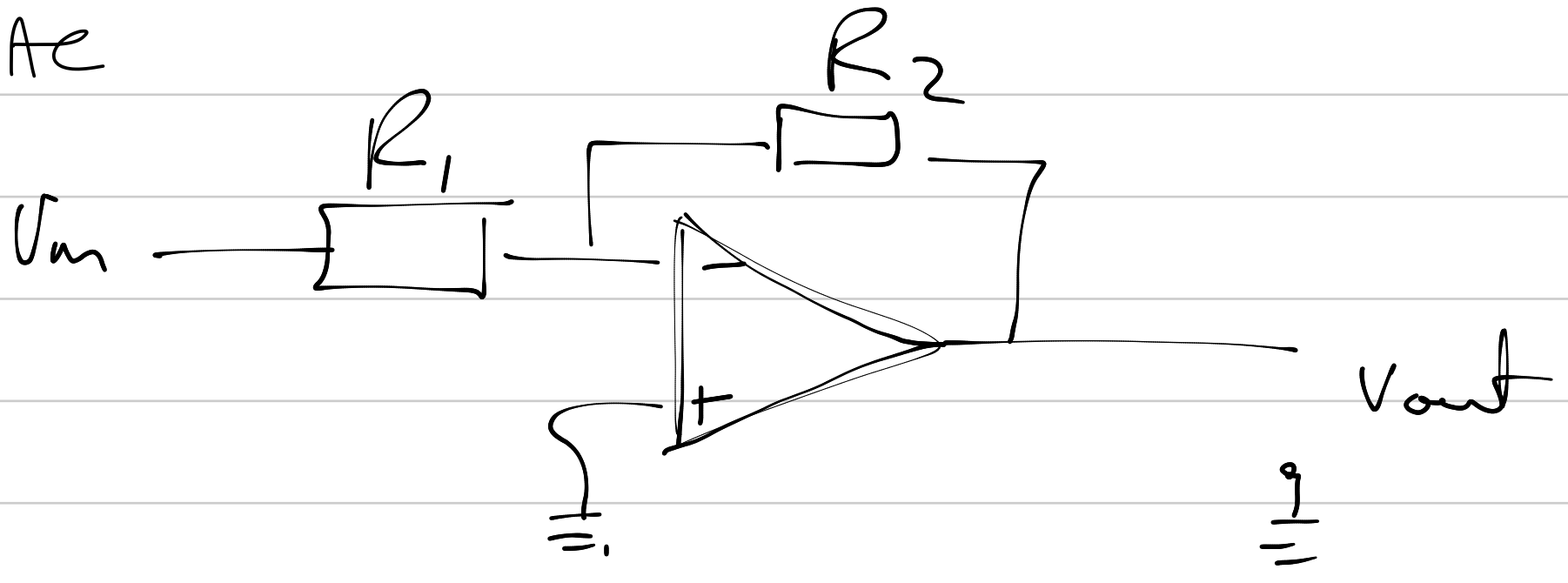


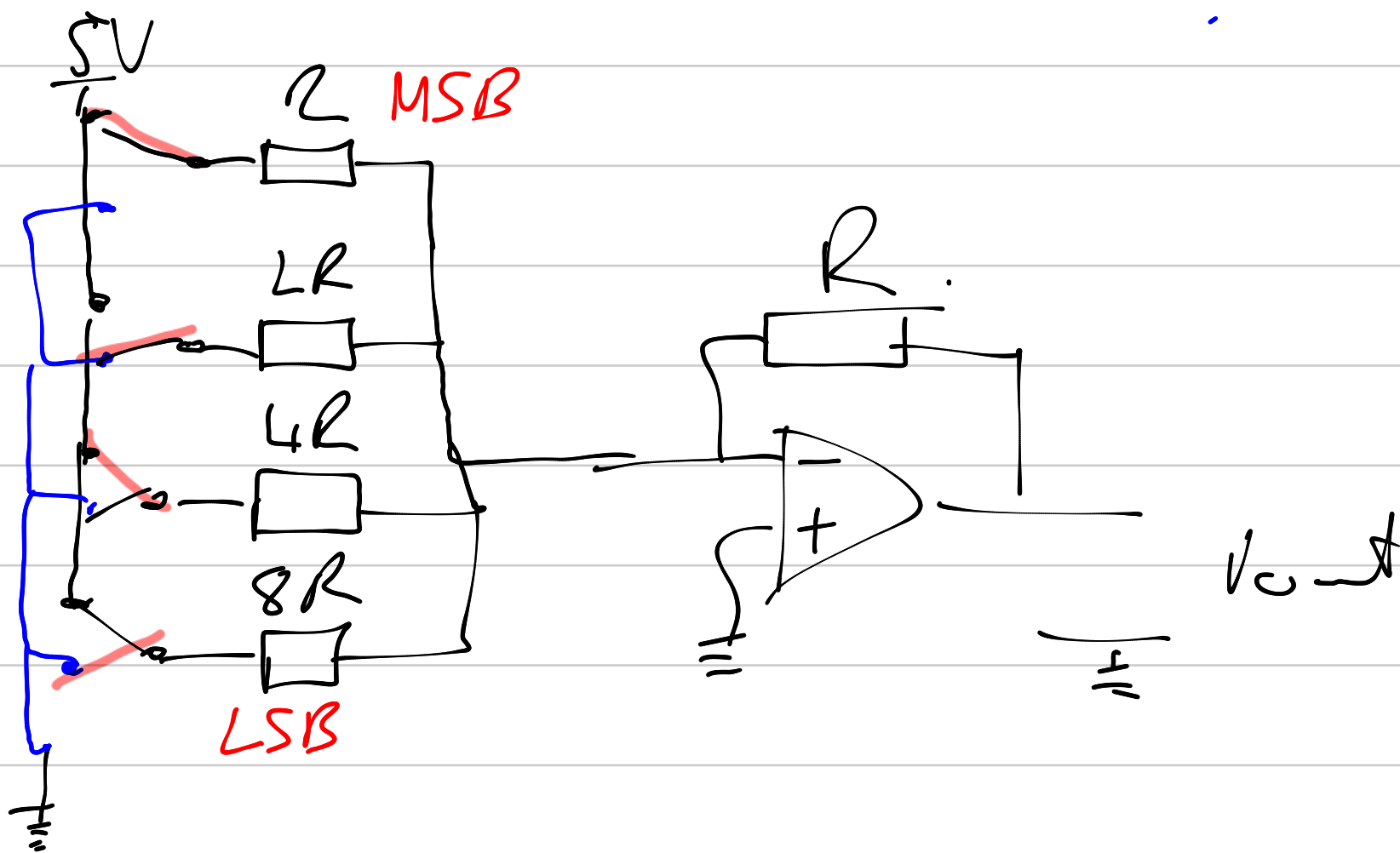
27 SEPTEMBER 2012

DAE



$$I_{in} = V_{in} / R_1$$

$$V_{out} = - \frac{R_2}{R_1} V_{in} \rightarrow -R_2 I_{in}$$



Σ example

$V_{supply} = 5V$
 MSB LSB
 1 0 1 0

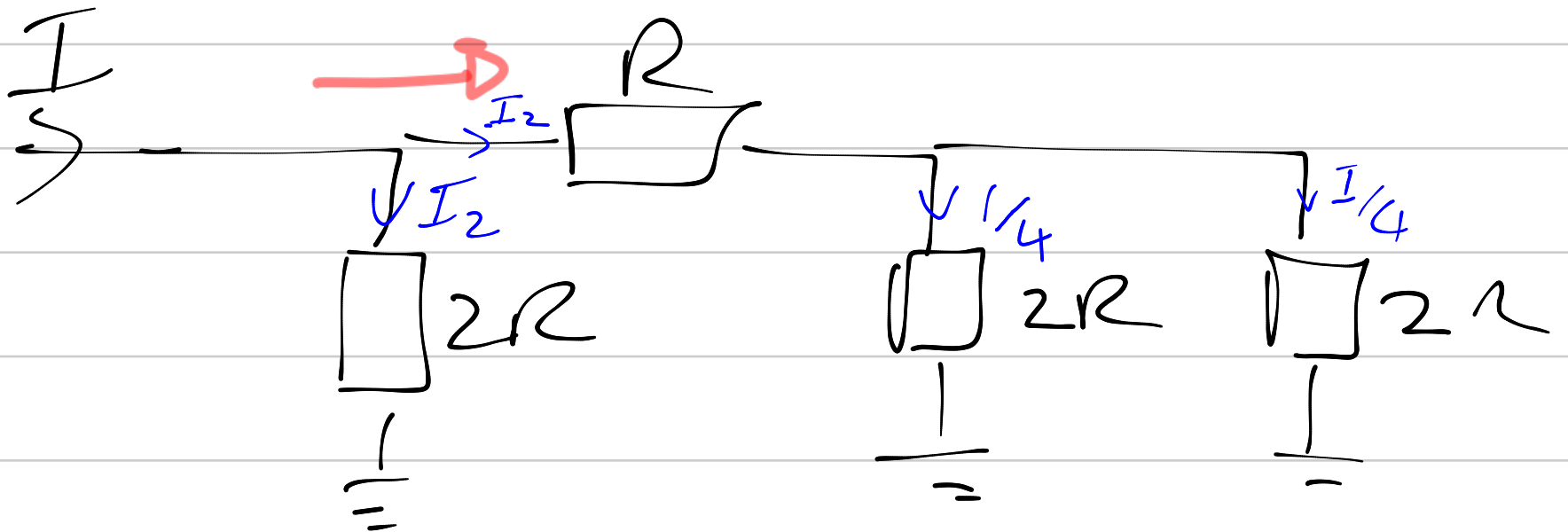
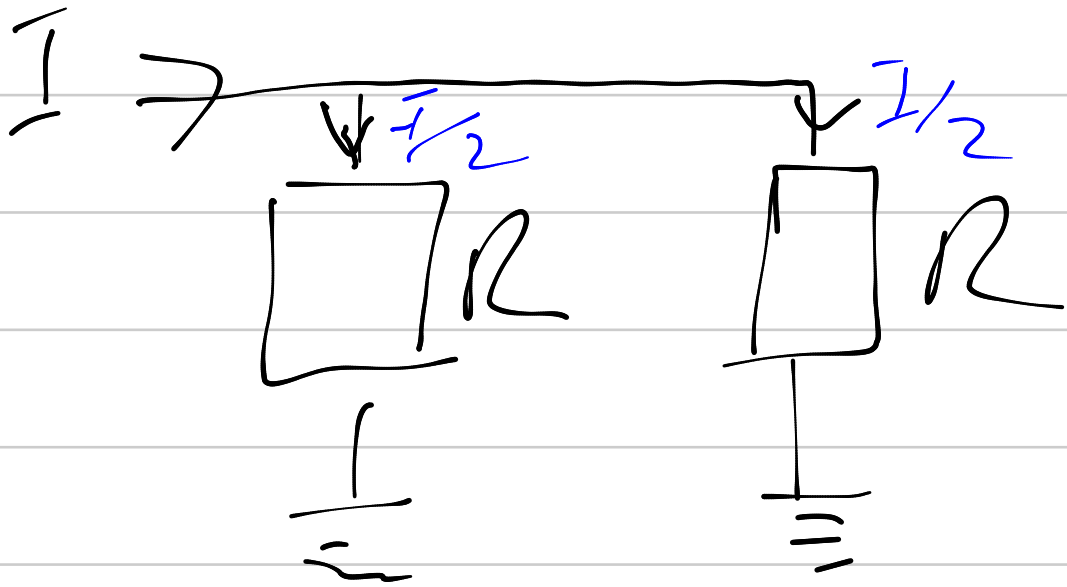
$$I = \frac{1}{2R} + \frac{1}{4R} = \frac{5}{4R}$$

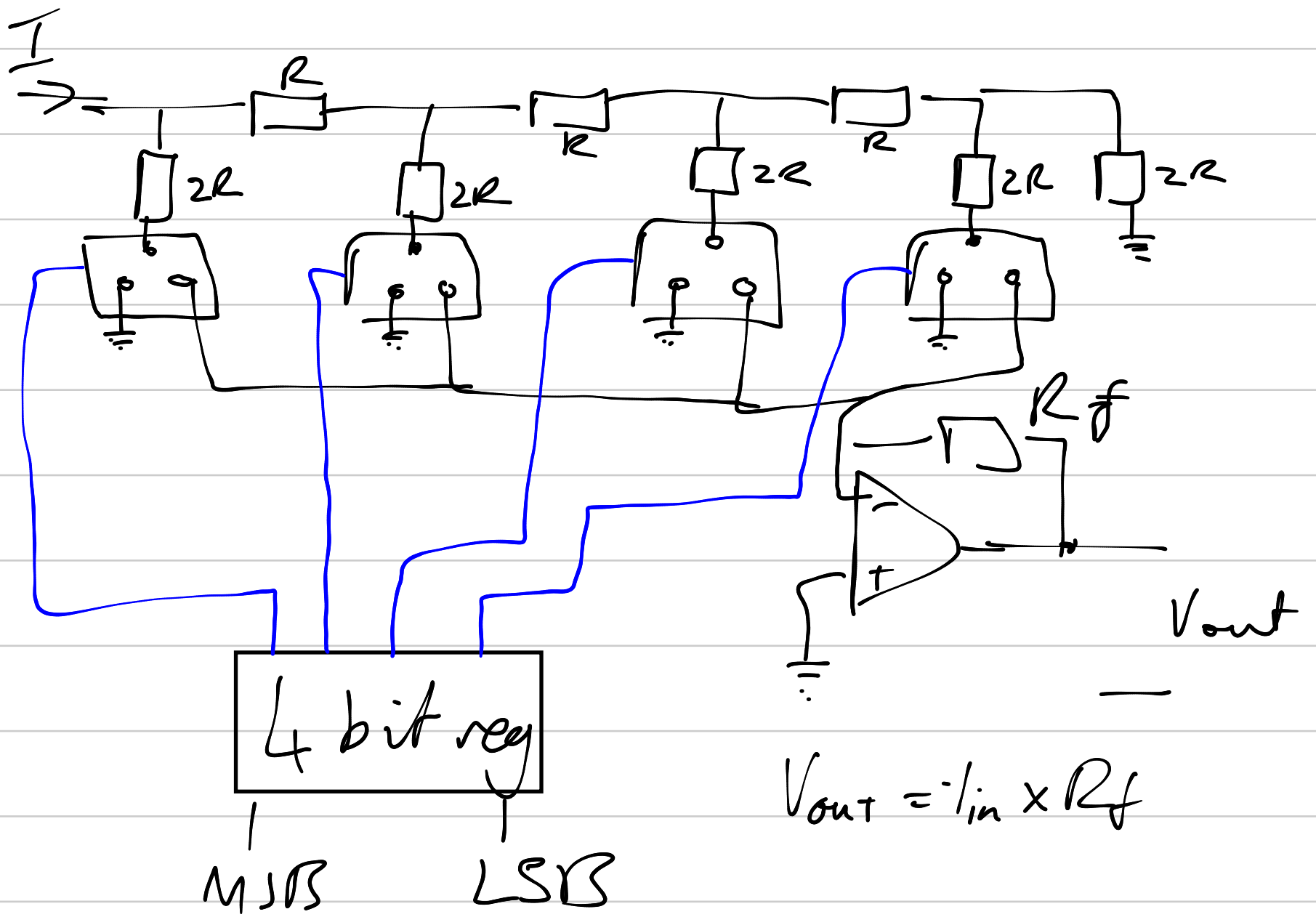
$$V_{out} = -RI = -5/4$$

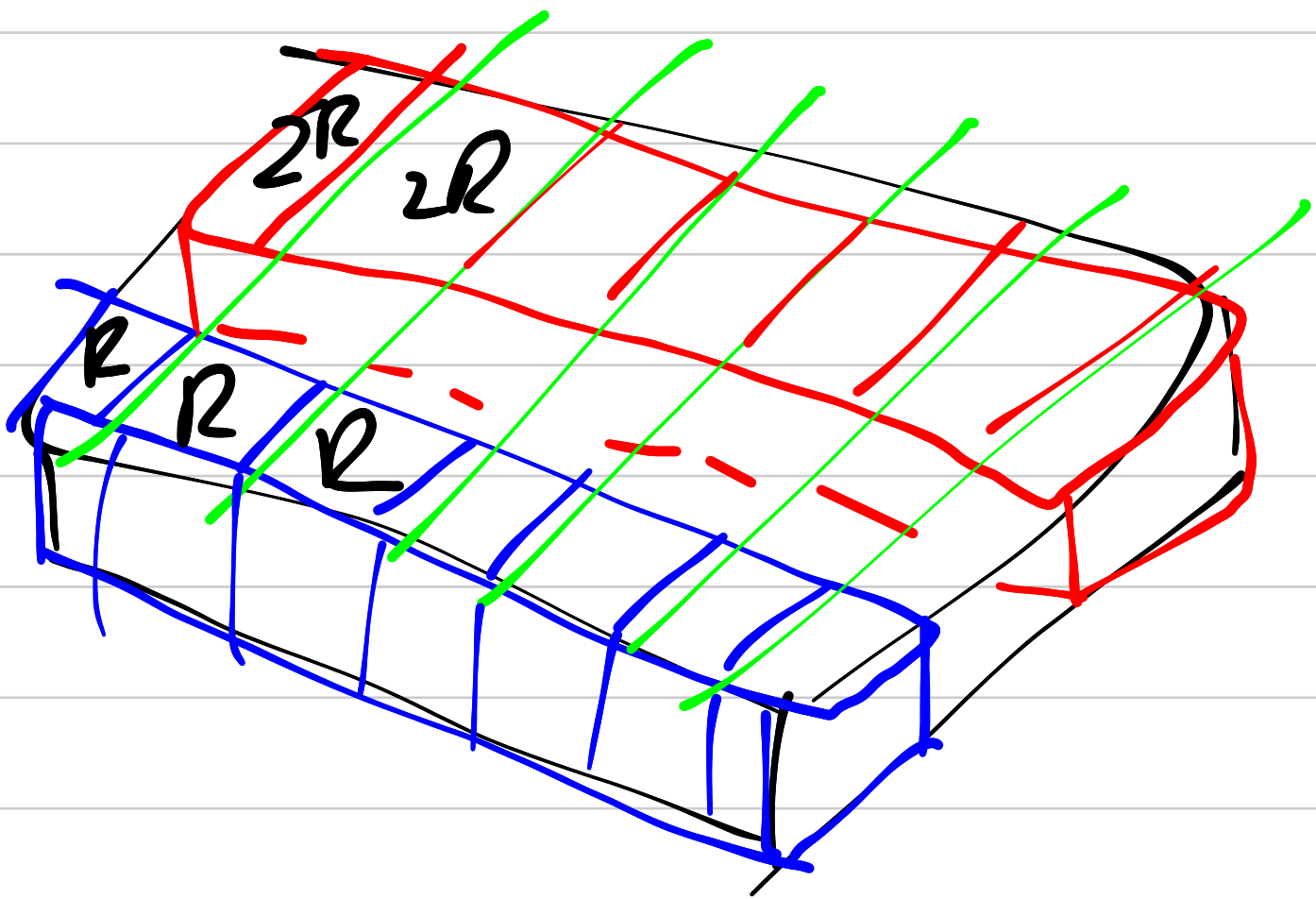
When all bits are high 1111 \rightarrow 15/8

$$5/4 \div \frac{15}{8} = \frac{2}{3} = \frac{10}{15} = \frac{1010_2}{1111_2}$$

$R-2R$ ladder network







PWM \rightarrow Pulse width modulation
 \rightarrow Control the energy

Pulse width

