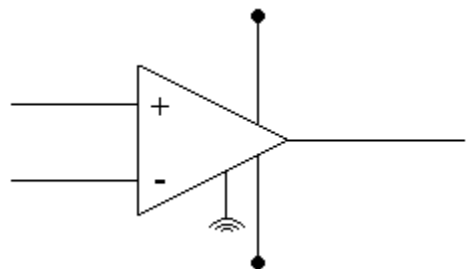## Operational Amplifier (OP-AMP)

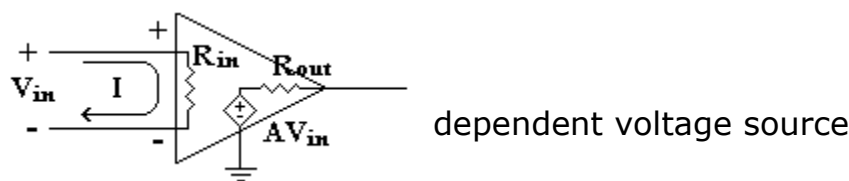Operational amplifiers are devices that have very _____ input impedance and very _____ output impedance.

⊕   non-inverting input

⊖   inverting input

    Output
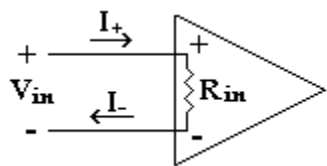
    Supply necessary to power

dependent voltage source
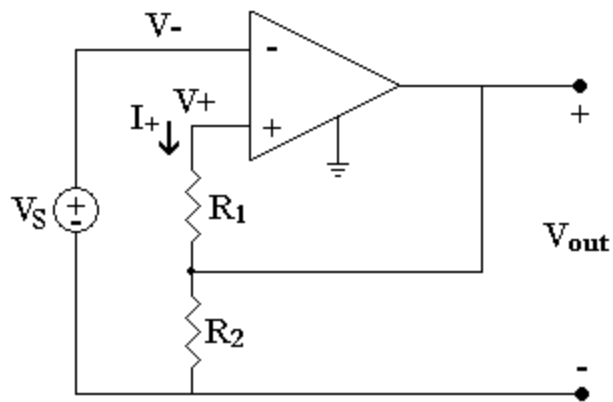
Ideal Op-amp

Because R_{in} is very, very _____ therefore I is very, very _____

$V+ = V-$

$I+ = I- = 0$

1. $V_- = V_S$

2. $V_+ = V_-$

3. $I_+ = 0$
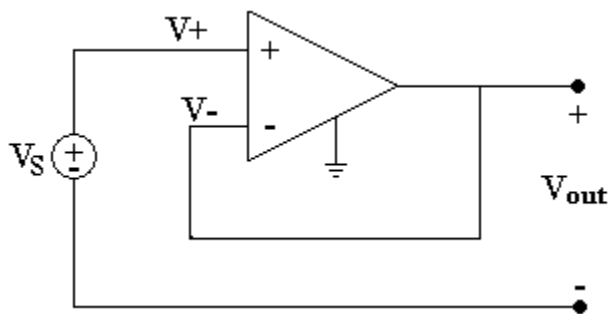
4.

5.

6.

∴

1.

2.

3.

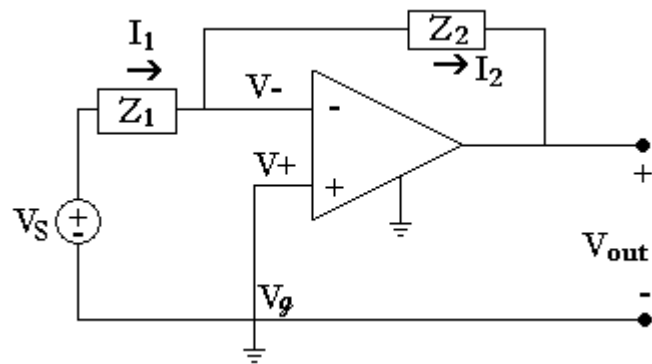4.
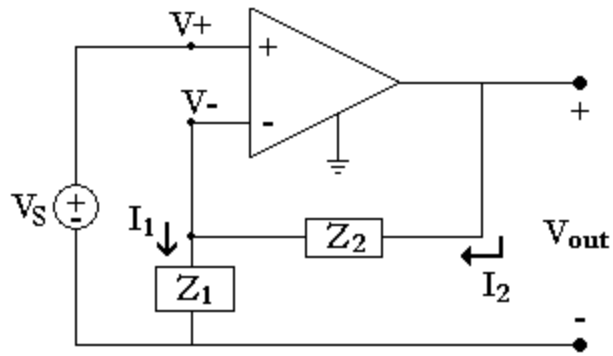
1. $V_g = 0$

2. $V_+ = V_g = 0$

3.

4.

5.

6.

7.

8.
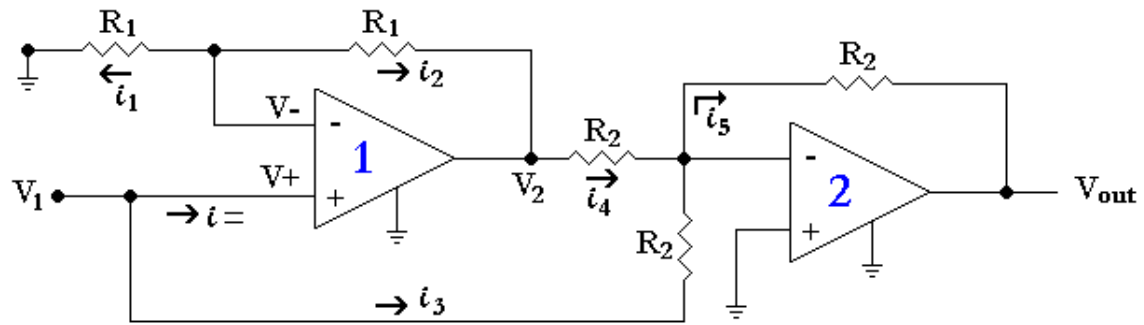
$\therefore$

1. VS = V+

2. V+ = V-

3. V- = V1

4.

5.

6.

7.

∴

❋

Op Amp #1 :

Op Amp #2