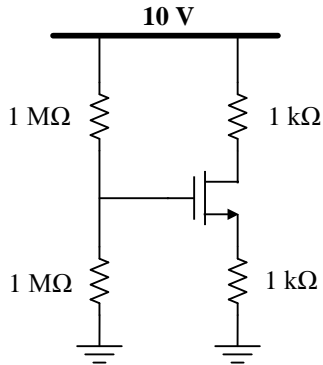
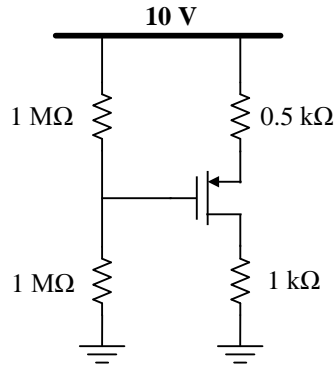


Electronics 2, Assignment #2, DC analysis of MOSFET transistors.

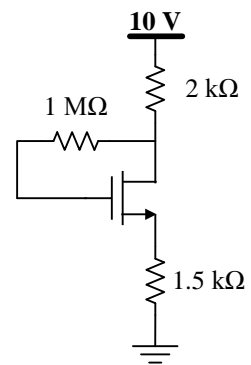
1- In the following circuits, determine the bias points of the transistors.



$$\begin{cases} V_{TH} = 2V \\ \mu_n C_{ox} \frac{W}{L} = 0.5 \frac{mA}{V^2} \end{cases}$$

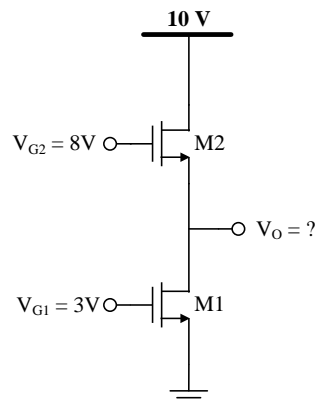
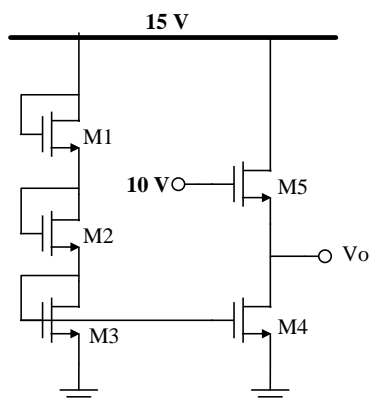


$$\begin{cases} V_{TH} = -1V \\ \mu_p C_{ox} \frac{W}{L} = 2 \frac{mA}{V^2} \end{cases}$$

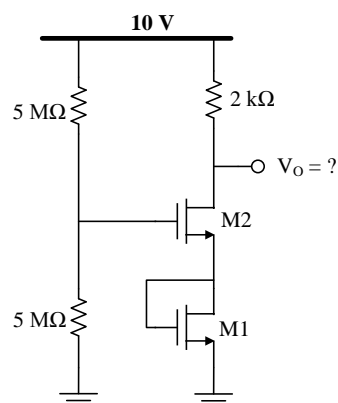


$$\begin{cases} V_{TH} = 1V \\ \mu_n C_{ox} \frac{W}{L} = 1 \frac{mA}{V^2} \end{cases}$$

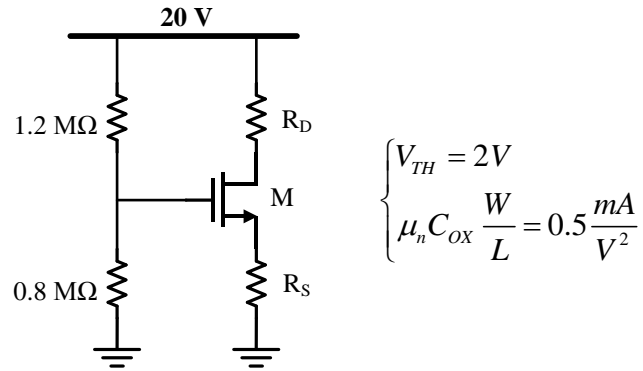
2- In the circuits shown below, all of the transistors are the same and operate in the saturation region. Calculate the output voltage.



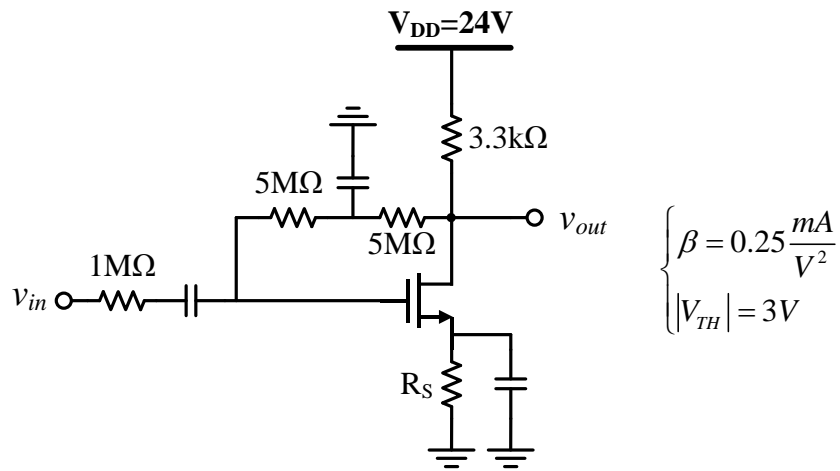
3- In the following circuit, the transistors are the same and operate in saturation. Calculate the output voltage. Assume $\beta = 0.5 mA/V^2$, $V_{TH} = 0.5V$.



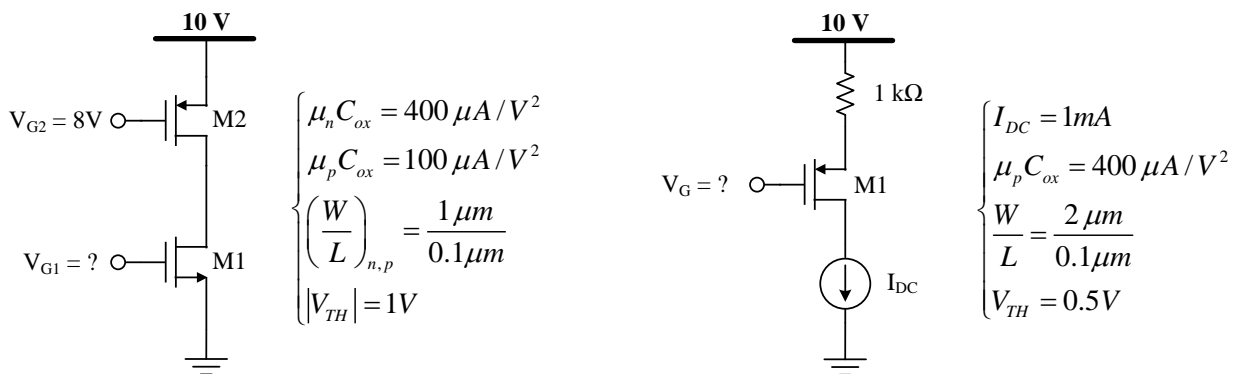
4- Specify R_D and R_S so that the transistor operates in saturation and $I_D = 1 \text{ mA}$.



5- Specify the source resistance such that the bias point current will be equal to 2.5 mA.



6- Determine the requested parameters. Assume that the transistors are in saturation.



Good Luck- M.R. Ashraf