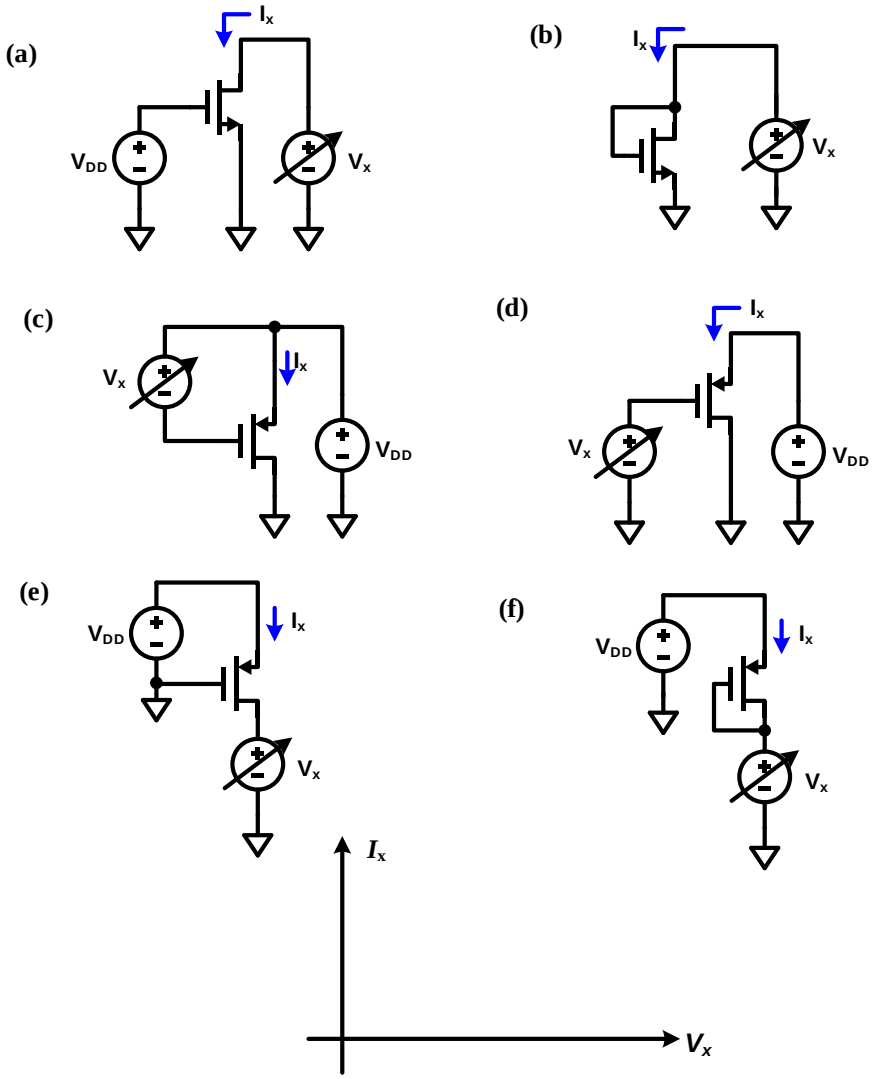
HW #5

1) **Textbook problems:** 6.19, 6.25, 6.29, 6.31, 6.39(a,b), 6.43(a, c).
   - You will find the values of transistor parameters in the textbook at the beginning of the problem set.
   - For problem 6.25, you may use R_D=1kΩ, and W/L=10/0.18. Otherwise, you will end up with expressions for answers.
   - For problem 6.29, note that λ is not equal to zero, so you will need graphical solution.
2) For the circuits seen below, plot the current I_x as the voltage V_x is swept from 0 to V_{DD}=1.8V. (Note the difference between NMOS and PMOS symbols)



3) Using Cadence, generate all I-V curves (i.e. I_D-V_{GS} and I_D-V_{DS} for varying V_{GS}) for NMOS and PMOS of sizes 18µ/0.18 µ and 36 µ /0.18 µ respectively. Find V_{THN} (V_{THP}) and $V_{DS,sat}$ ($V_{SD,sat}$) for both NMOS (and PMOS). Label the plot along with the cutoff, triode and saturation regions.

Solve on your own (Don't turn these in): 6.2, 8, 10, 18, 20, 24, 26, 28, 32, 36, 40, 42, 44.