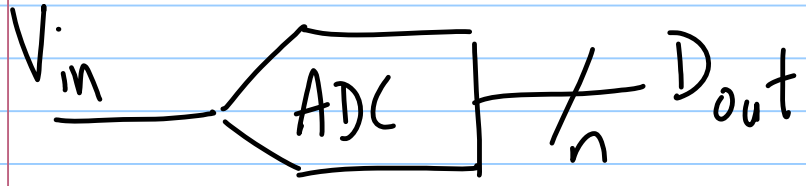
ADCs

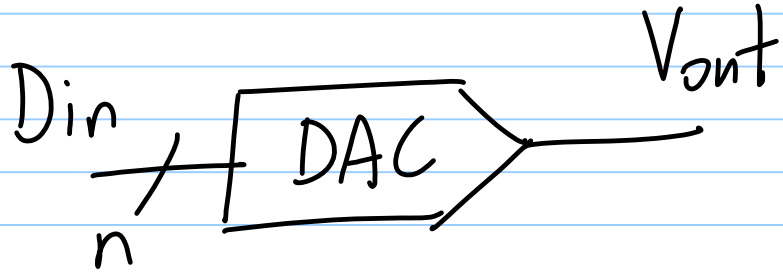


$D_{out} = k$ if

$$\frac{V_{ref}}{2^n} \cdot k < V_{in} \leq \frac{V_{ref}}{2^n}(k+1)$$

n: # of bits

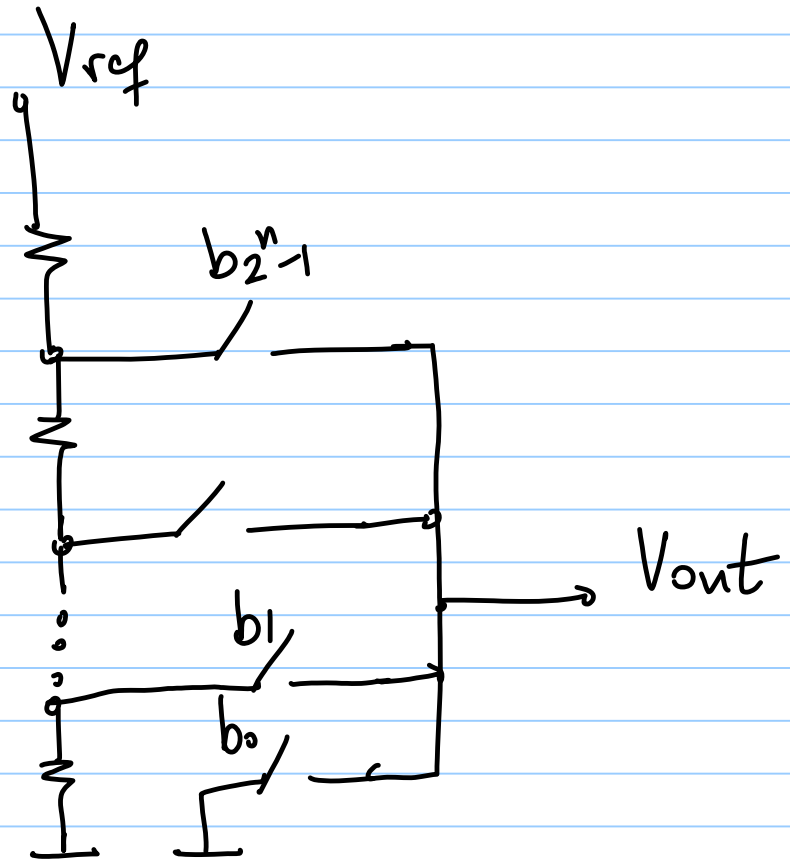
DACs



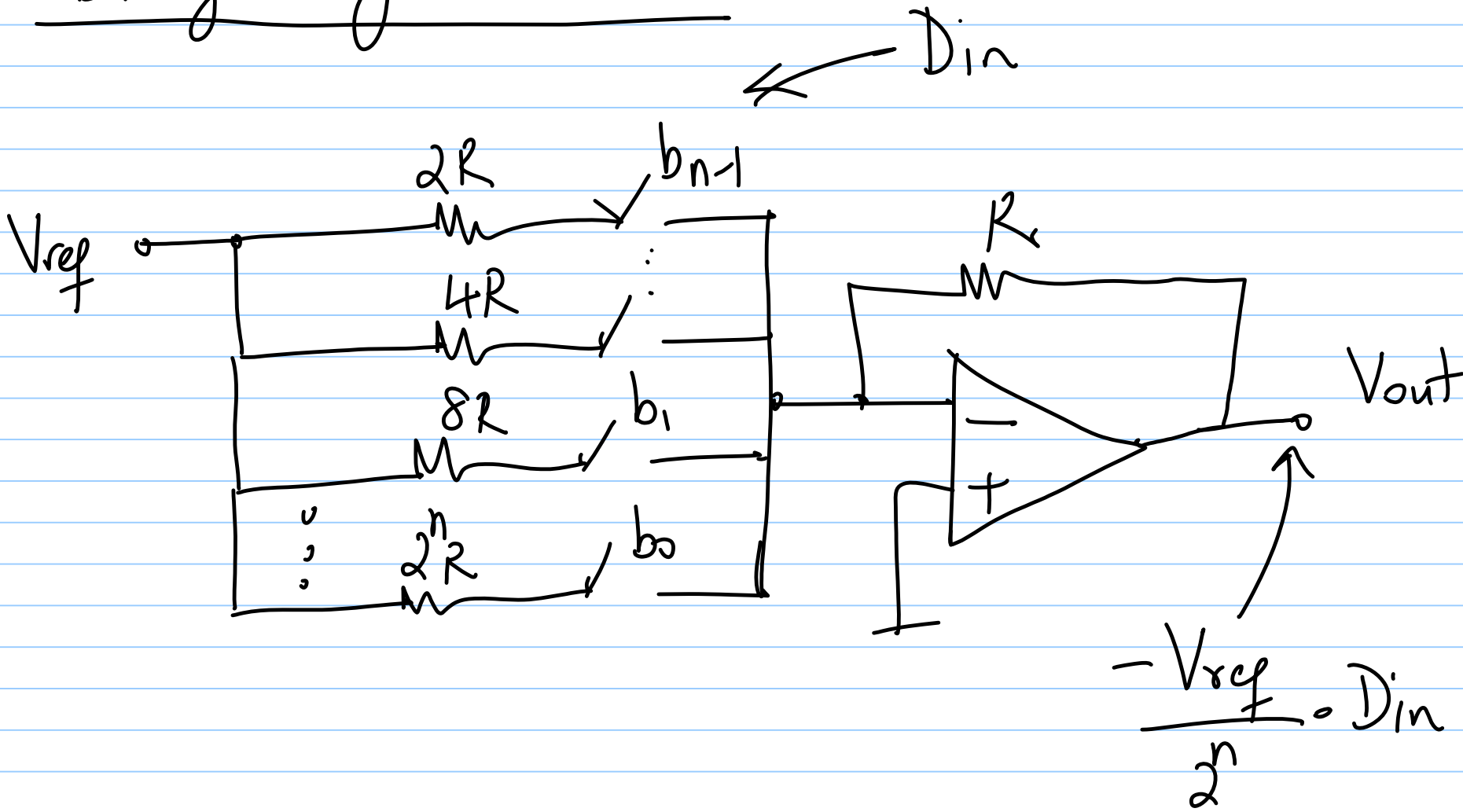
$$V_{out} = D_{in} \cdot \underbrace{\frac{V_{ref}}{2^n}}_{LSB}$$

DACs

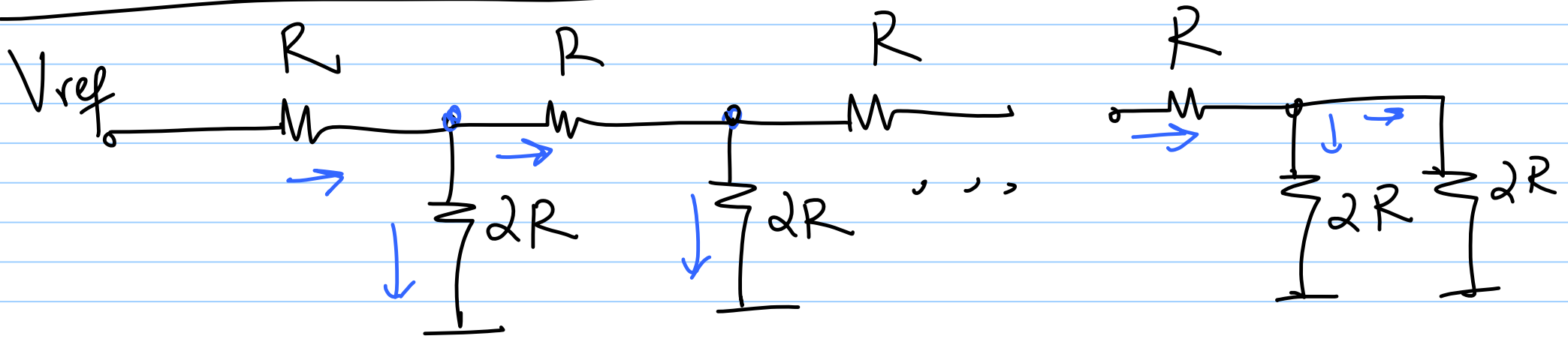
Resistor String

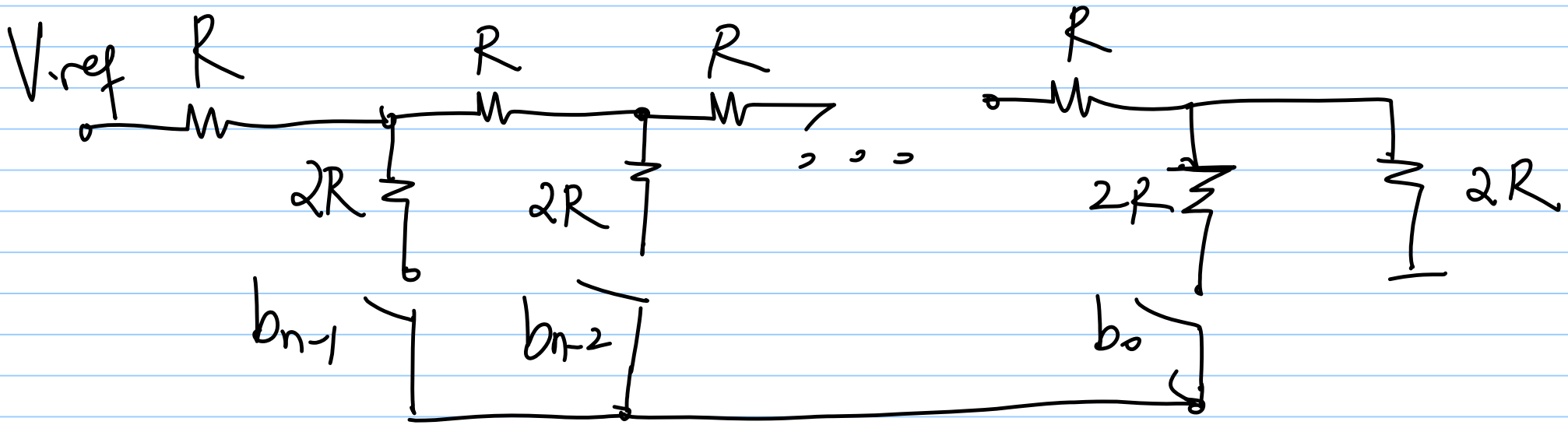


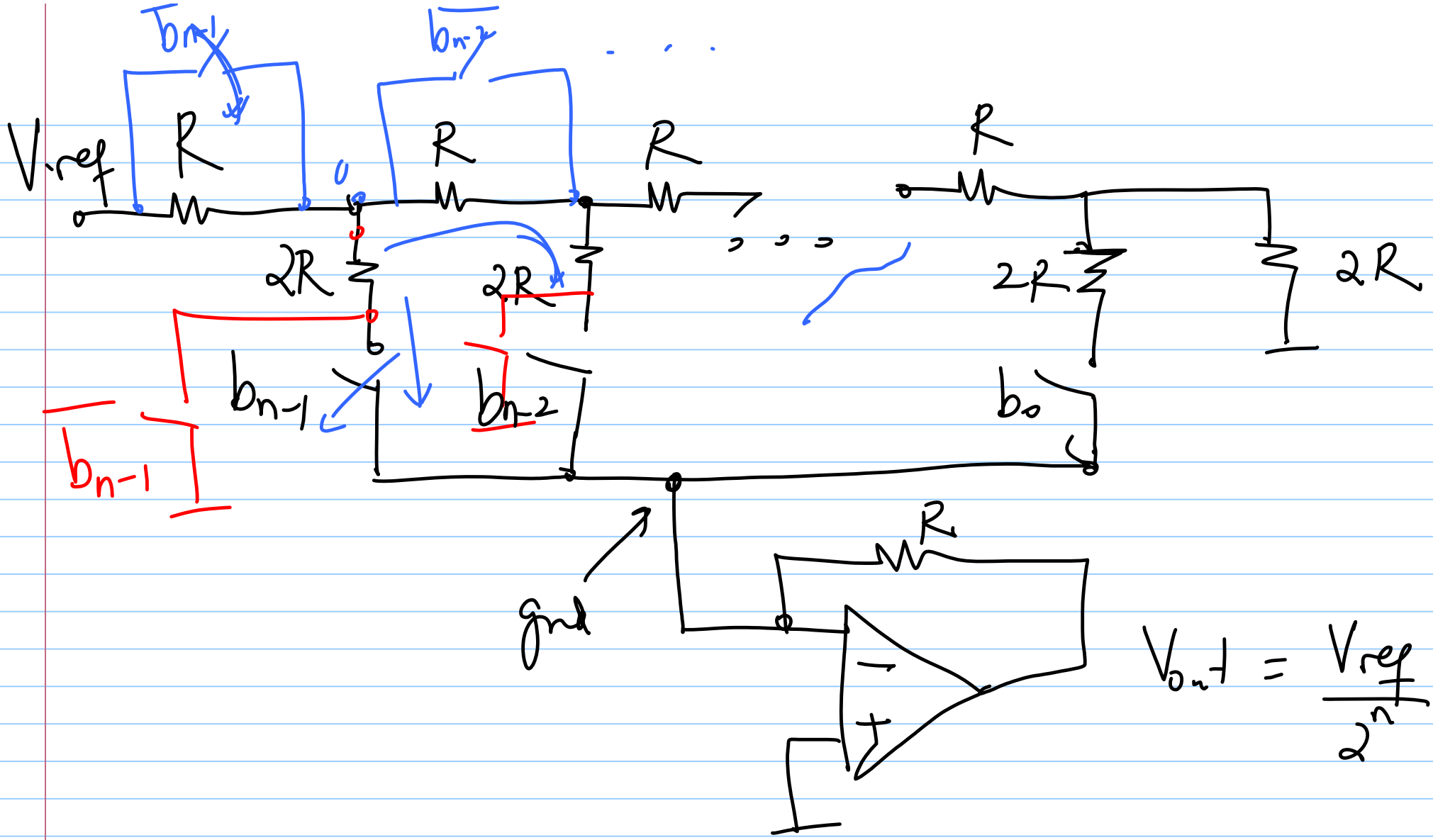
Binary weighted DAC



R-2R Ladder DAC







$$V_{out} = \frac{V_{ref}}{2^n} \cdot D_{in}$$