Multi-stage Voltage Amplifiers

Stage 1 **Stage 2** **Stage N**
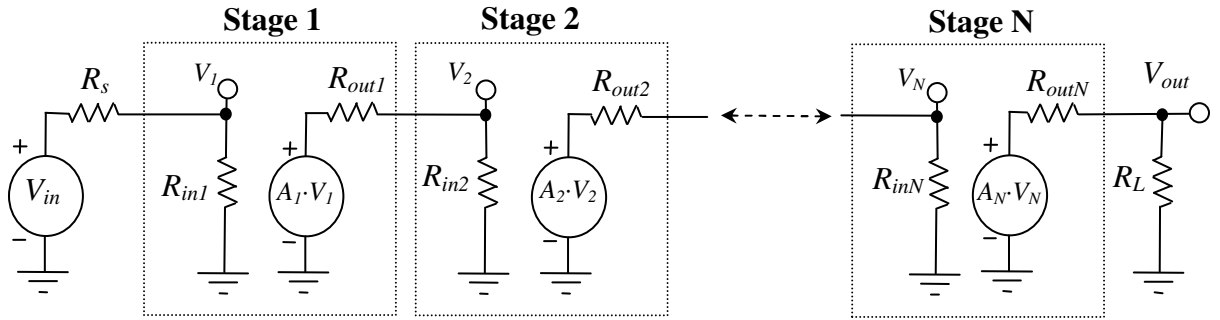
$$A_v = \frac{V_{out}}{V_{in}} = \left(\frac{R_{in(1)}}{R_s + R_{in(1)}} \right) \cdot \left(\prod_{j=1}^{N-1} \frac{A_j \cdot R_{in(j+1)}}{R_{out(j)} + R_{in(j+1)}} \right) \cdot \left(\frac{A_N \cdot R_L}{R_{out(N)} + R_L} \right)$$