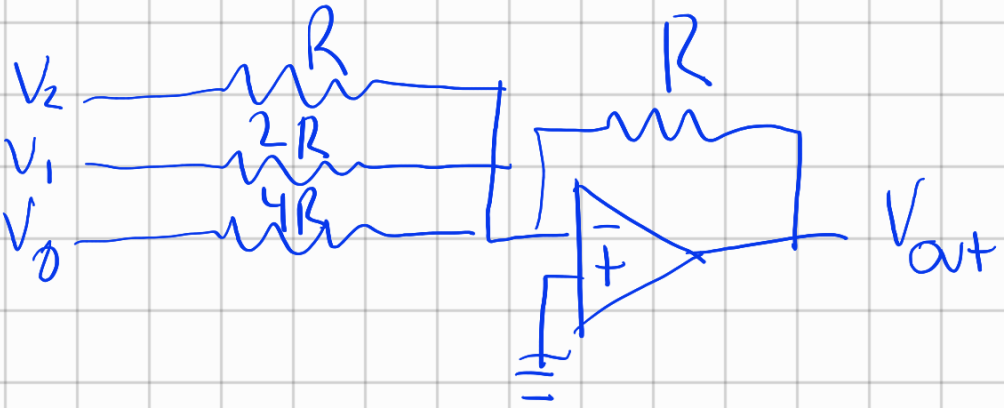
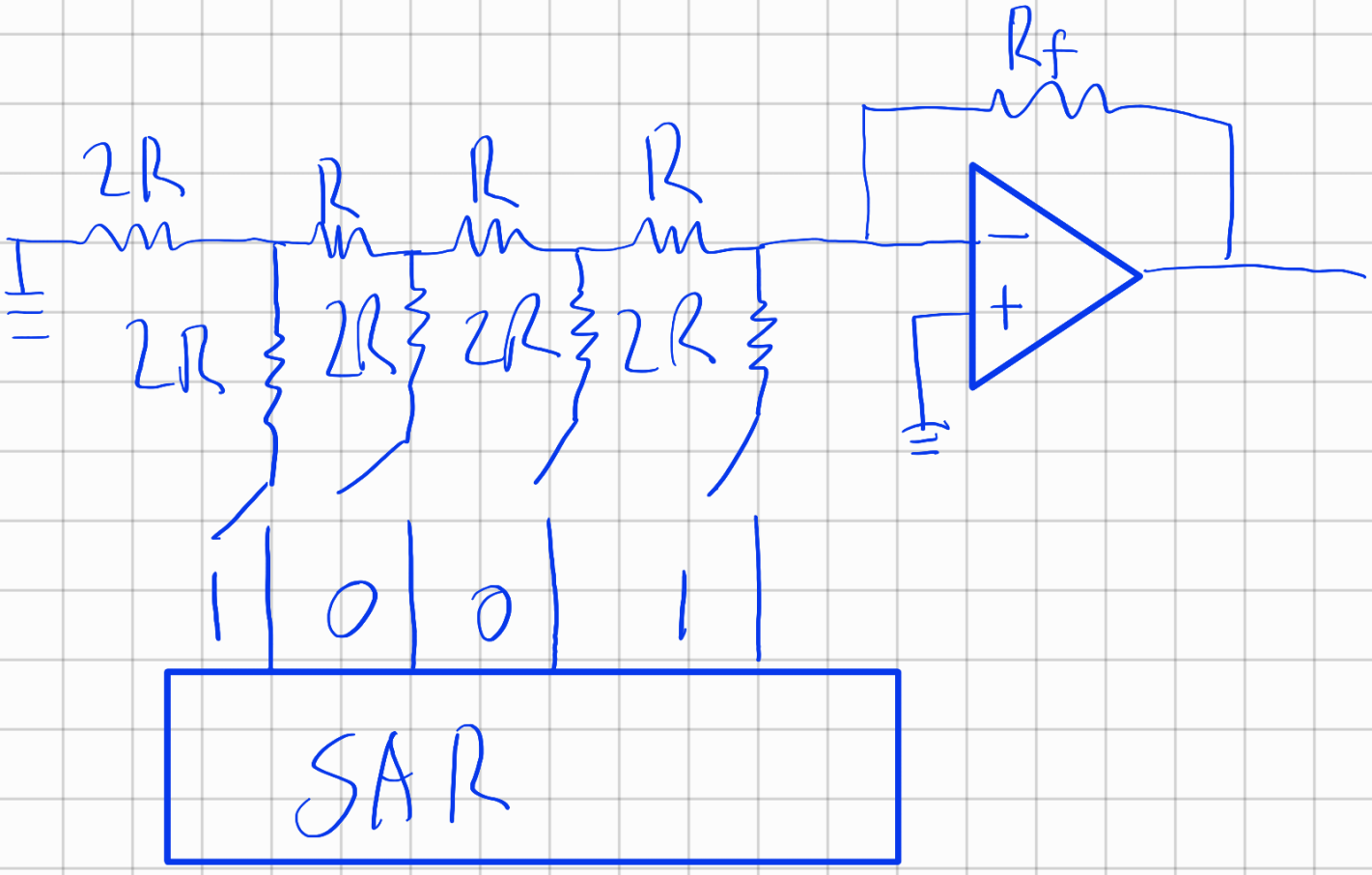
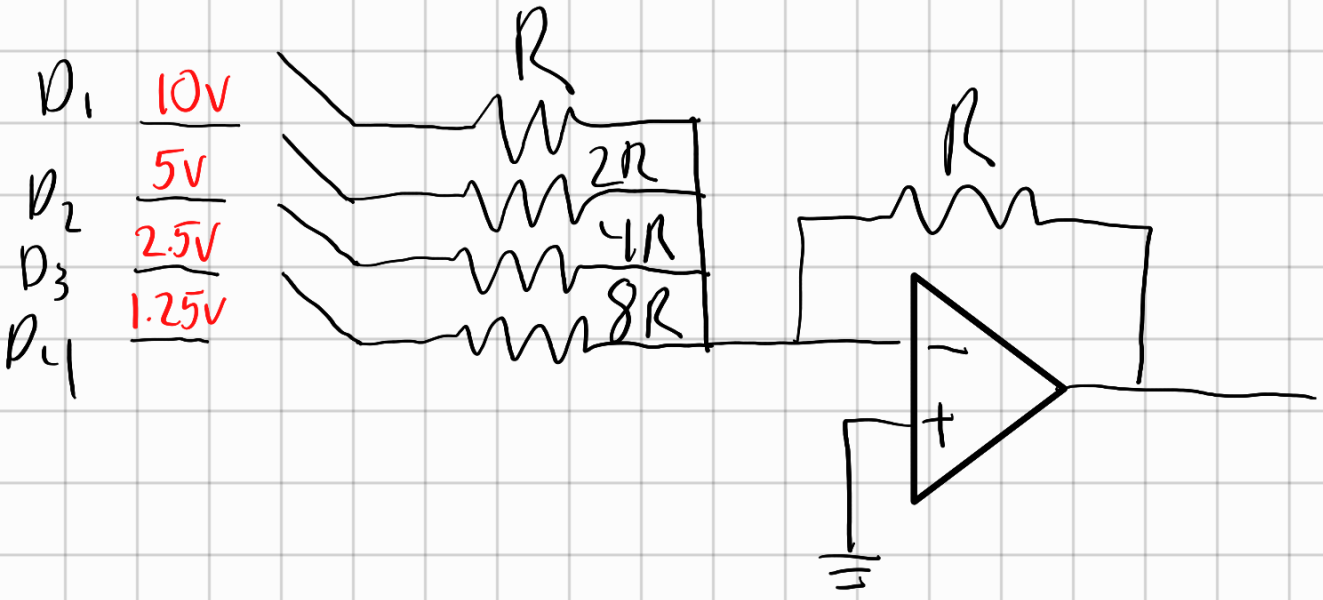
Summing Amplifier



$$V_0 = -R\left(\frac{V_2}{R} + \frac{V_1}{2R} + \frac{V_0}{4R}\right)$$

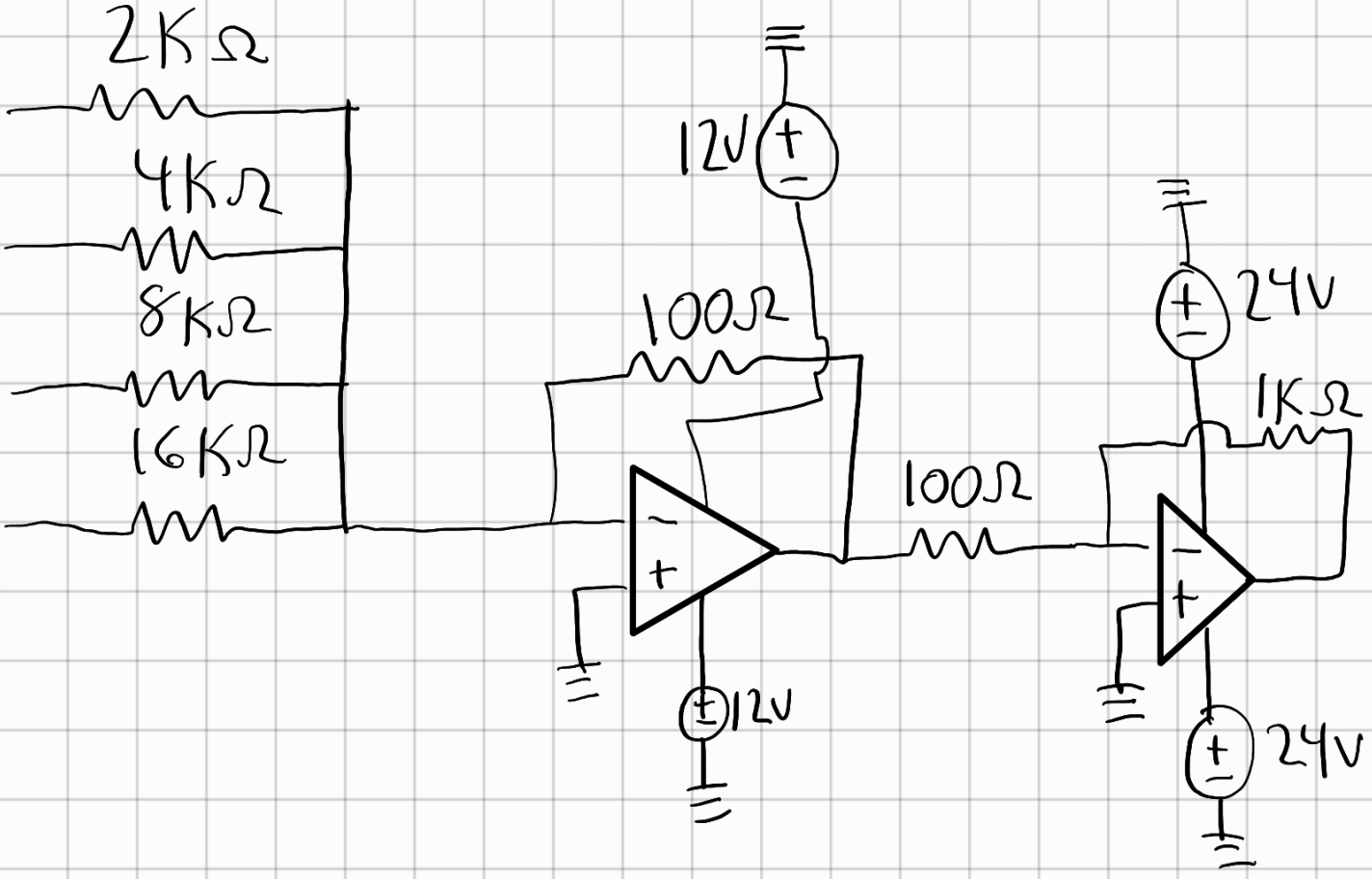
R-2R Ladder

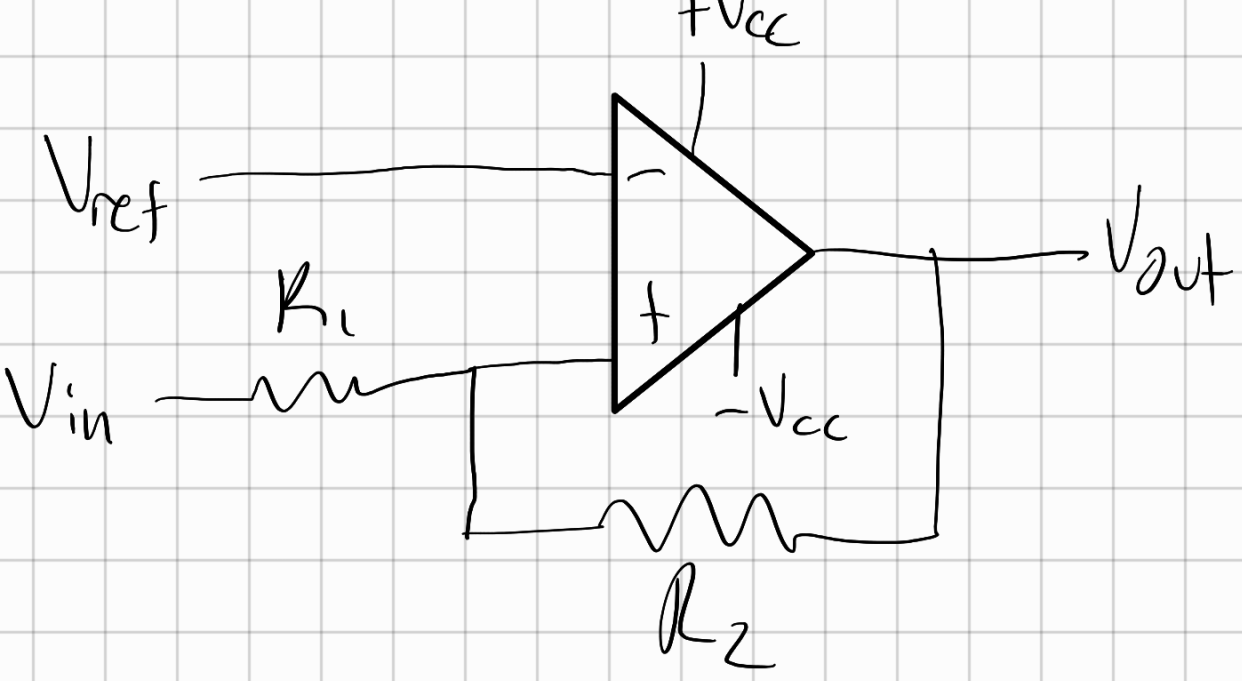




$$V_{out} = -R\left(\frac{D_1}{R} + \frac{D_2}{2R} + \frac{D_3}{4R} + \frac{D_4}{8R}\right)$$

$$V_{out} = -R\left(\frac{1}{R} + \frac{0}{2R} + \frac{0}{4R} + \frac{0}{8R}\right)$$





Target Value	Measured Value
2K	2K
4K	4.07K
8K	8.01K
16K	16.2K

	Target Values		Measured Values
0	0000	→ 0	10.66mV
1	0001	→ 0.3125	0.316
2	0010	→ 0.6250	0.627
3	0011	→ 0.9375	0.934

④	0100	1.25	1.26
⑤	0101	1.5625	1.569
⑥	0110	1.8750	1.88
⑦	0111	2.1875	2.189
⑧	1000	2.5	2.48
⑨	1001	2.8125	2.79
⑩	1010	3.125	3.1
⑪	1011	3.4375	3.4
⑫	1100	3.75	3.73
⑬	1101	4.0625	4.04
⑭	1110	4.325	4.353
⑮	1111	4.6875	4.657