OP Amp Basics (H.1)

20170215

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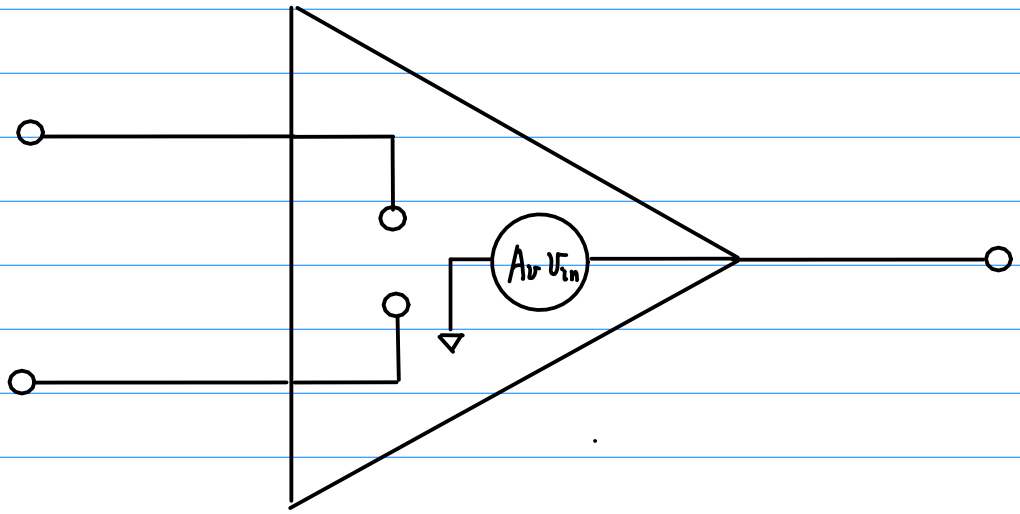
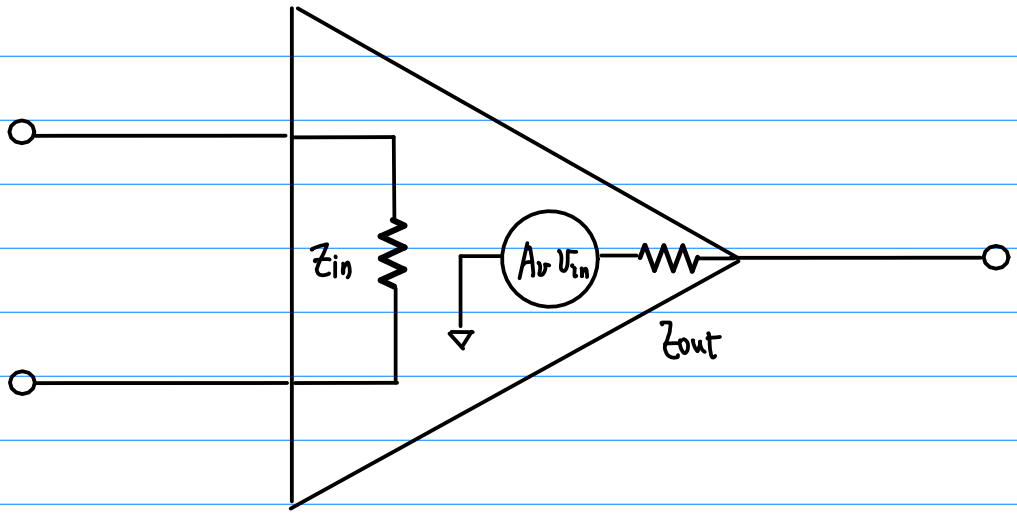
References

Based

[1] Floyd, Electronic Devices 7th ed
[2] Cook,

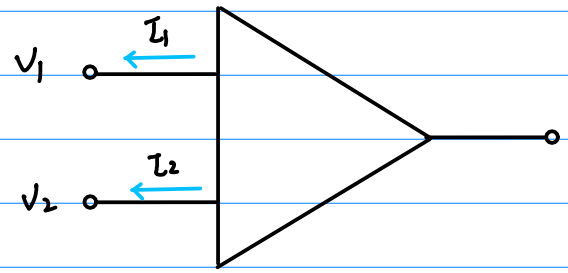
[2] en.wikipedia.org


$A_v v_{in}$

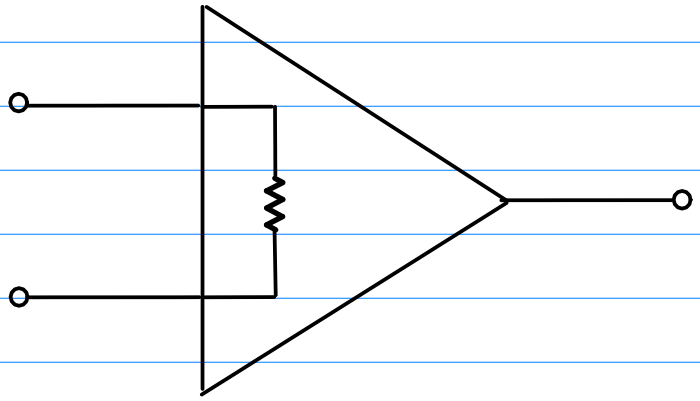

z_{in}
$A_v v_{in}$
z_{out}

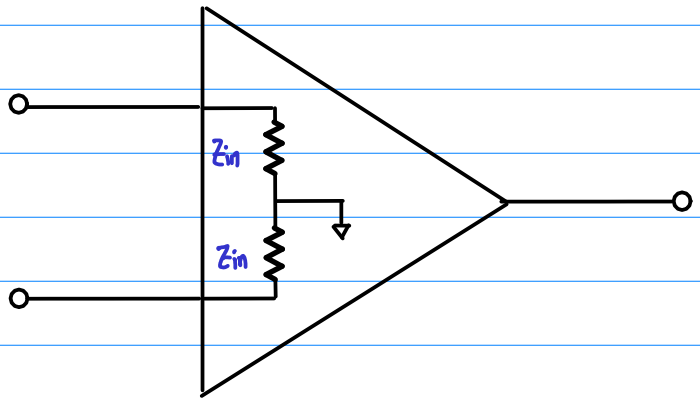
OP Amp Parameters

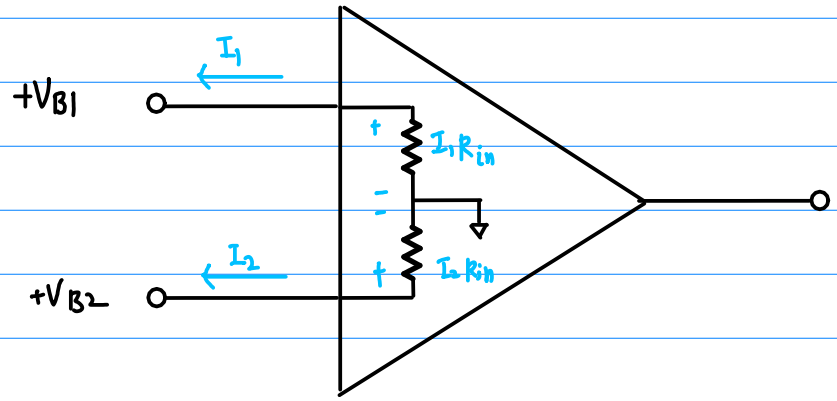
Input Offset Voltage
Input Bias Current
Input Impedance
Input Offset Current
Output Impedance
Common Mode Input Voltage Range
Open-Loop Voltage Gain
Common-Mode Rejection Ratio
Slew Rate
Frequency Response

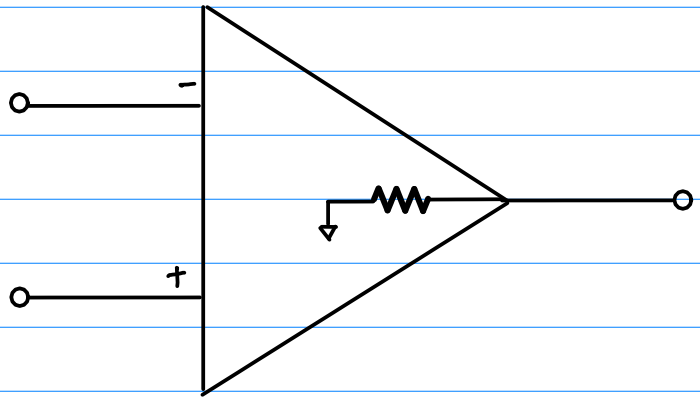


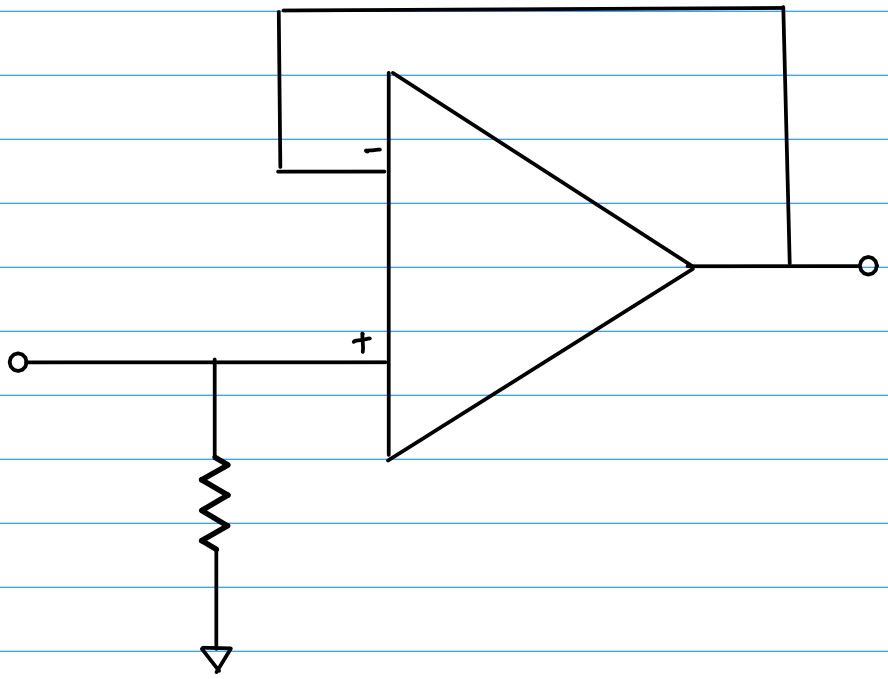
$$I_{BIAS} = \frac{I_1 + I_2}{2}$$

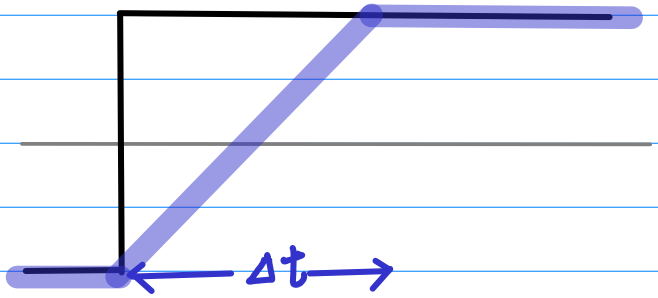


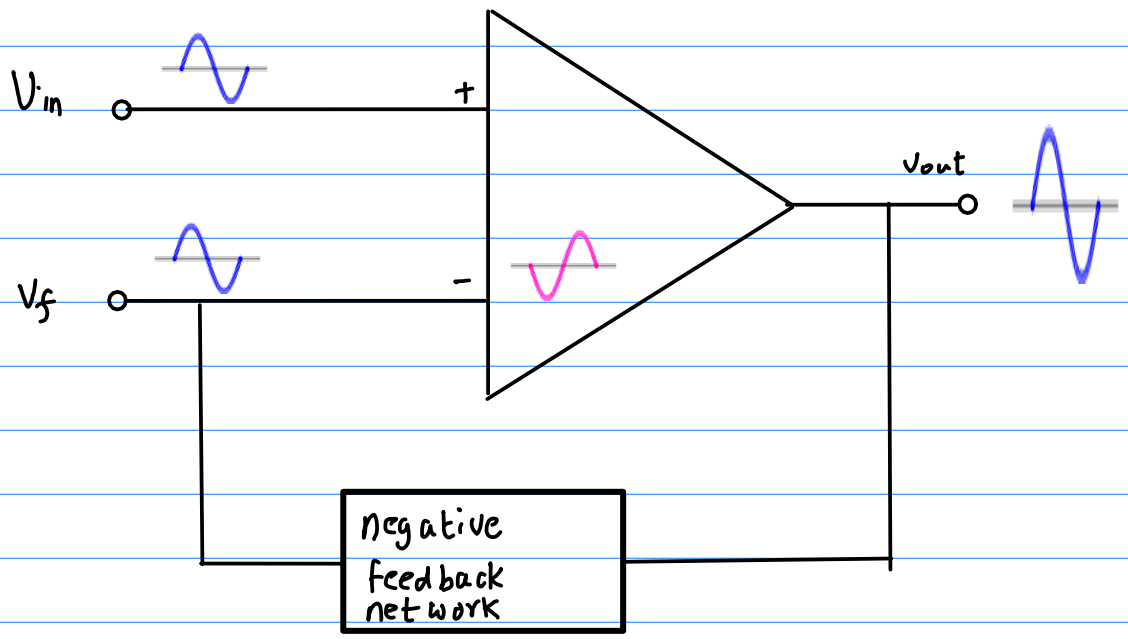

Zin
Zin

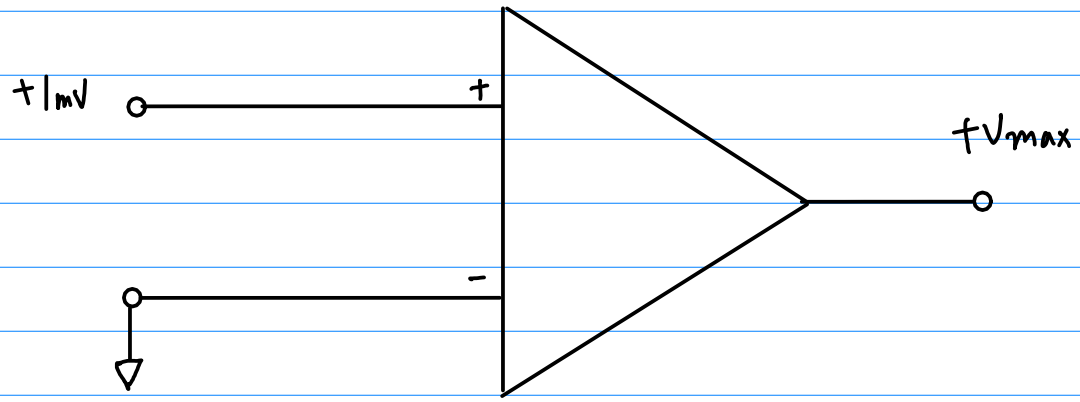

$+V_{B1}$
I_1
+
$I_1 R_{in}$
−
I_2
$+V_{B2}$
+
$I_2 R_{in}$

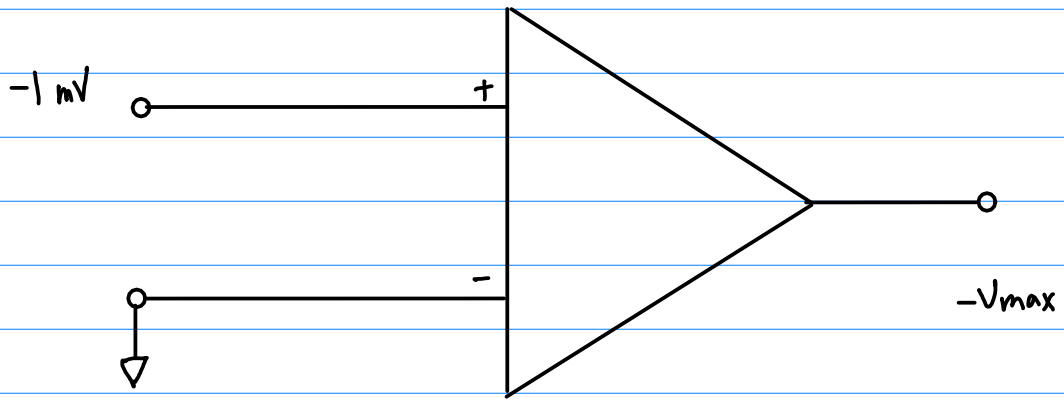


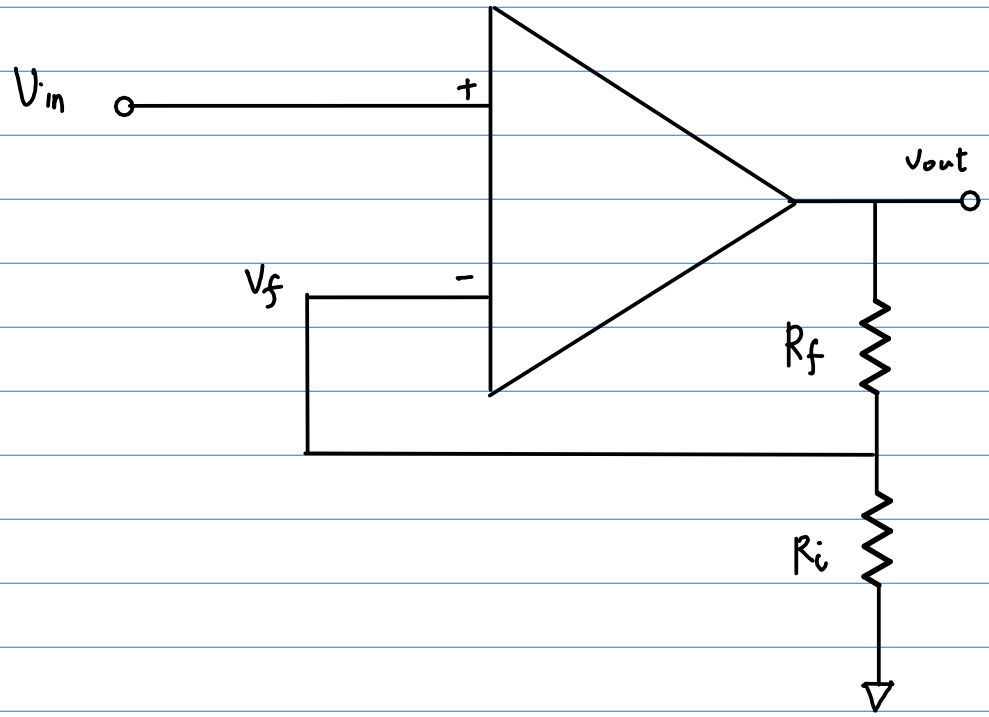

-
+


Δt

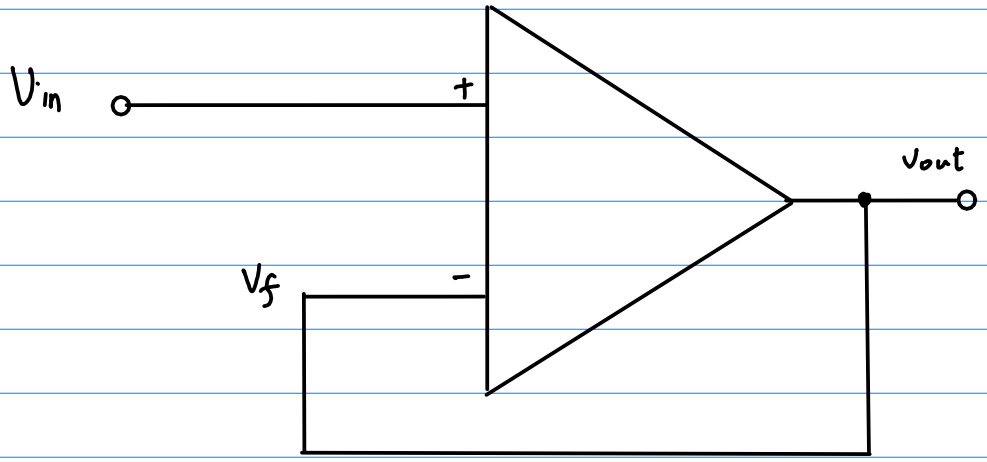

V_{in}
+
V_{out}
V_f
-
negative
feedback
network


+1mV
+
-
+Vmax

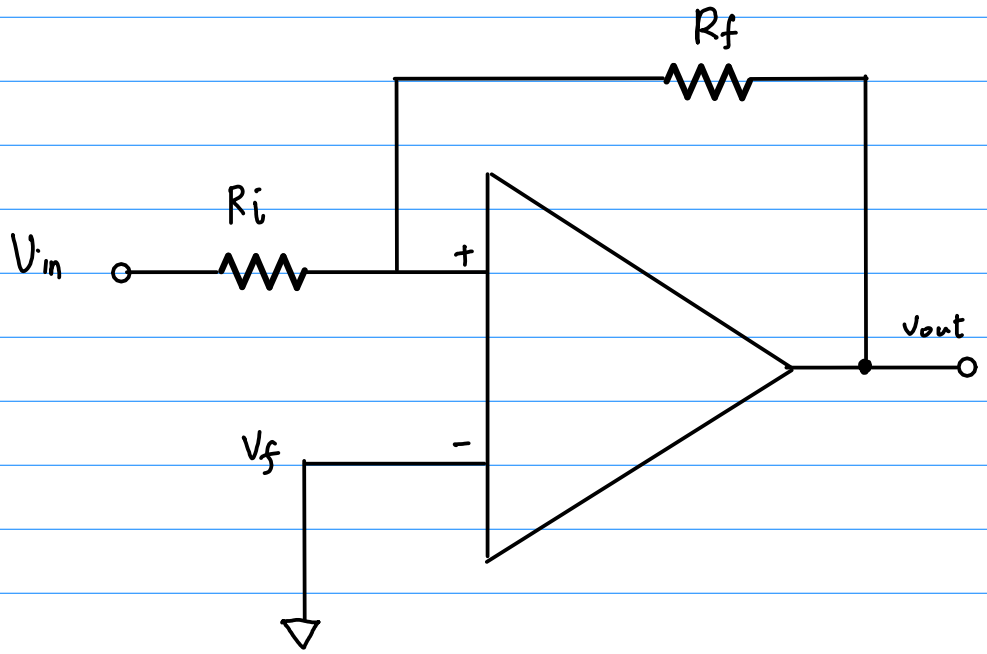

-1 mV
+
-
-Vmax

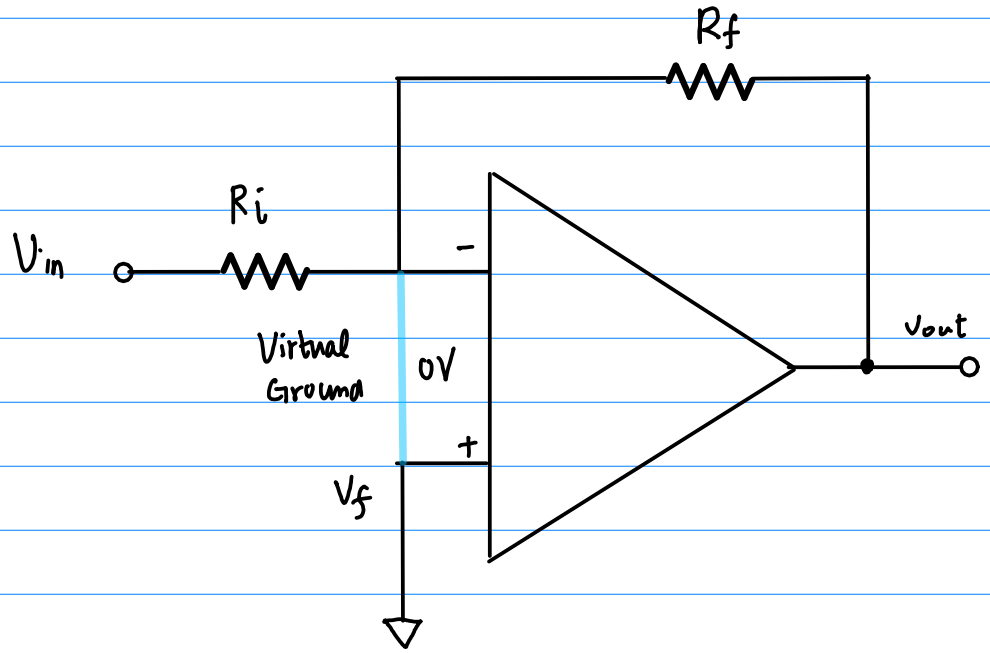

V_{in}
+
V_{out}
V_f
-
R_f
R_i

Voltage follower

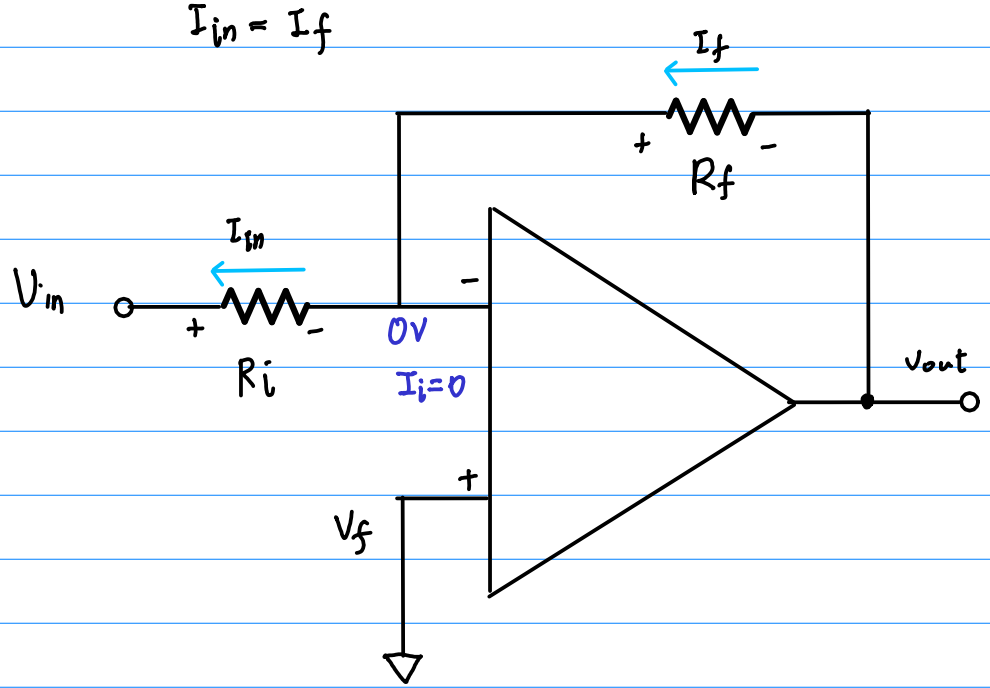


Inverting Amplifier

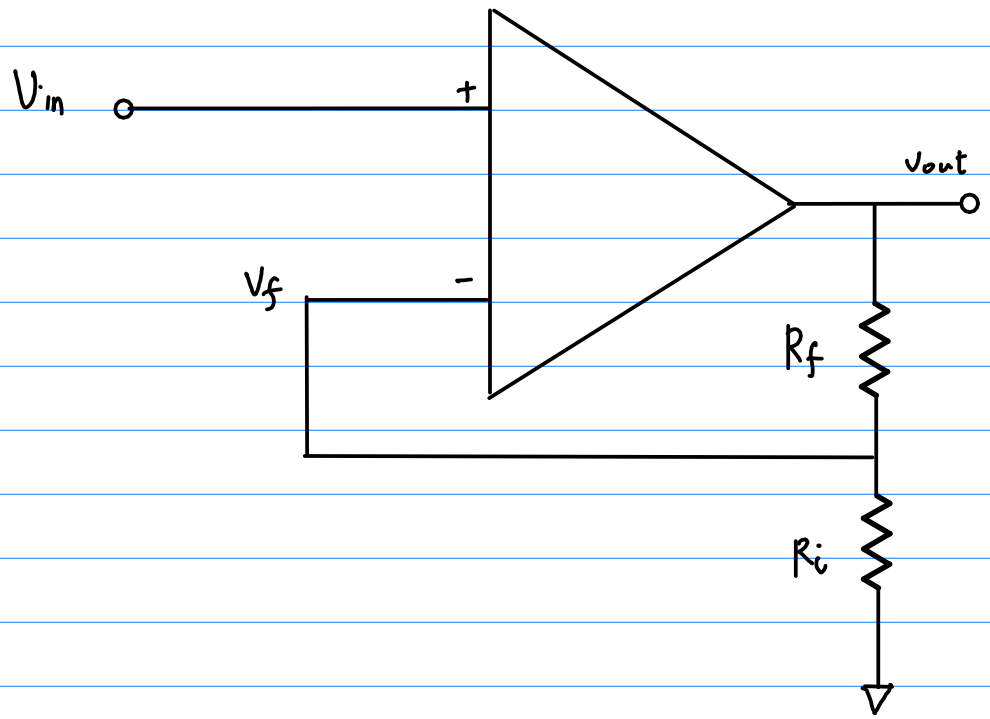
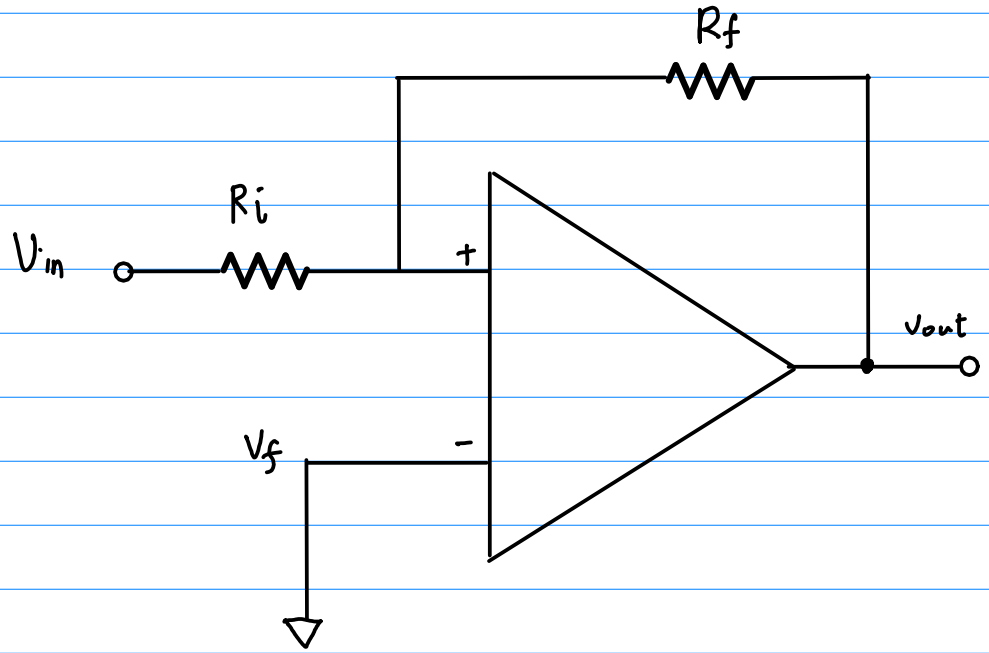



Rf
Ri
Vin
-
Virtual
Ground
0V
+
Vf
Vout

$I_{in} = I_f$


If
+
Rf
-
Iin
Vin
-
+
-
Ri
0V
Ii=0
Vout
+
Vf

Non-inverting Amplifier



Inverting Amplifier Impedance