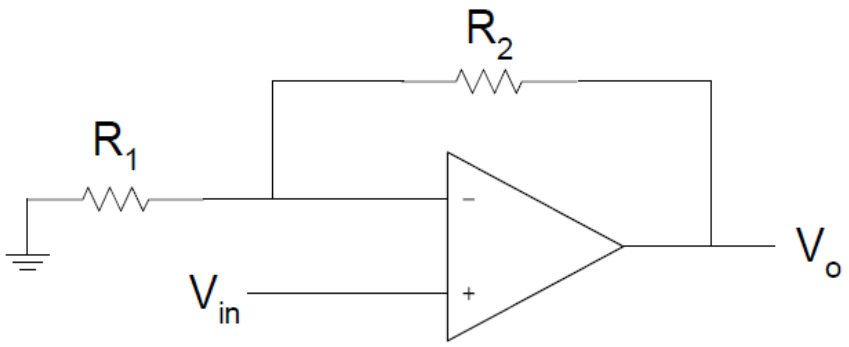
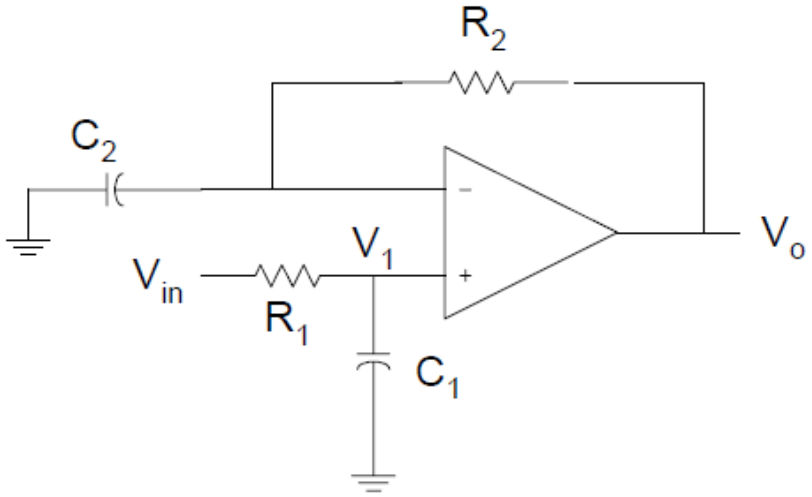
1- For Figure Shown, if the open-loop gain is finite,
(a) Show that the closed-loop gain is given by the expression shown in the Equation given.

$$\frac{V_O}{V_{IN}} = -\frac{\left(1 + R_2/R_1\right)}{1 + \left(1 + R_2/R_1\right)/A}$$

(b) If R_2 = 100K Ohms and R_1 = 0.5K Ohms, plot the percentage error in the magnitude of the closed-loop gain for open-loop gains of 10^2, 10^4, 10^6 and 10^8.



2- For the figure shown:
(a) Derive the transfer function.
(b) Use MATLAB to find the poles and zeros.
(c) Plot the magnitude and phase response, assume that C_1 = 0.1uF, C_2 = 1000 0.1uF, R_1 = 10K Ohms, and R_2 = 10 Ohms.



3- An op amp has an open-loop dc gain of 10^7, the unity gain bandwidth of 10^8 Hz. For an op amp connected in an inverting configuration Figure, plot the magnitude response of the closed-loop gain. If R_2/R_1 = 100 , 600, 1100.