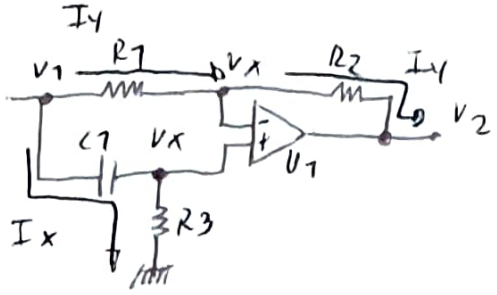
TSO:



$$H(S) = \frac{V_2}{V_1} \rightarrow \begin{cases} \left[V_x = V_1 \cdot \frac{R_3}{\frac{1}{SC_1} + R_3} \right] (1) \\ \left[\frac{V_1 - V_x}{R_1} = \frac{V_x - V_2}{R_2} \right] (2) \end{cases}$$

De (1)

$$V_x = V_1 \frac{R_3}{\frac{1}{SC_1} + R_3} = V_1 \cdot \frac{R_3}{\frac{1+SC_1R_3}{SC_1}} = V_1 \cdot \frac{SC_1R_3}{SC_1R_3+1} \rightarrow \left[V_x = V_1 \frac{SC_1R_3}{SC_1R_3+1} \right] (3)$$

De (2)

$$\frac{V_1 - V_x}{R_1} = \frac{V_x - V_2}{R_2} \rightarrow V_1R_2 - V_xR_2 = V_xR_1 - V_2R_1 \rightarrow \left[V_1R_2 - V_x(R_1+R_2) = -V_2R_1 \right] (4)$$

(3) → (4): $V_1R_2 - V_1 \frac{SC_1R_3}{SC_1R_3+1} \cdot (R_1+R_2) = -V_2R_1$

$$V_1 \left(R_2 - \frac{SC_1R_3 \cdot (R_1+R_2)}{SC_1R_3+1} \right) = -V_2R_1$$

$$V_1 \left(\frac{R_2R_3C_1S + R_2 - SC_1R_3(R_1+R_2)}{SC_1R_3+1} \right) = -V_2R_1$$

$$\rightarrow V_1 \left(\frac{SC_1R_2R_3 + R_2 - SC_1R_1R_3 - SC_1R_2R_3}{SC_1R_3+1} \right) = -V_2R_1$$

$$H(S) = \frac{V_2}{V_1} = \frac{1}{R_1} \cdot \frac{SC_1R_1R_3 - R_2}{SC_1R_3+1} = \frac{1}{R_1} \cdot \frac{C_1R_1R_3}{C_1R_3} \cdot \frac{S - \frac{R_2}{C_1R_1R_3}}{S + \frac{1}{C_1R_3}}$$

$$\rightarrow \left[H(S) = \frac{S - \frac{R_2}{C_1R_1R_3}}{S + \frac{1}{C_1R_3}} \right]$$