

Homework 3 (Due date: 10/13)

HW3.1: (40 points)

Using small-signal parameters to find each amplifier's voltage gain and output resistance in Fig 3.1 (*channel length modulation* and *body effect* cannot be ignored).

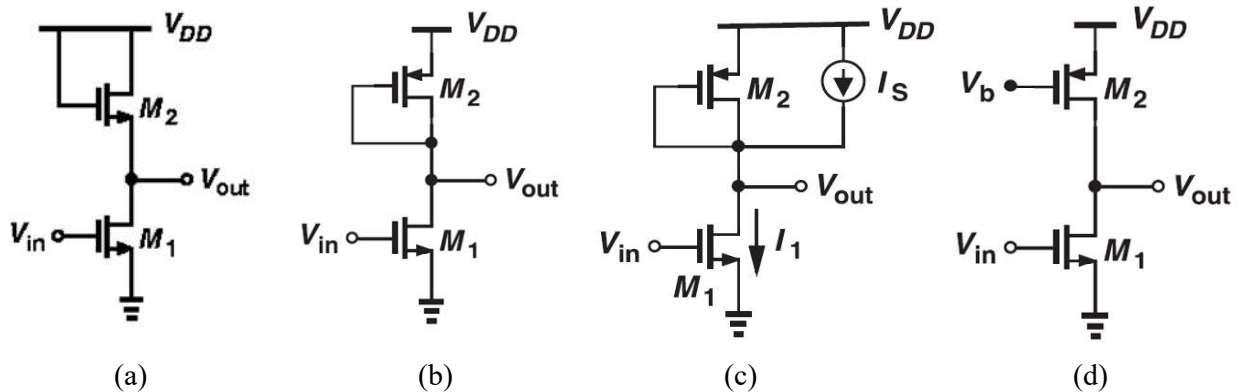


Fig. 3.1

HW3.2: (10 points)

Using small-signal parameters to derive the output resistance (R_{out}) in Fig. 3.2.

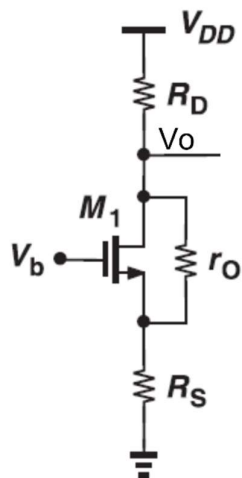


Fig. 3.2

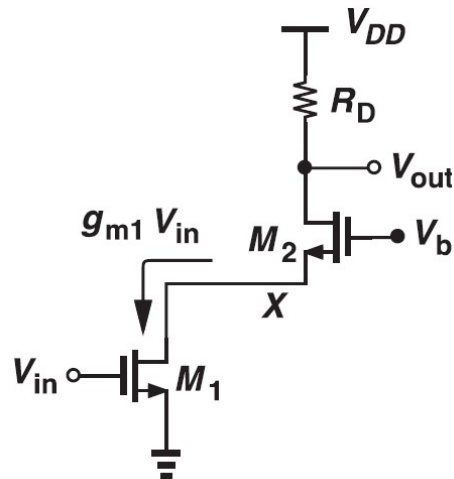


Fig. 3.3

HW3.3: (20 points)

Fig. 3.3 shows a common-gate circuit.

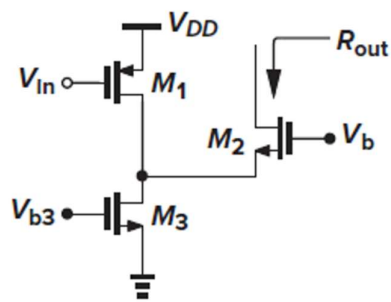
- If we define a minimum output voltage, $V_{out,min}$, how do you find out the valid input range of V_{in} ?
- Calculate the voltage gain and output resistance.

Homework 3 (Due date: 10/13)

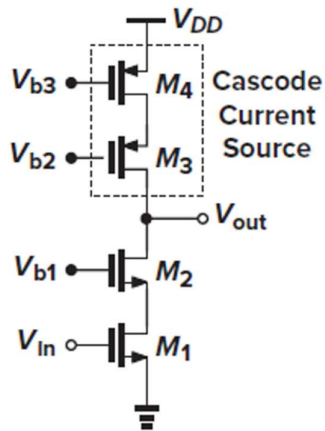
HW3.4: (30 points)

Calculate the voltage gain and output resistance of circuits in Fig. 3.4.

Note: Fig. 3.4(a) only needs to calculate the output resistance.

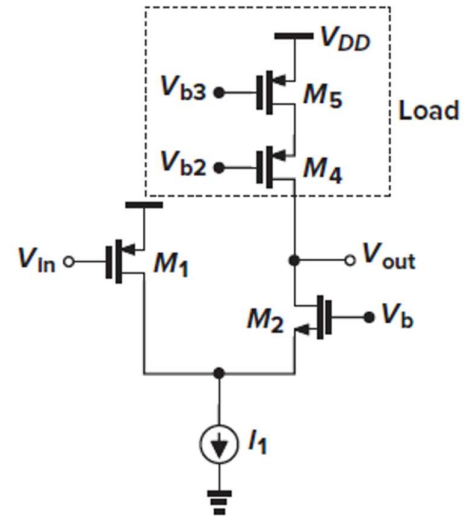


(a)



(b)

Fig. 3.4



(c)