1. The non-inverting amplifier uses type I feedback. Find a formula for the input and output impedance for the non-inverting amplifier in terms of $R_1$ and $R_2$:

2. Derive the transfer function $H(s)$ for the 2nd-order highpass filter in terms of the component values:

3. Show that the first-order lowpass filter is a Butterworth filter:

4. Assume that $R_f$ and $R_g$ have nominal values of 10 KΩ, and $R_1$ and $R_2$ have nominal values of 1 KΩ. Assume the tolerance on these resistors is 5%, find the worst-case CMRR for the differential amplifier.