

Es 1

a) $-\frac{R_1 + R_2}{R_1} = -11$

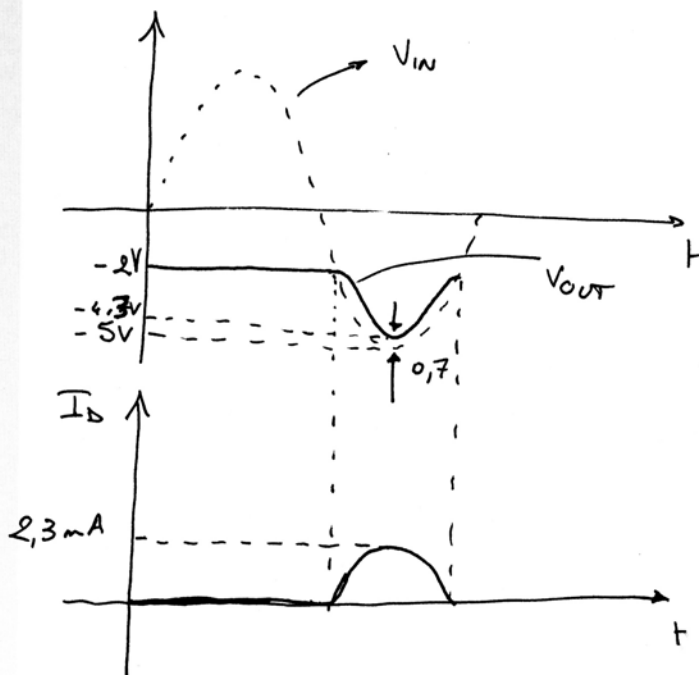
b) $G_{loop} = -\frac{A R_1 R_3}{2R_1 R_2 + R_3 R_2 + 2R_1 R_3} = -14,9$

c) $G_{ideal} = -\left(1 + \frac{R_2}{R_3} + \frac{R_2}{R_1}\right) = -111$

$G_{real} = -104$

d) $f > 31,8 \text{ kHz}$

Es 2



Es 3

1) $V_G = 2,5V$

$V_S = 1V$

$I_D = 1mA$

2) $G = + \frac{g_m R_s}{1 + g_m R_s} \cdot \frac{R_{d1} || R_e}{R_{in} + R_{d1} || R_e} \approx 0,55$

3) $Z_{out} = \frac{1}{g_m} || R_s \approx 333 \Omega$

Es 4

a)

a/b	0	1
0	0	1
1	0	0

b) 20 ms
10 ms

