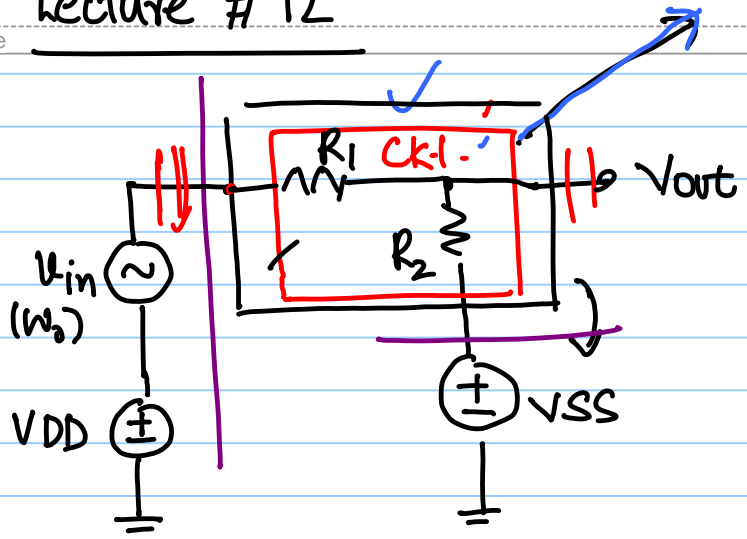
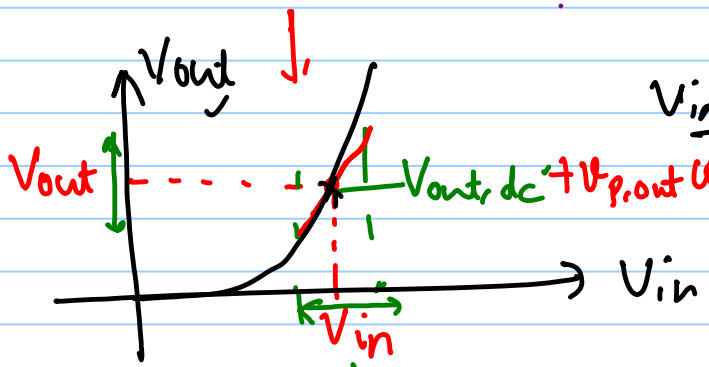
Lecture # 12

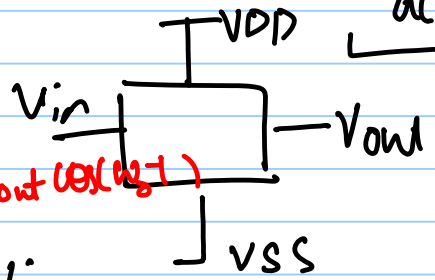
Note Title 05-02-2020



$$V_{out} = \frac{(V_{DD}+V_{in})}{R_1+R_2} \cdot R_2 + \frac{V_{SS}}{R_1+R_2} R_1$$

$$V_{out} = \underbrace{\frac{V_{in}}{R_1+R_2} \cdot R_2}_{\text{'ac'}} + \underbrace{\frac{R_2 \cdot V_{DD} + R_1 V_{SS}}{R_1+R_2}}_{\text{'dc'}}$$

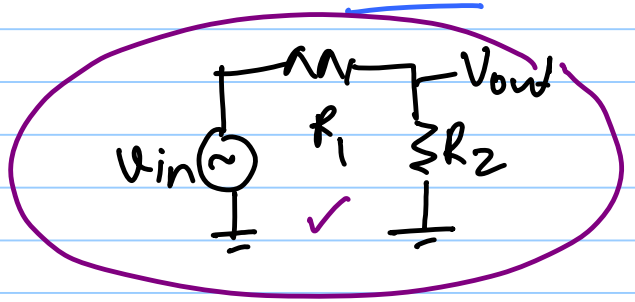


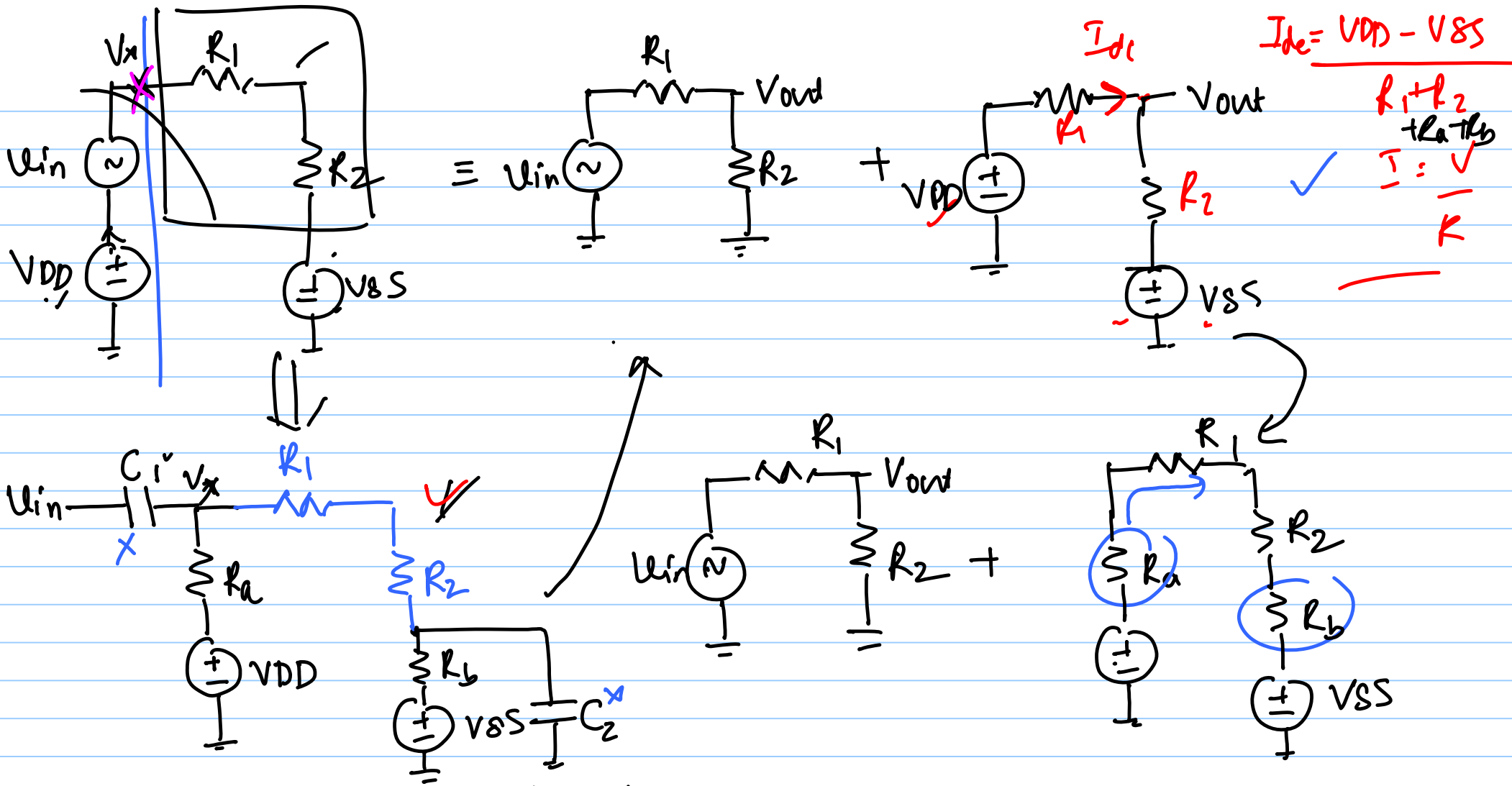


$$V_{in,dc} + V_p \cos(\omega_0 t)$$

$$\Delta V_{out} = k \cdot \Delta V_{in}$$

$$V_{out,ac} = \frac{V_{in}}{R_1+R_2} \cdot R_2$$

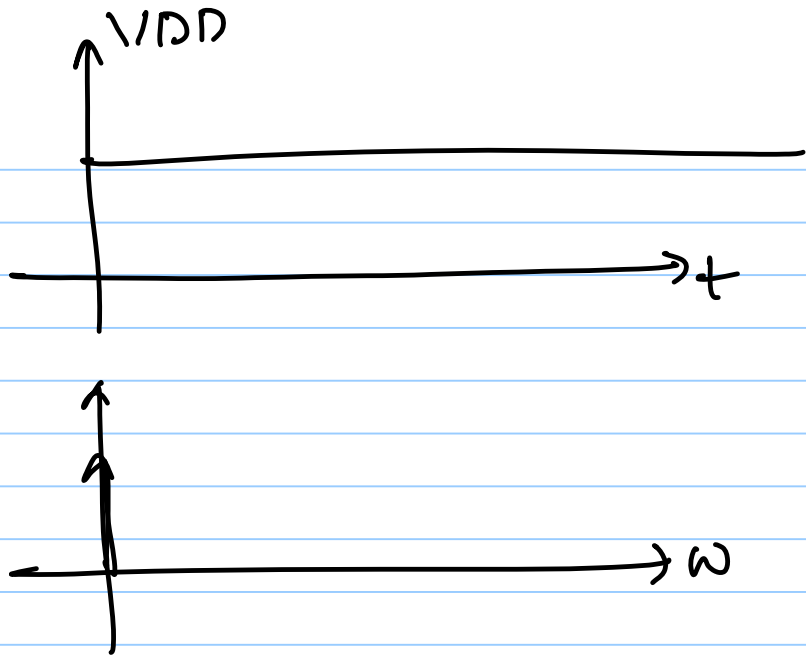


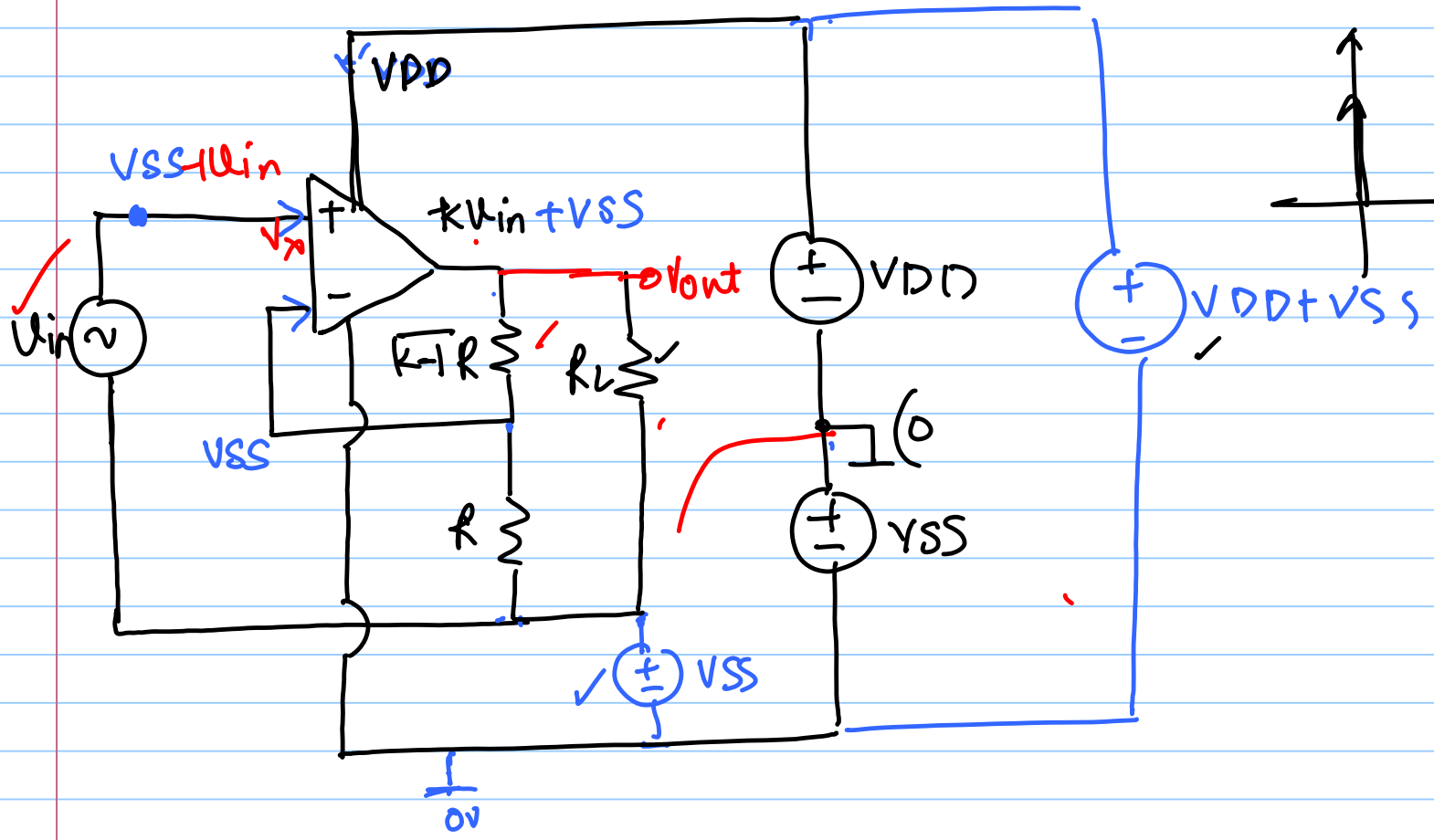


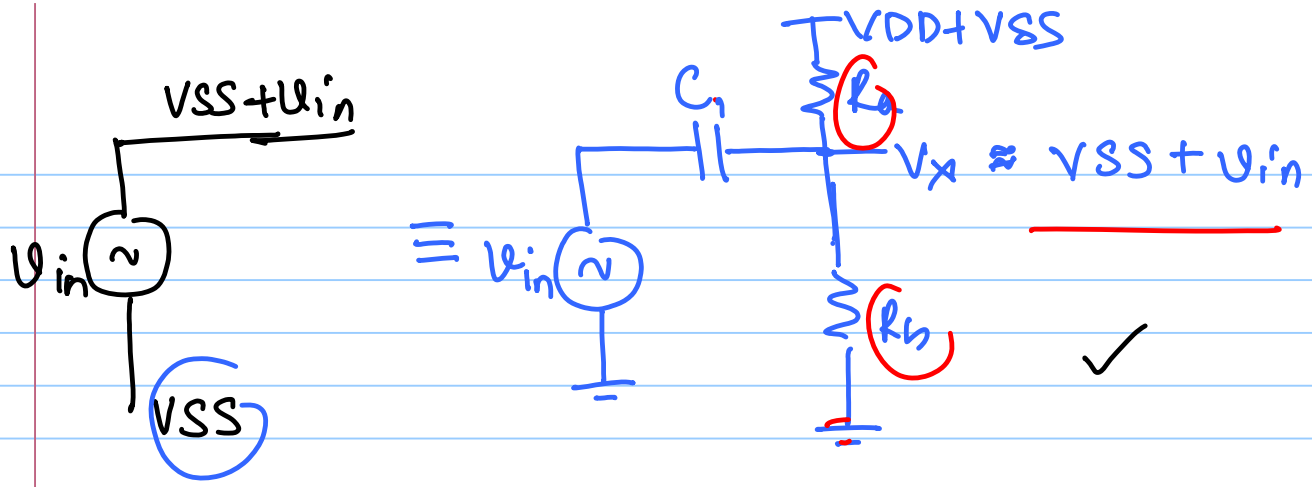
$$V_x = V_{in}\frac{sR_aC_1}{1+sR_aC_1} + \frac{VDD}{(1+sR_aC_1)} \quad |sRC_1| \gg 1$$

$$\approx V_{in} + VDD$$

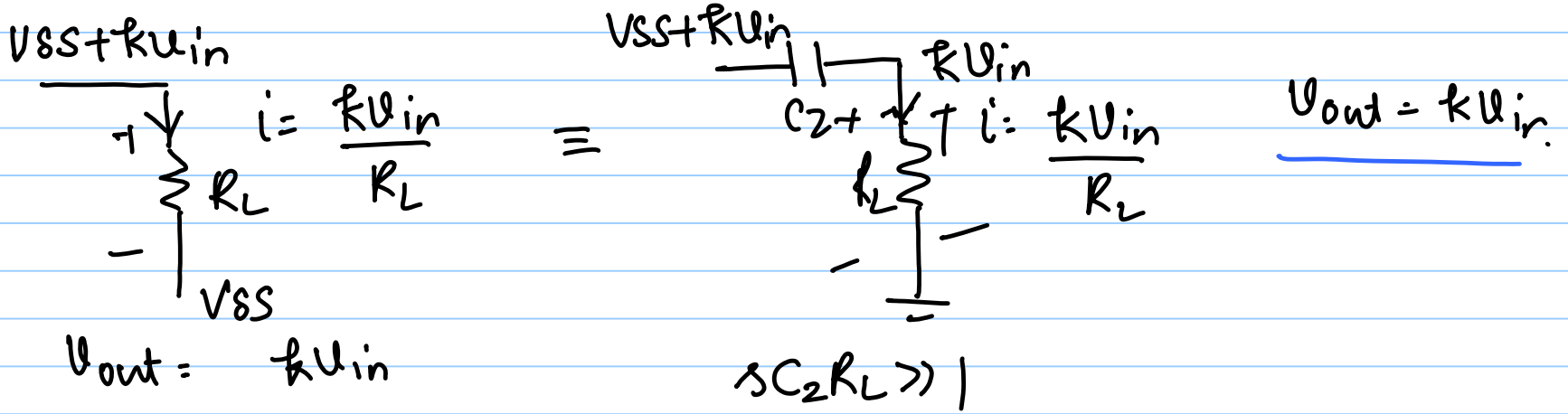
$$V_x(s) = V_{in}(s)\,\frac{sRC_1}{1+sRC_1} + \frac{VDD\;\delta(\omega=0)}{1+sRC_1}$$



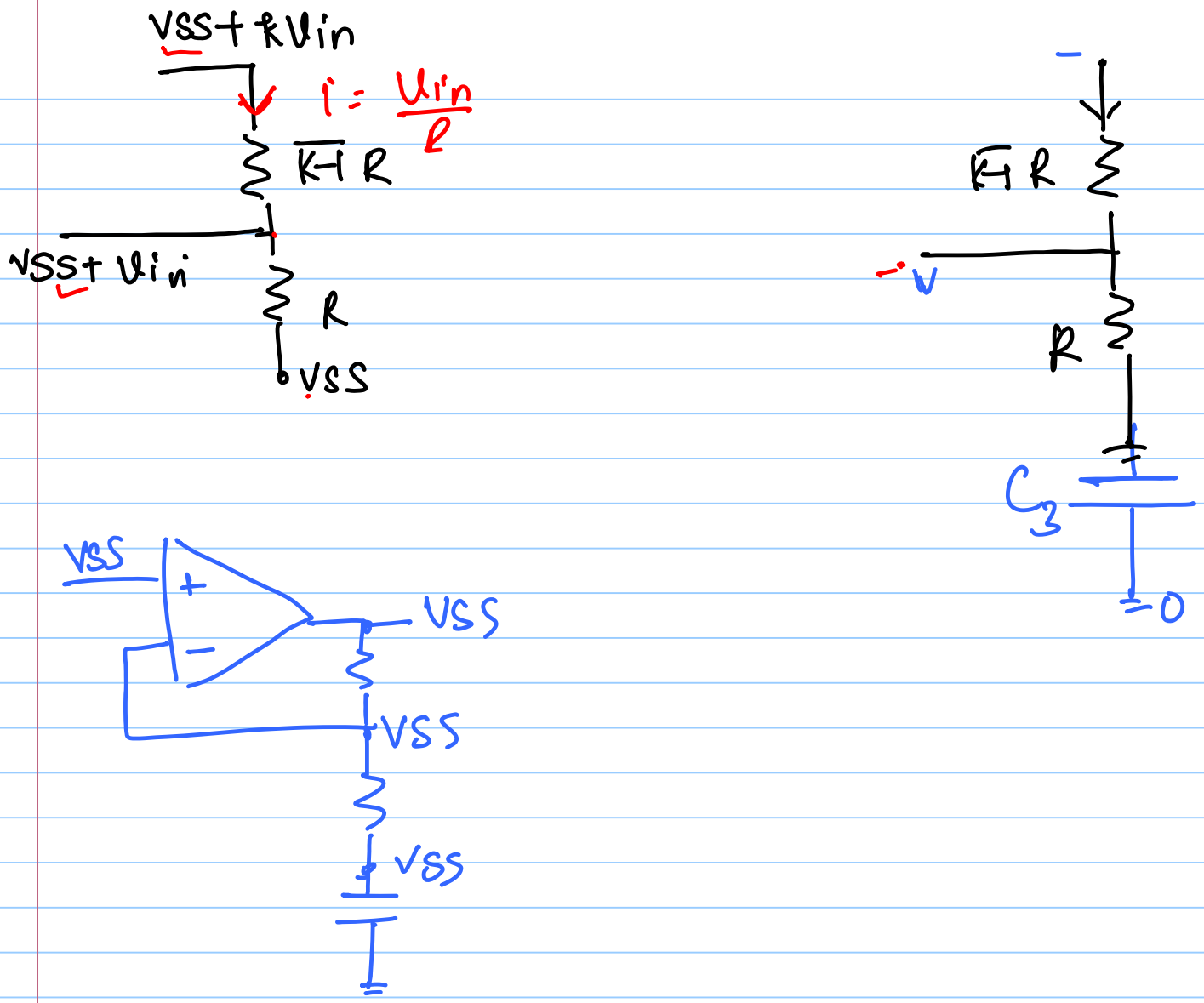


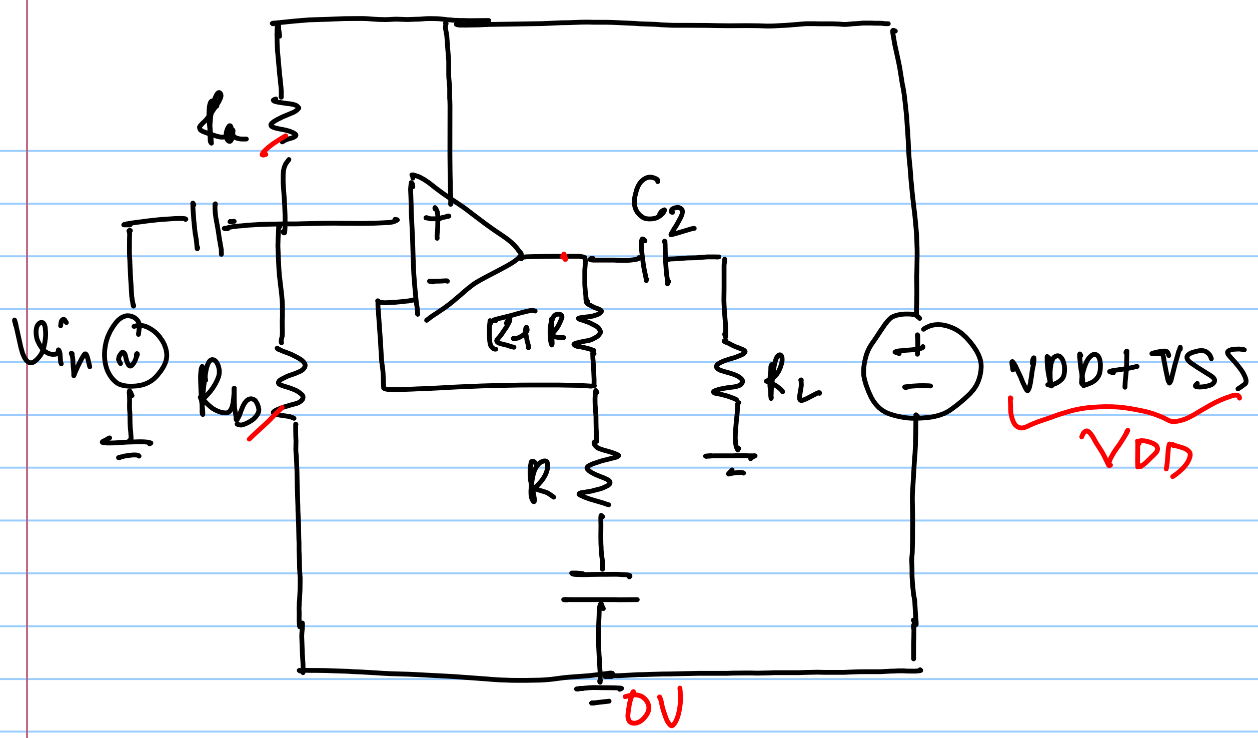

VSS+Vin
Vin
VSS
≡
Vin
C1
VDD+VSS
R1
Vx ≈ VSS + Vin
R2

✓

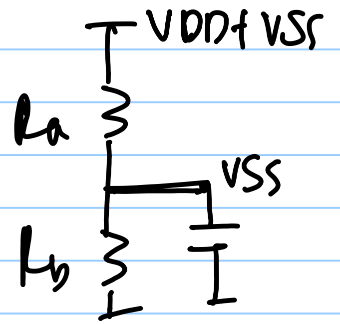

VSS+kVin
i = kVin / RL
RL
VSS
Vout = kVin
≡
VSS+kVin
kVin
C2
i = kVin / RL
RL
sC2RL >> 1

$V_{out} = kV_{in}$

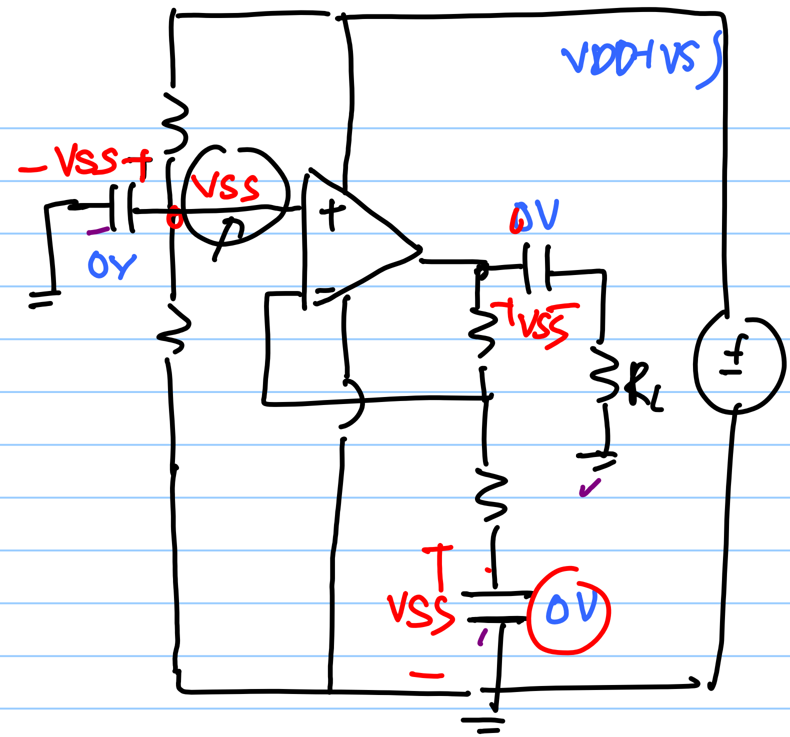

VSS + kVin
i = Vin / R
kR
VSS + Vin
R
VSS
VSS
+
−
VSS
VSS
VSS
−
kR
−V
R
C3
0



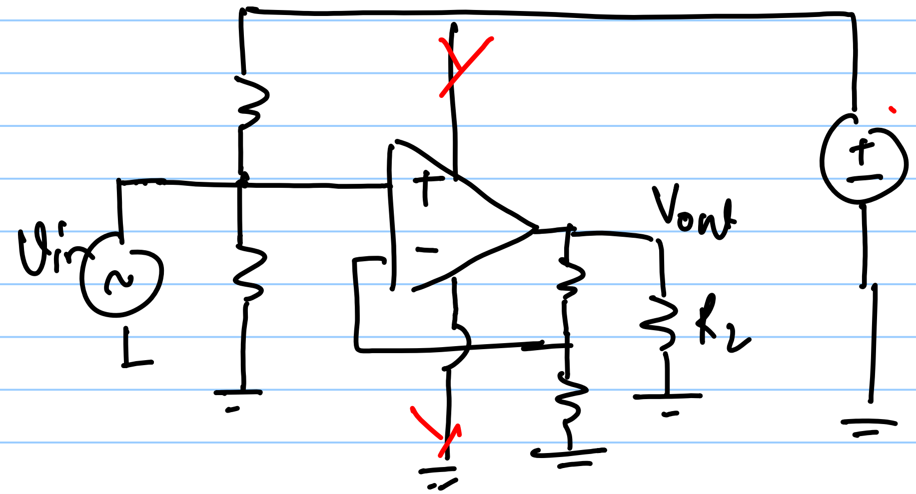
Ra
Rb
Vin
R1 R
R
C2
RL
VDD+VSS
VDD
0V



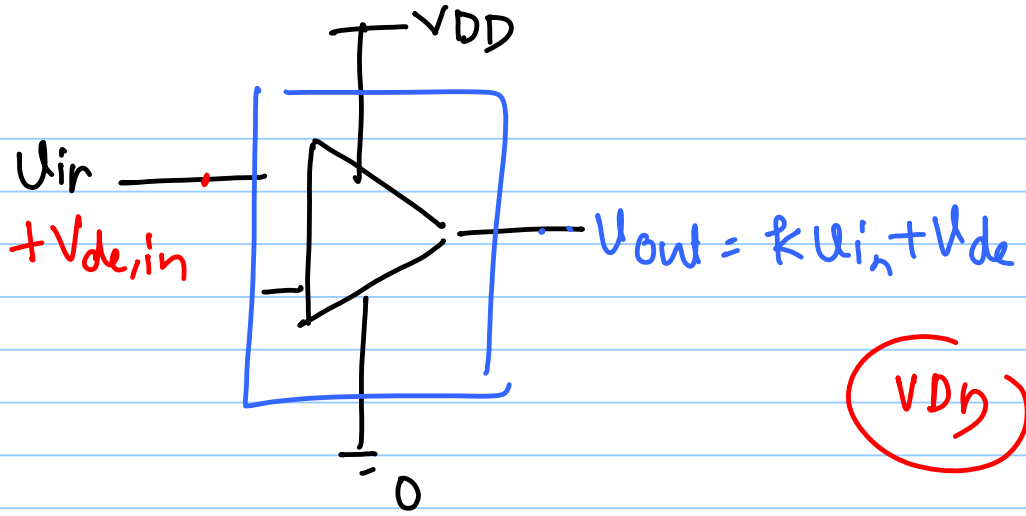
VDD+VSS
Ra
Rb
VSS

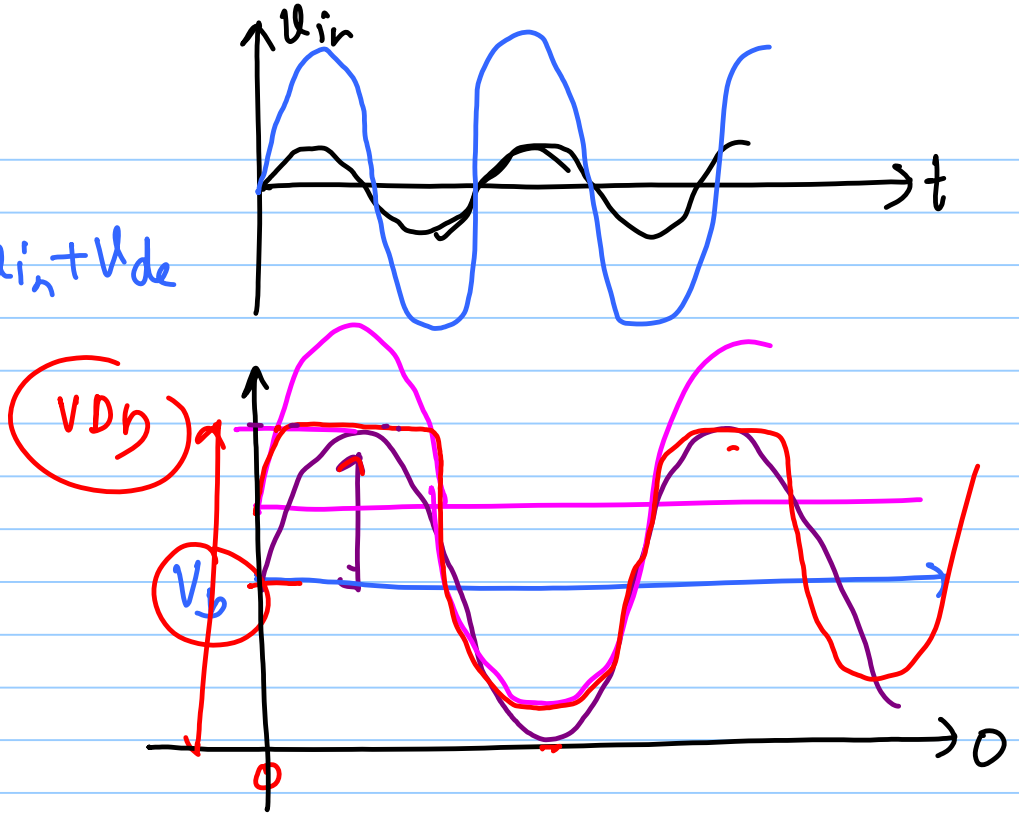


VDD+VSS
-VSS+
VSS
0V
VSS
RL



Vin
Vout
RL


VDD
Uir
+Vdc,in
Uout = k Uin + Vdc
0


Uin
t
VDD
Vb
0
0