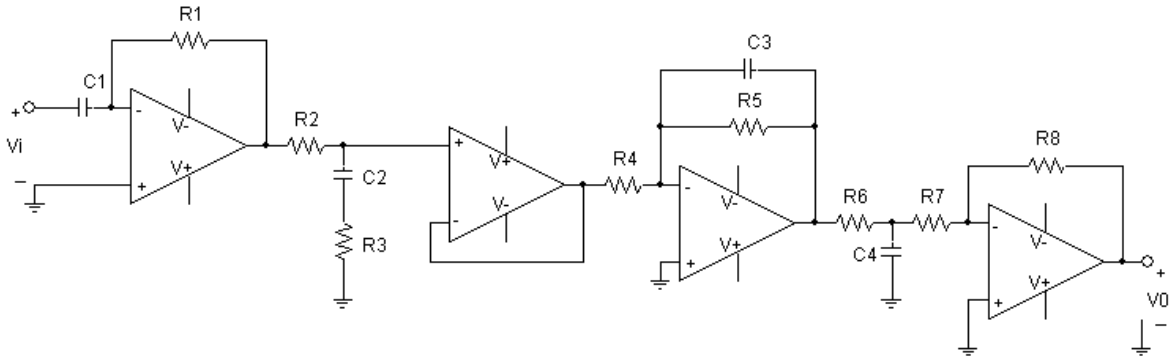
Handout 1: Analysis of Amplifier Transfer Functions

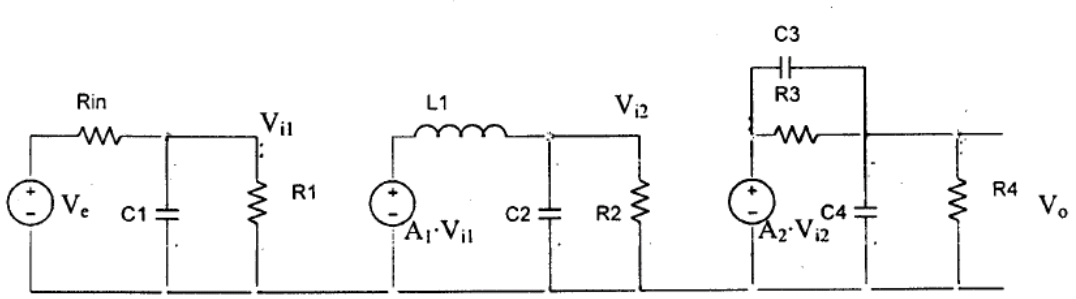
For each of the different cases in which an amplifier can be expressed, do the following:

1. Obtain the expression of the transfer function, output voltage (V_0) over input voltage (Vi).
2. Provide the value of pass-band (mid-frequency) gain and the location of the poles and zeroes of the system.

CASE 1: Expressed as a chain of Ideal OP AMPS



CASE 2: Expressed as a chain of voltage dependent sources and passive discrete components



$C_1 = 1nF$, $C_2 = 1.5nF$, $C_3 = 16nF$, $C_4 = 40nF$, $L_1 = 1.7\ mH$.
$R_{in} = 75\Omega$, $R_1 = 2K\Omega$, $R_2 = 320\Omega$, $R_3 = 300\Omega$, $R_4 = 4.6K\ \Omega$.
$A_1 = 10^3$, $A_2 = 10^4$.

CASE 3: Poles and Zeroes analytical expression

$$A(s) = \frac{A_0 * s * (1 + \frac{50000s}{\pi})}{(1 + \frac{500s}{\pi})(1 + \frac{2,5s}{\pi})(1 + \frac{10^{-7}s}{\pi})(1 + \frac{10^{-9}s}{\pi})(1 + \frac{10^{-11}s}{\pi})}$$

Ao=2500/π, s=jω y *f* en Hz.