14.47 Find the transfer function for the network shown in Fig. P14.47.

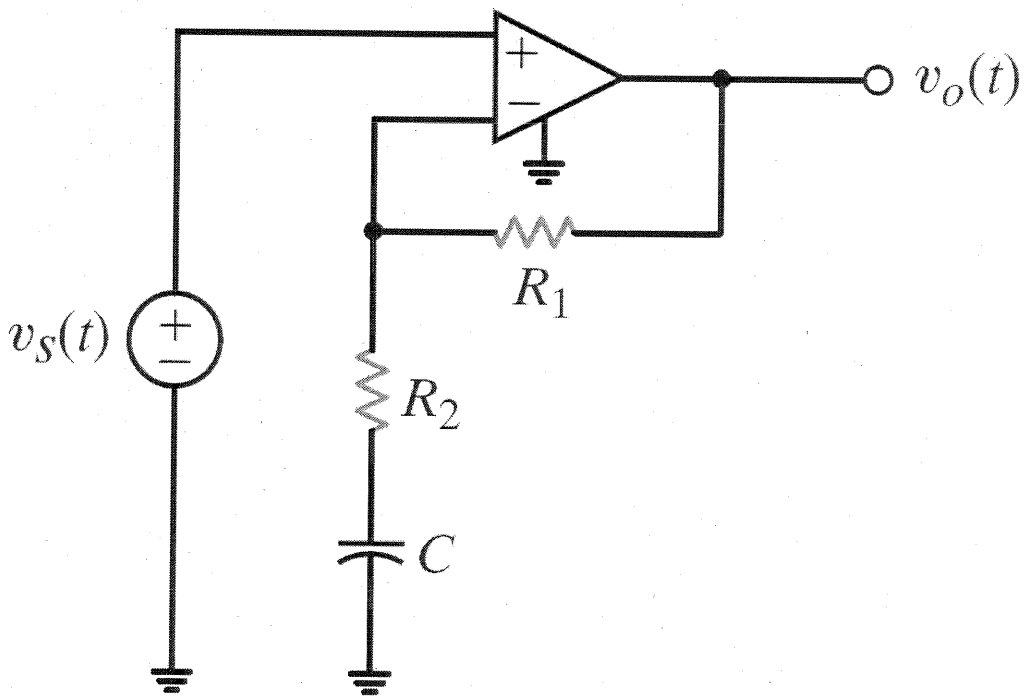

Figure P14.47

SOLUTION: Let $Z_2 = R_1$ & $Z_1 = R_2 + \frac{1}{sC} = \frac{R_2Cs+1}{sC}$

$$\frac{V_o}{V_s} = 1 + \frac{Z_2}{Z_1} = 1 + \frac{R_1Cs}{R_2Cs+1} = \frac{(R_1+R_2)Cs+1}{R_2Cs+1}$$

$$\boxed{\frac{V_o}{V_s} = \left(1 + \frac{R_1}{R_2}\right)\left(\frac{s+\frac{1}{CR}}{s+\frac{1}{CR_2}}\right) \qquad R = R_1 + R_2}$$