

Homework Assignment No. 3

Due on Monday, January 26, 2004

Problems refer to the second edition and problems in () refer to the first edition.

1.) The differential amplifier below uses an ideal op amp. Find the values of R_1 , R_2 , R_3 and R_4 if the single-ended input resistances, R_{in1} and R_{in2} are to be $100\text{k}\Omega$ and the output voltage is to be $v_{out} = 10(v_1 - v_2)$.

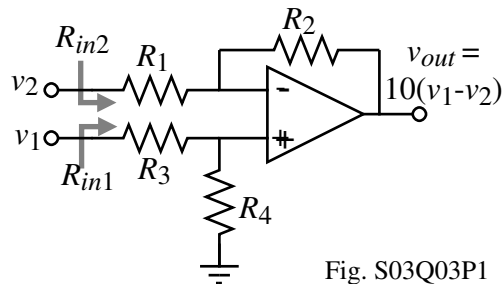
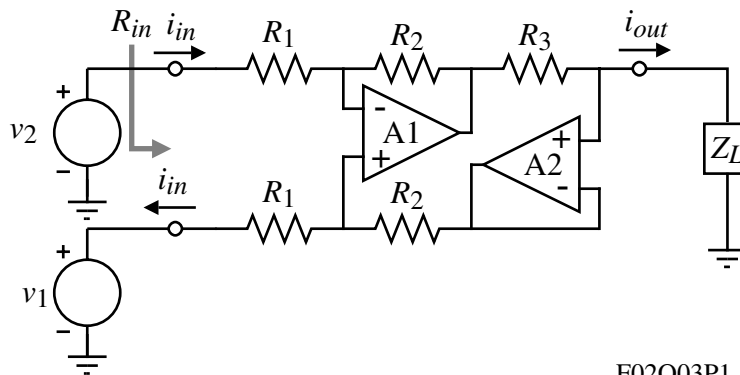


Fig. S03Q03P1

2.) Assume that the op amps are ideal and find i_{out} as a function of the inputs, v_1 and v_2 . Find the input resistance defined as $R_{in} = (v_2 - v_1)/i_{in}$.



F02Q03P1

3.) Problem 11.38 (12.24) of the text [Ans. $v_{o2} = -\frac{R_2}{R_1} v_s$, and $v_{o1} = -\left(\frac{R_2}{R_1} + \frac{R_3}{R_1}\right) v_s$]

4.) Problem 11.39 (12.29 modified – see second edition) of the text.

5.) Problem 11.98 (12.74) of the text.