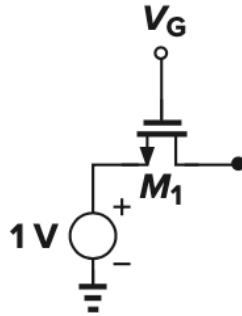
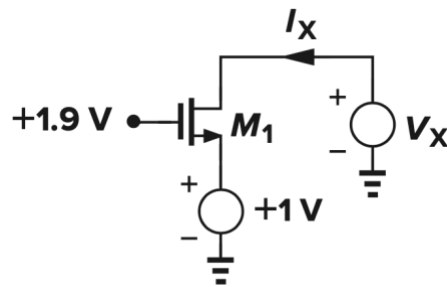


## EE-320 Exercise 1

1. For the circuit shown below, plot the “on resistance” of  $M_1$  as a function of  $V_G$ . Assume  $\mu_n C_{ox} = 50 \mu A/V^2$ ,  $W/L = 10$ , and  $V_{TH} = 0.3 V$ . Hint: the drain terminal is open.



2. Sketch  $I_X$  as a function of  $V_X$  as  $V_X$  varies from 0 to 1V. Assume  $V_{TH} = 0.7 V$ .



3. Find an equation that relates  $I_X$  to  $V_X$  and  $I_1$ , as  $V_X$  varies from 0 to 1 V. Assume  $V_{TH} = 0.7 V$  (no need to solve the equation for  $I_X$ ).

