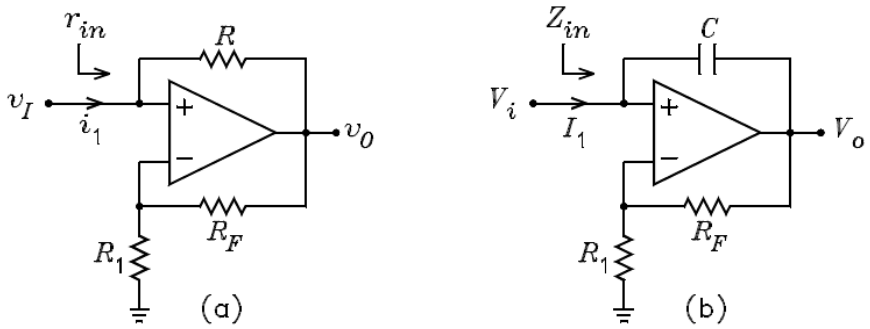
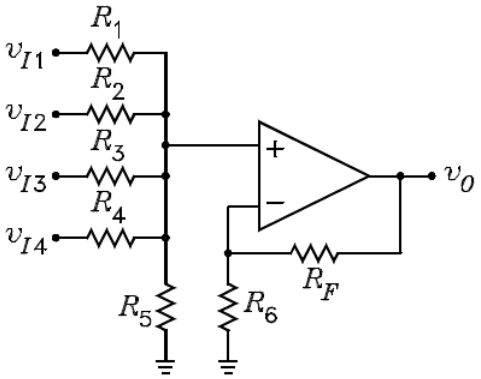
EE 101 Tutorial 7: Linear Op-amp Circuits

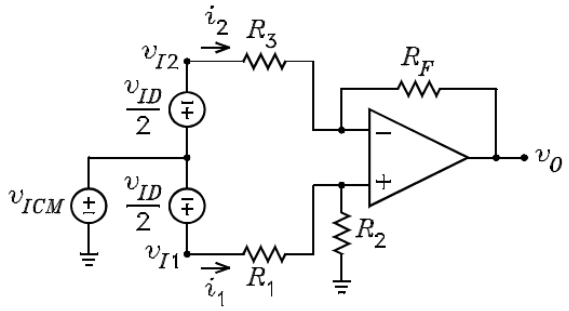
1. Assuming ideal-op amps operating in the linear regime, analyze the following circuits to find out expressions for r_{in} and Z_{in}. Such circuits are called negative impedance converters.



2. Analyze the circuit below (a non-inverting summer) to find an expression of v_o in terms of the input voltages.



3. For the difference amplifier below, v_{CM} is the common-mode input voltage and v_D is the differential mode input voltage. Find out expressions for the differential mode (A_d) and common mode (A_c) gains for arbitrary R_F, R_3, R_2 and R_1 and then for $R_F/R_2=R_3/R_1$



$$v_{I1} = v_{CM} + \frac{v_D}{2}$$

$$v_{I2} = v_{CM} - \frac{v_D}{2}$$