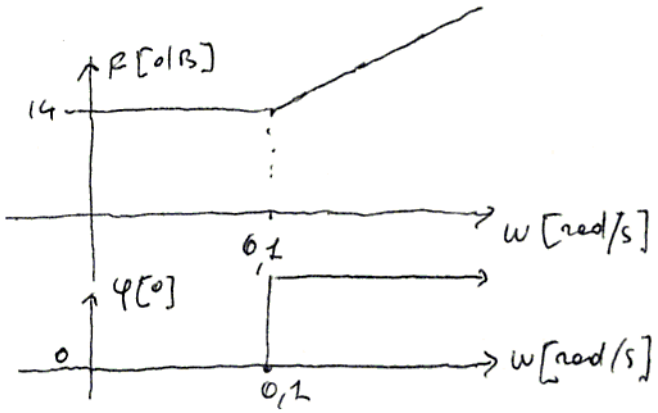
$$Z_1 = \frac{R_1}{1 + sR_1C_1}$$

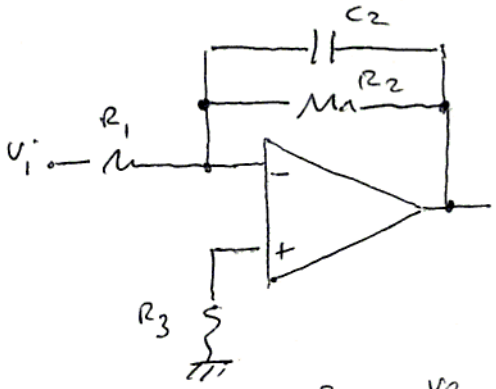
$$Z_2 = R_2$$

$$F(s) = \frac{\frac{R_1}{1+sR_1C_1} + R_2}{\frac{R_1}{1+sR_1C_1}} = \frac{R_1 + R_2}{R_1}\left(1 + sR_pC_1\right) \quad \text{con } R_p = R_1 /\!/ R_2 = \frac{R_1R_2}{R_1+R_2}$$

SOSTIT.

$$F(s) = 5\left(1 + 2s\right) = 5\left(1 + \frac{s}{0{,}5}\right)$$





$R_1 = 2\ \Omega$

$R_2 = 10\ \Omega$

$C_2 = 1\ F$

$$F(s) = \frac{V_o}{V_i} = -\frac{Z_2}{Z_1}$$

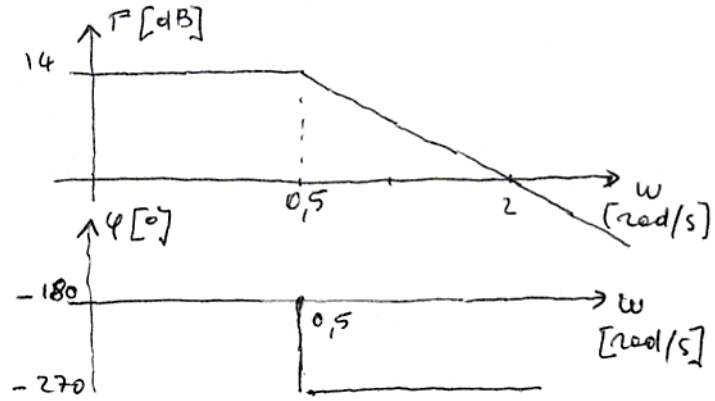
$$Z_1 = R_1$$

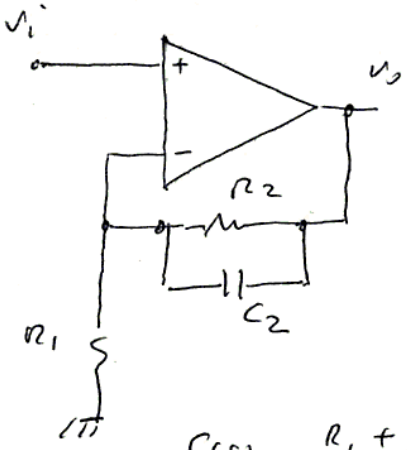
$$Z_2 = \frac{R_2}{1 + sR_2C_2}$$

$$F(s) = -\frac{\frac{R_2}{1+sR_2C_2}}{R_1} = -\frac{R_2}{R_1} \cdot \frac{1}{1 + sR_2C_2}$$

SOST.

$$F(s) = -5\frac{1}{1 + 10s} = -5\,\frac{1}{1 + \frac{s}{0{,}1}}$$





$R_1 = 2{,}5\,\Omega$

$R_2 = 10\,\Omega$

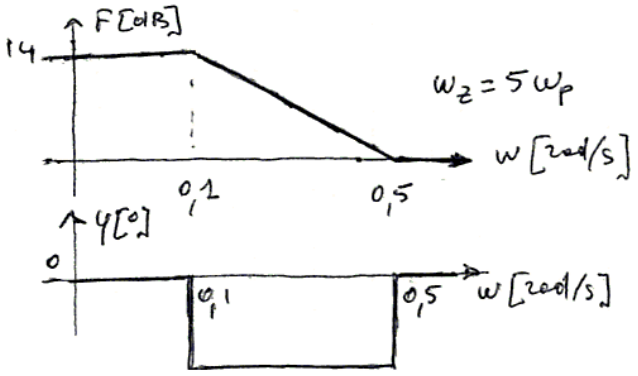
$C_2 = 1\,F$

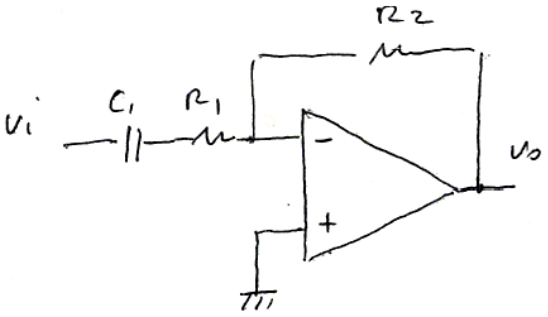
$$F(s) = \frac{v_o}{v_i} = \frac{Z_1 + Z_2}{Z_1} \qquad Z_1 = R_1 \qquad Z_2 = \frac{R_2}{1 + sR_2C_2}$$

$$F(s) = \frac{R_1 + \frac{R_2}{1+sR_2C_2}}{R_1} = \frac{R_1 + R_2}{R_1} \cdot \frac{1 + sR_pC_2}{1 + sR_2C_2} \quad \text{con } R_p = R_1 \| R_2 = \frac{R_1R_2}{R_1+R_2}$$

SOSTIT.

$$F(s) = 5\,\frac{1+2s}{1+10s} = 5\,\frac{1+\frac{s}{0{,}5}}{1+\frac{s}{0{,}1}}$$





$R_1 = 2{,}5\,\Omega$

$R_2 = 10\,\Omega$

$C_1 = 1\,F$

$$F(s) = \frac{v_o}{v_i} = -\frac{Z_2}{Z_1} \qquad Z_1 = \frac{1+sR_1C_1}{sC_1} \qquad Z_2 = R_2$$

$$F(s) = -\frac{R_2}{\frac{1+sR_1C_1}{sC_1}} = -\frac{sR_2C_1}{1+sR_1C_1}$$

SOSTIT.

$$F(s) = -\frac{10s}{1+2{,}5s} = -\frac{10s}{1+\frac{s}{0{,}4}}$$