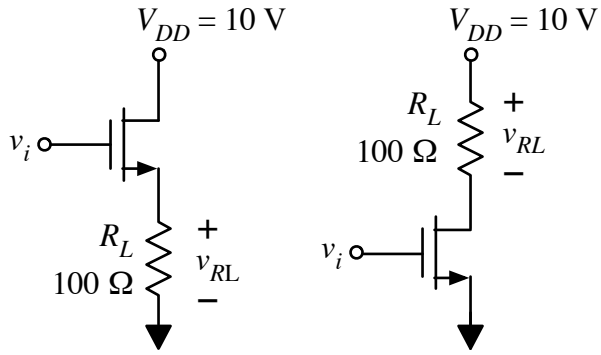
EE 230 — HW 6.6 Name_____

At right are two configurations for using an NMOS to deliver power to a load: one with the load connected to the source and one with the load connected to the drain.



Assume that the control voltage, v_i , is either 0 or 10 V. Of course, if $v_i = 0$ in either circuit, the NMOS is off and no current flows. For the case of $v_i = 10$ V for each circuit, calculate the load current current and voltage, i_{RL} and v_{RL}. Calculate the power delivered to the load. The calculate the power being delivered by the supply: $P_S = V_{DD} \cdot i_D$. Determine the power being dissipated in each of the transistors What is the power delivery efficiency $\eta = P_{RL}/P_S$ in each case?

For the transistors, $K_n = 5$ mA/V^2. and $V_T = 1$ V.

i_{RL} = _____ i_{RL} = _____

v_{RL} = _____ v_{RL} = _____

P_{RL} = _____ P_{RL} = _____

P_S = _____ P_S = _____

P_{NMOS} = _____ P_{NMOS} = _____

η = _____ η = _____

Put your answers — and whatever work will fit — on this sheet. Staple any sheets with additional work behind.