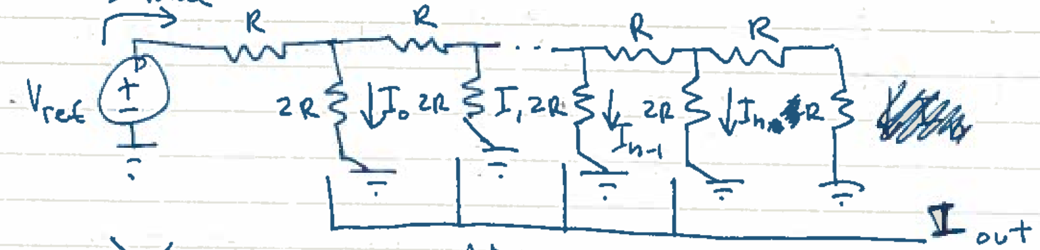
Post lab I 2/4/15 Ruby Spring



$$\cancel{I_n} = I_{total} = \frac{V_{ref}}{2R}$$

$$I_0 = I_{total}/2 = \frac{V_{ref}}{4R}$$

$$I_1 = \frac{V_{ref}}{8R}$$

$$I_2 = V_{ref}/16R$$

$$I_n = V_{ref}/2^{(n+2)}R$$

$$I_{out} = \frac{V_{ref}}{4R} + \frac{V_{ref}}{8R} + \frac{V_{ref}}{16R} \ldots + \frac{V_{ref}}{2^{(n+2)}R}$$

$$I_{out} = \sum_{i=0}^{n} \frac{V_{ref}}{2^{(i+2)} \cdot R}$$ iff all switches go to I_{out}

the fact that the switches are there means Iout won't be a sum of all the currents, but if you put a bit or other transistor in as a switch that would work...

$V = V_{ref} \cdot b_i$

$$\boxed{I_{out} = \sum_{i=0}^{n} \frac{b_i V}{2^{(n+2)} R}}$$

*note! I indexed differently so my equation has $2^{(n+2)}$ instead of $2^{(n+1)}$