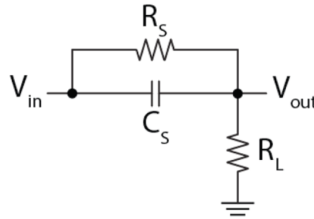
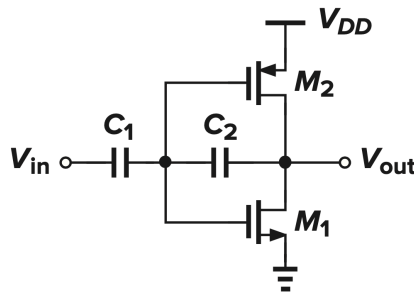


1. For the circuit below: ($R_s = 9k\Omega$, $C_s = 1nF$, $R_L = 1k\Omega$)

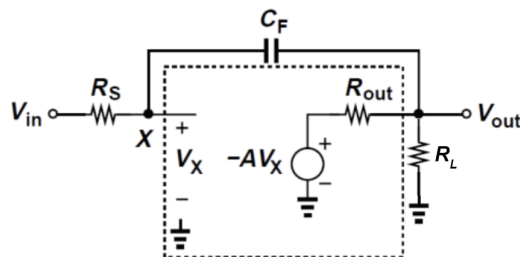


- Calculate the transfer function $V_{out}/V_{in}(s)$ and find pole and zero frequencies.
- Draw the phase and magnitude Bode plots.
- if $v_{in}(t) = 0.2 + \sin(\omega t)$ with $\omega = \omega_{p1}$ (first pole), find output $v_{out}(t)$.

2. For the circuit below, draw the small-signal model, find the location of poles and zeros, and draw the estimated Bode plot. (Include the r_o of M1 and M2 in your model and ignore the parasitic capacitances of M1 and M2)



3. For the circuit below:



- Find the transfer function directly by writing KVL/KCL equations.
- Use the Miller technique (for C_F) and re-draw the new circuit.
- Find transfer function for part b.
- Compare the results from part c and part a.