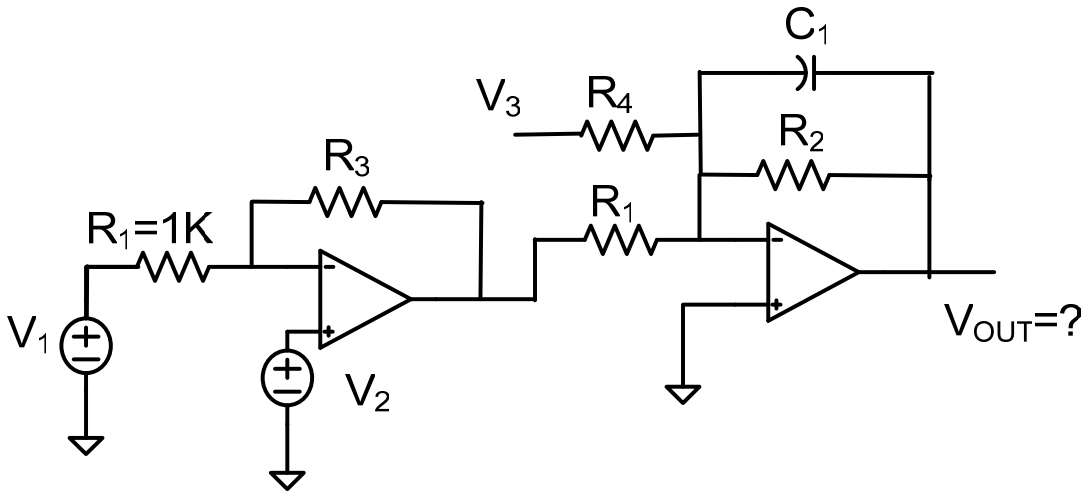
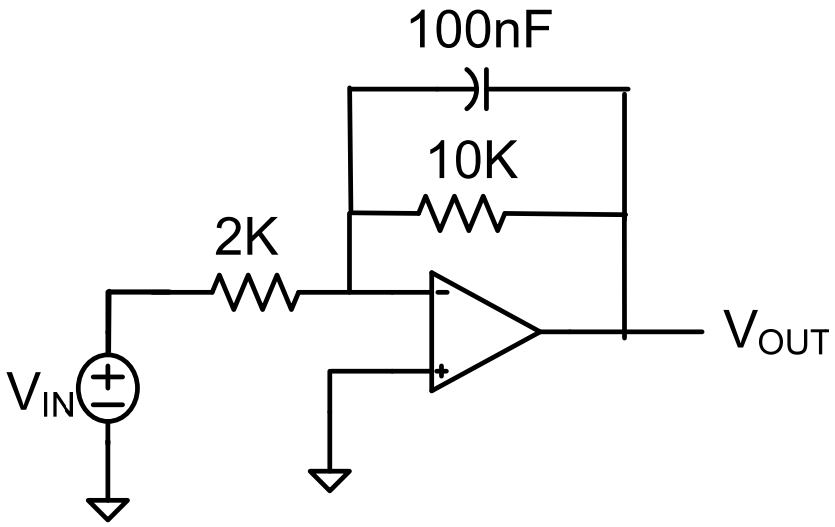
EE 230
Homework Assignment 5
Spring 2010
.

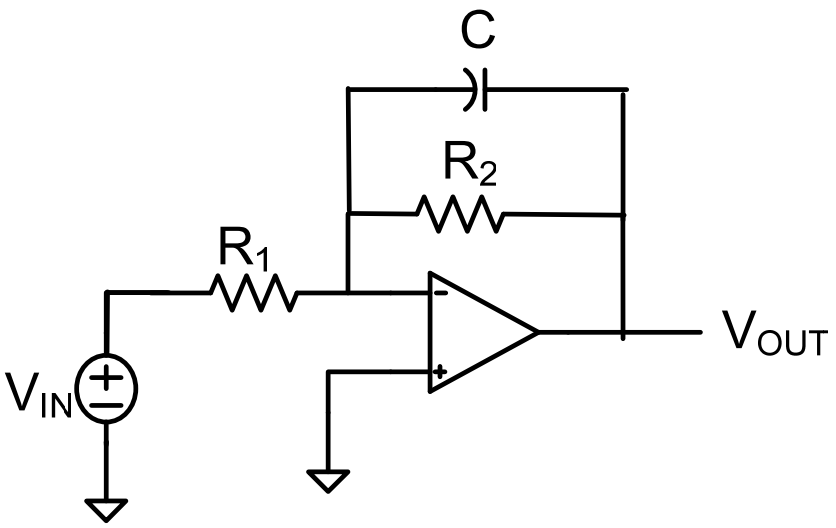
Problem 1 Determine the output variable (in the s-domain) indicated. Assume the op amps are ideal.



Problem 2 Determine the 3-dB band edge for the following circuit and plot the magnitude of the transfer function. Assume the op amp is ideal.



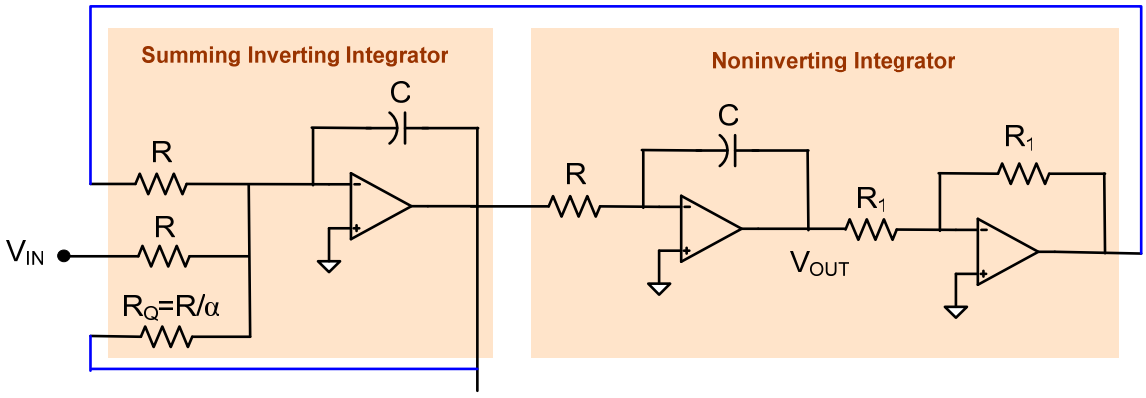
Problem 3 Plot the poles and zeros of the following circuit. Assume the op amp is modeled by the frequency dependent gain $A(s)=\dfrac{A_0}{\dfrac{s}{p}+1}$ where A_0 is the dc gain of the op amp and the parameter p is positive.



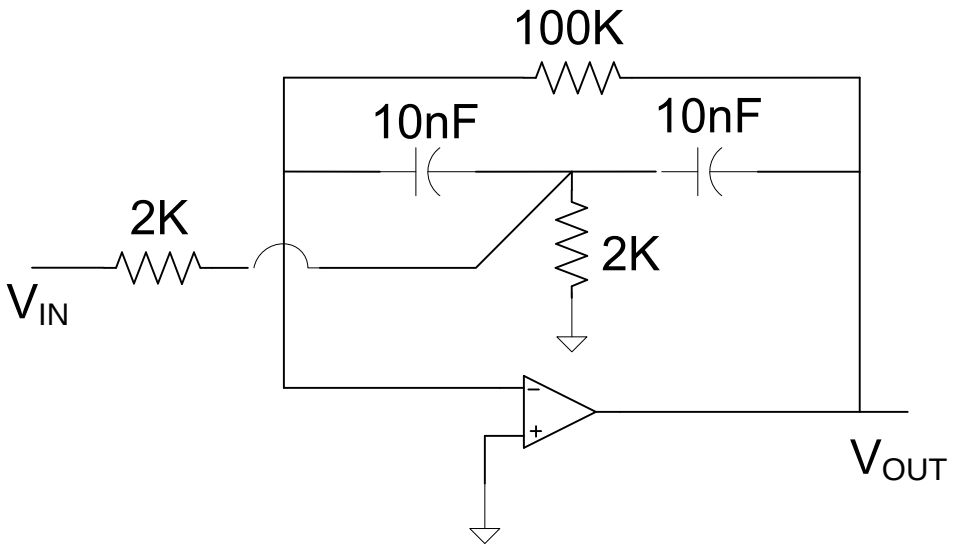
Problem 4 Design a circuit that has in input impedance of -20KΩ.

Problem 5 Design a noninverting integrator that has a unity gain frequency of 10KHz.

Problem 6 Obtain the transfer function $T(s)=V_{OUT}/V_{IN}$. Assume the op amps are ideal. Determine the poles and zeros of this circuit and the 3dB bandwidth.

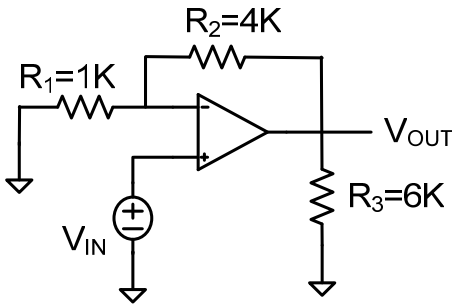


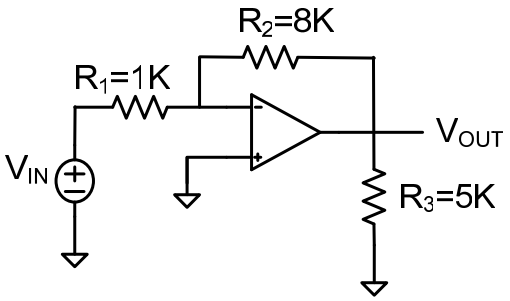
Problem 7 Determine the peaking frequency, the 3dB bandwidth, and the poles of the following circuit. Assume the op amp is ideal.

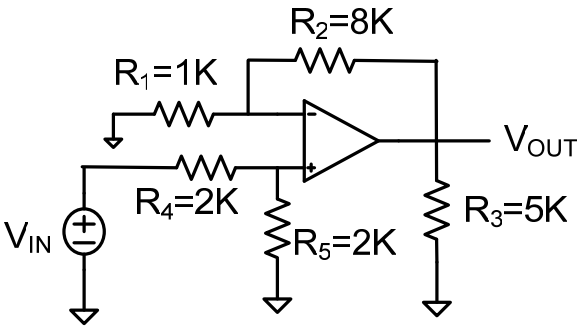


Problem 8 Design a bandpass filter with a peaking frequency at 5KHz and a bandwidth of 500Hz. Assume ideal op amps.

Problem 9 Determine the 3dB bandwidth of the following circuits if the GB of the op amps are all 2MHz.







Problem 10 Determine the 3dB bandwidth of the following circuit and compare it with that of a single-stage noninverting amplifier with the same dc gain. Assume the GB of the op amp is 750KHz.