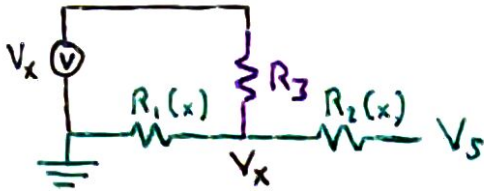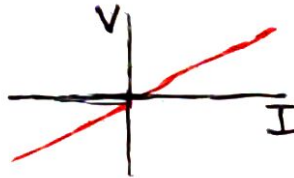## RECAP: 2D TOUCH

this is essentially an open circuit, so R_3 won't be a problem

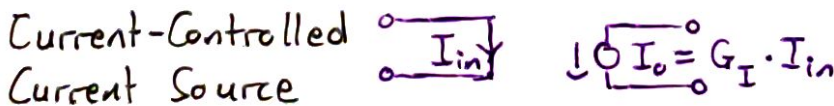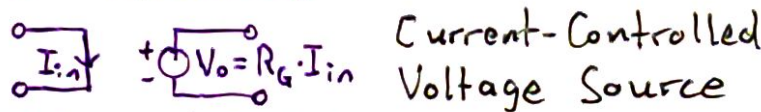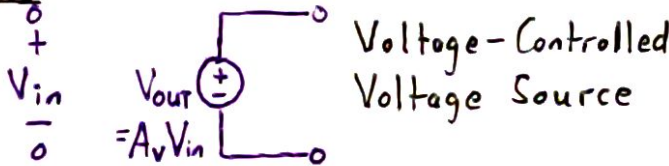*to measure V_y, simply switch colors!*

EQUIVALENCE

The equivalent resistance of resistors in series is the sum of these resistances. Prove with KVL.

The equivalent resistance R_{eq} of n resistors in parallel is $\frac{1}{R_{eq}} = \sum_{i=1}^{n} \frac{1}{R_i}$. Prove with KCL.
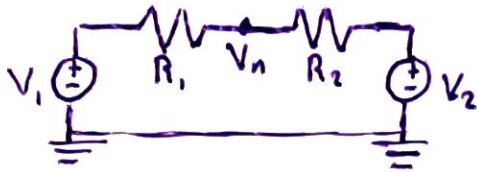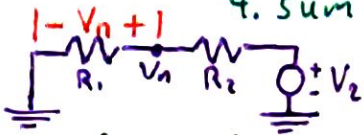
AMPLIFIERS

Voltage-Controlled Voltage Source

V_{in} $V_{OUT} = A_v V_{in}$

Current-Controlled Voltage Source

$V_0 = R_G \cdot I_{in}$

Voltage-Controlled Current Source

$I_o = V_{in} \cdot \frac{1}{R_G}$

Current-Controlled Current Source

$I_o = G_I \cdot I_{in}$

SUPERPOSITION

NVA: $[Y] \cdot \vec{V}_n = \overrightarrow{\text{constant sources}} \cdot [Y]^{-1} = \vec{V}_n$

An easier method is linear superposition.
See next page & EECS 16B.

1. zero all but 1 source
2. repeat for diff. source
3. keep repeating for all sources
4. sum results

1. zero V_1 :

$$V_n = \frac{V_2 \cdot R_1}{R_1 + R_2}$$

2. zero V_2 : $V_n = (V_1 \cdot R_2) \div (R_1 + R_2)$

3. sum both: $\dfrac{V_1 R_2 + V_2 R_1}{R_1 + R_2}$