he material we have covered so far this semester is summarized (but NOT limited to) below:

Understand the basic operation of a MosFet:

- 3 regions of operation: cutoff, triode, saturation and know all current equations associated with each region and what their cross sections look like
- the I_D versus V_{DS} graph

Understand the bias point concept for linear amplification.

Be able to separate the DC and AC analysis for a circuit containing a MosFet.

Be able to analyze a circuit (with or without cap in it) containing a MosFet for DC operation.

Be able to draw a small-signal model of a MosFet circuit.

Be able to analyze a small-signal circuit to find overall gain, midband gain, input resistance, and output sistance.

Determine ω_L and ω_H or f_L and f_H.

V_t=1V, $k_n'(W/L)$=2A/V^2, λ=0

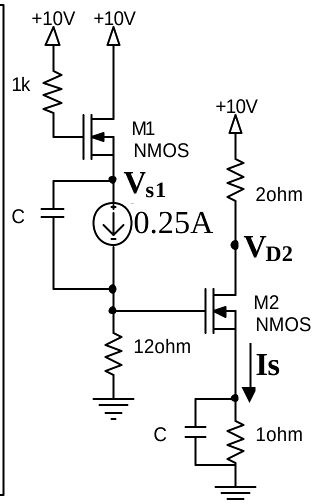
The 0.25A current source is not ideal and may have a voltage drop across it. All caps are large.

Solve the circuit for the **DC** values of:

(a) V_{D2}

(b) V_{s1}

(c) Is



V_t=1V, $k_n'(W/L)$=1mA/V^2, v_{sig} is an AC source

Transistor 1 has DC values: VGS=5V, ID=8mA

Transistor 2 has DC values: VGS=5V, ID=8mA

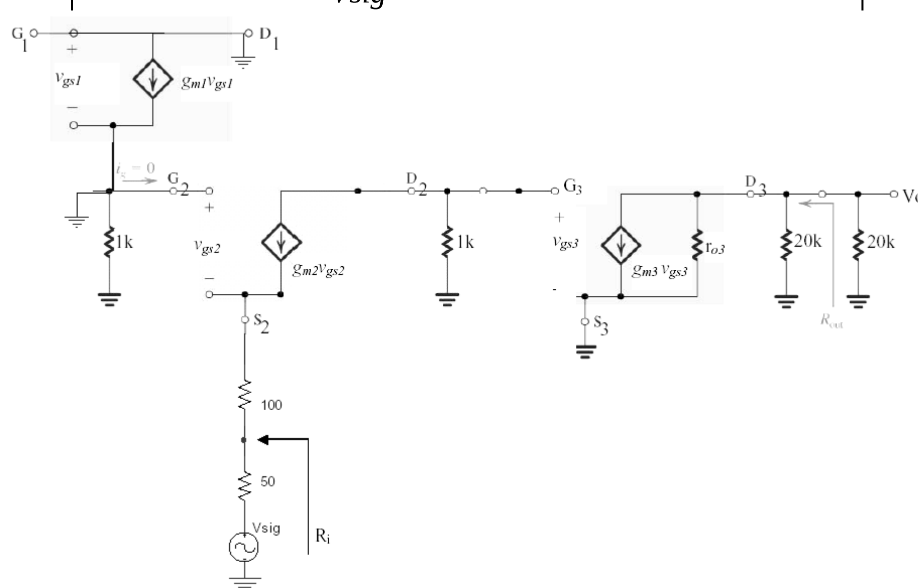
Transistor 3 has DC values: VGS=3V, ID=2mA

λ=0 (for all transistors)

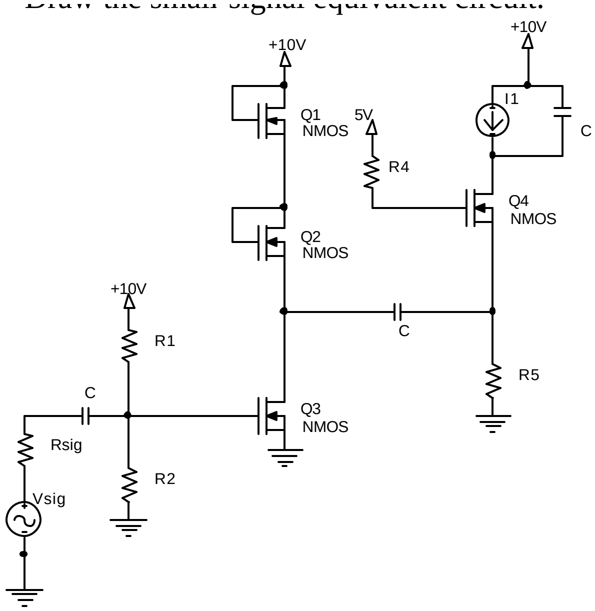
Find (a) R_i (input resistance – ignore the 50ohm and Vsig)

(b) Rout (output resistance

(c) midband gain, $\dfrac{Vo}{Vsig}$



Draw the small-signal equivalent circuit.



et V_t=1V, k_n'(W/L)=1mA/V^2, and λ=0.

) Draw the small-signal equivalent circuit

) Analyze the circuit to find $A_v=V_o/V_{in}$, R_{in} and R_{out}

) Find all low frequency pole values

) Find ω_H given Cgs= 10pF and C_{gd}=0.1pF.