類比積體電路設計概論 HW6, due date: 07 Dec.

HW6.1 (20 points)

Calculate the close-loop input and output resistance ($R_{in,CL}$ and $R_{out,CL}$) using small-signal parameters.

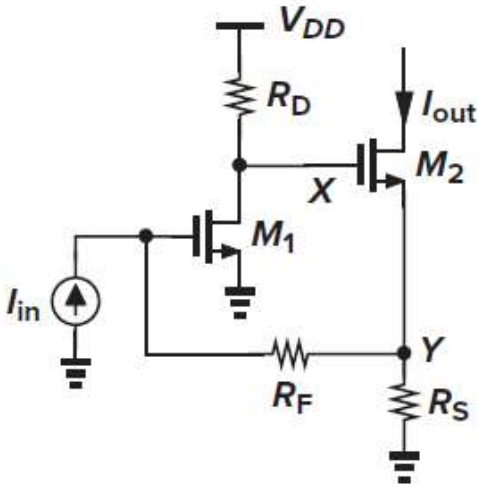
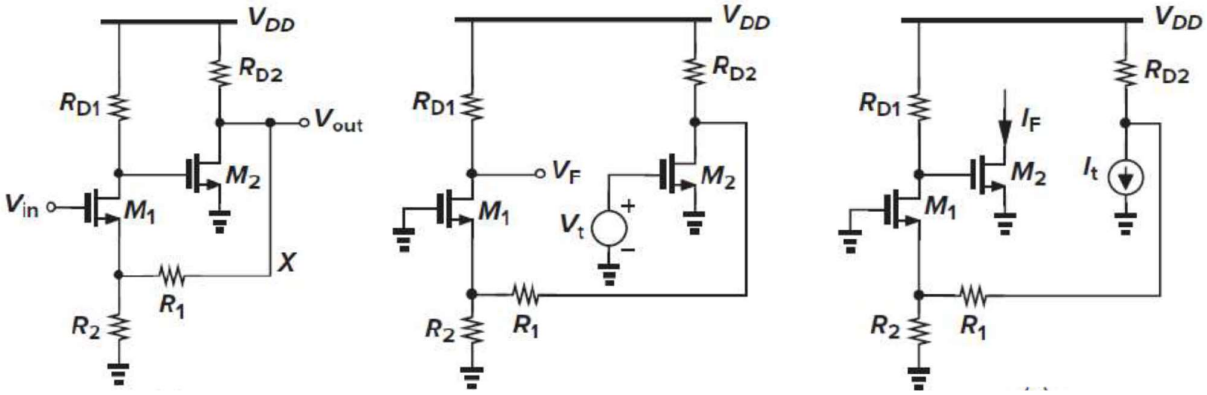


Fig. 6.1

HW6.2 (20 points)

As shown in Fig. 6.2(a), please prove that the loop gain, I_F/I_t (shown in Fig. 6.2(c)), is the same as that using V_F/V_t (shown in Fig. 6.2(b)).



(a) (b) (c)

Fig. 6.2

類比積體電路設計概論 HW6, due date: 07 Dec.

HW6.3 (40 points)

Using feedback techniques, calculate the input and output impedance and voltage gain of each circuit in Fig. 6.3. Using small-signal parameters to represent your solutions.

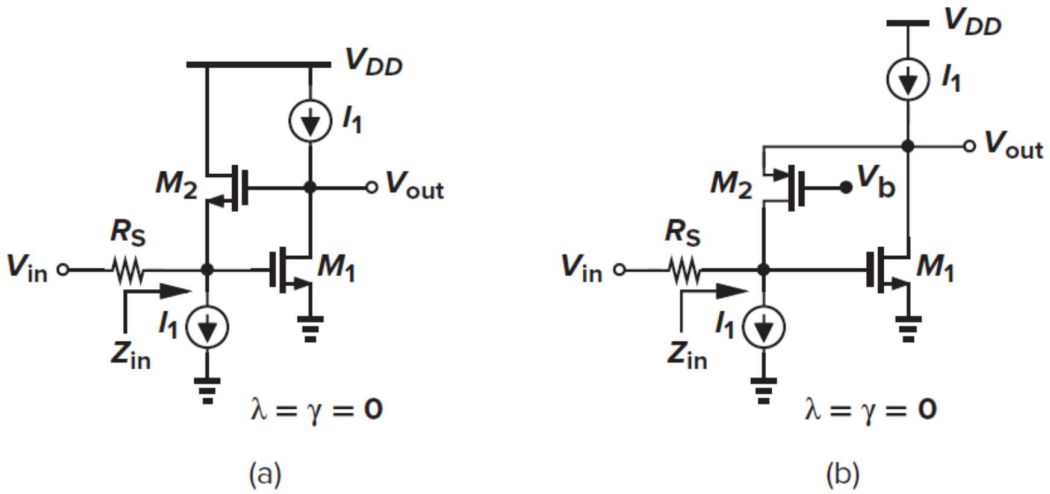


Fig. 6.3

HW6.4 (20 points)

In the circuit of Fig. 6.4, assuming that $\lambda = \gamma = 0$, calculate the closed-loop gain and output impedance. Using small-signal parameters to represent your solutions.

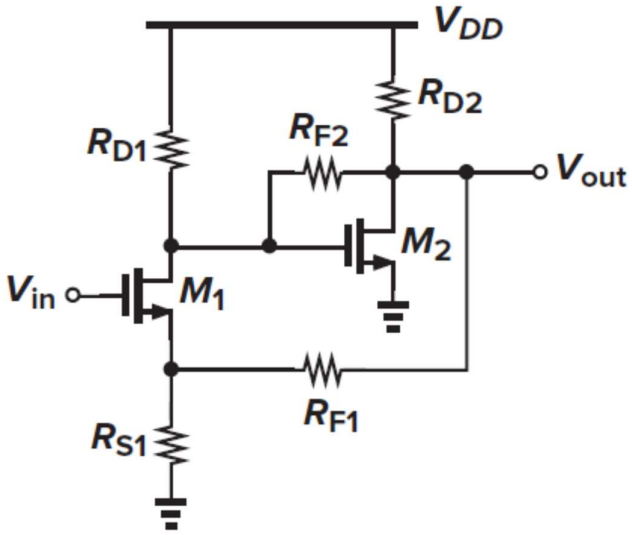


Fig. 6.4