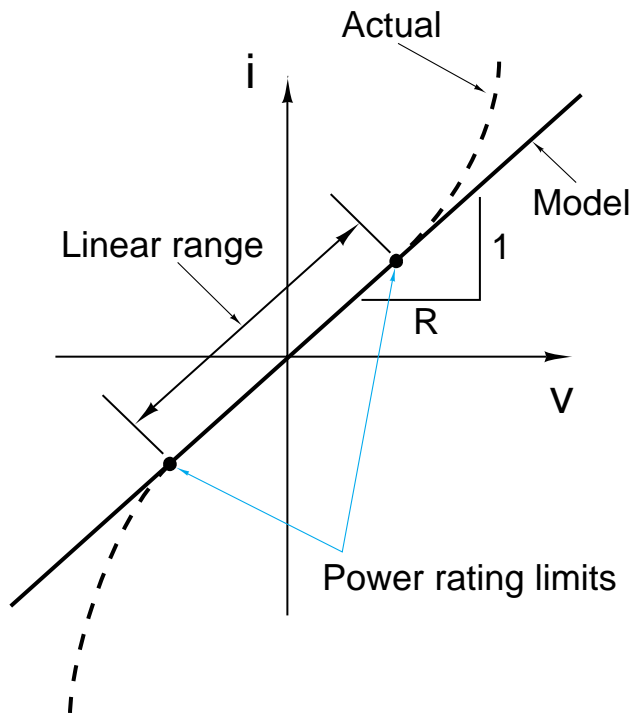
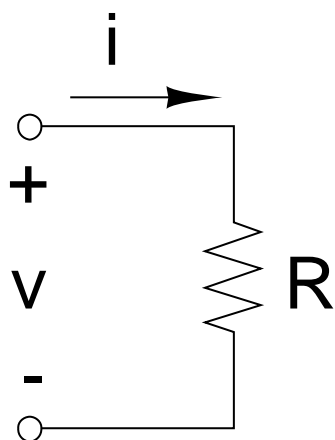


# Homework set #1, due 4/2/08

1-3, 1-8, 1-17, 1-19, 1-22

2-1, 2-2, 2-6, 2-15, 2-19, 2-22, 2-24

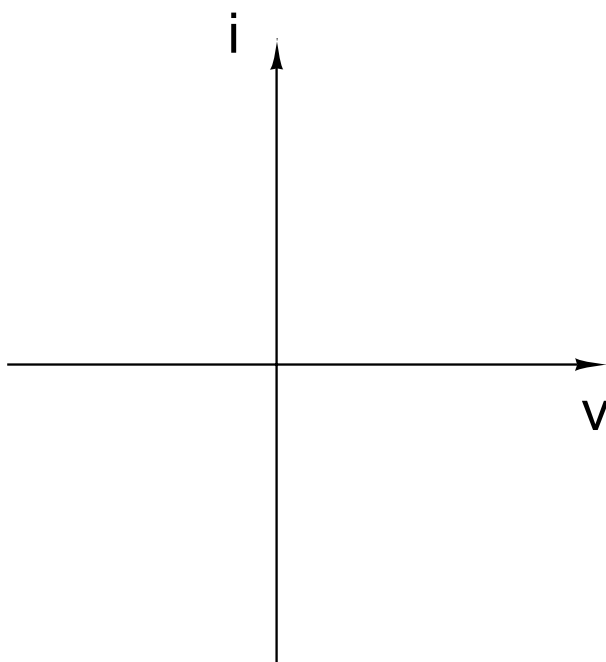
Meet the resistor...



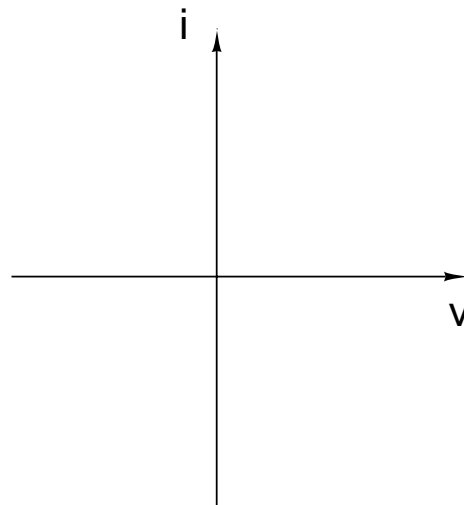
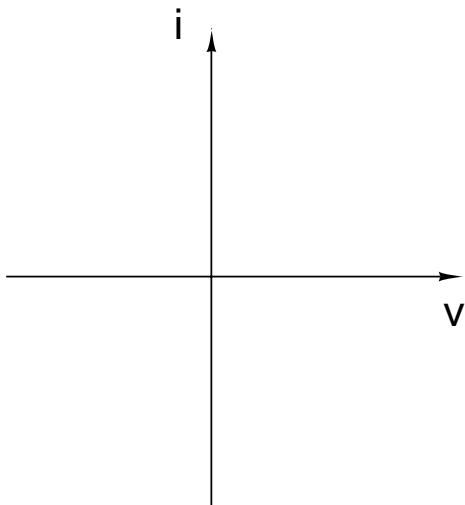
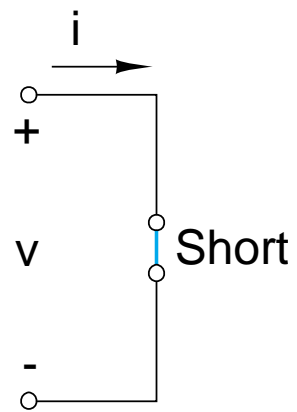
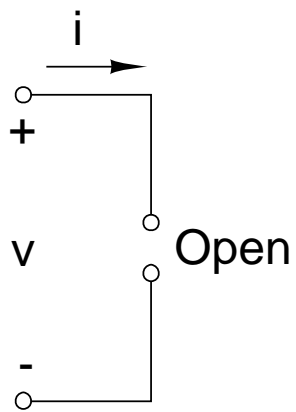
$v=Ri$  or  $i=Gv$

where:  $R$  [ $\Omega$ ],  $G$  [ $S$ ],  $G=1/R$

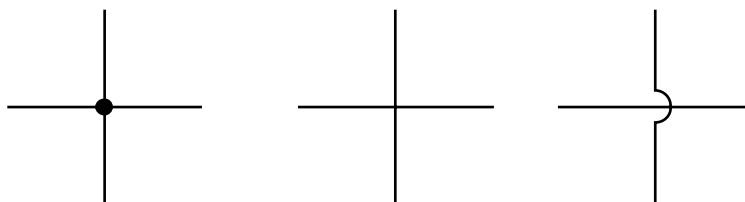
... I have a feeling you'll be spending a lot of time together



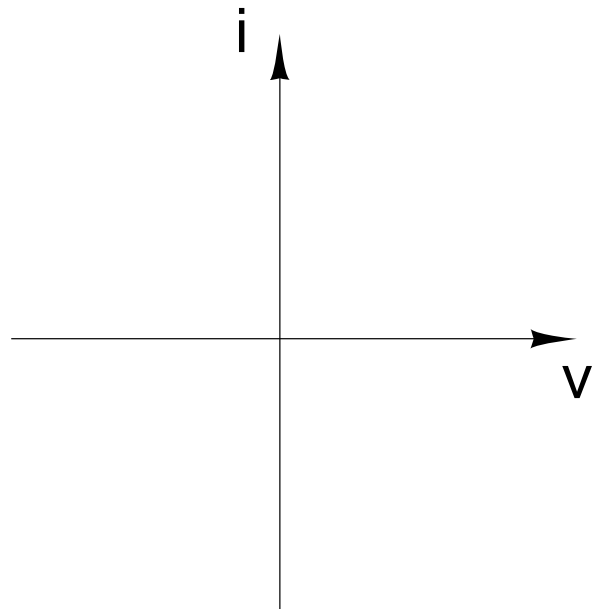
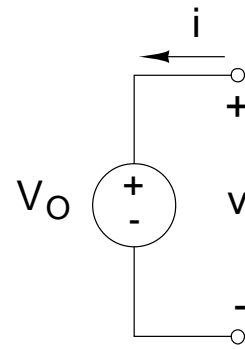
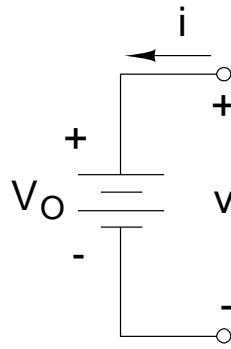
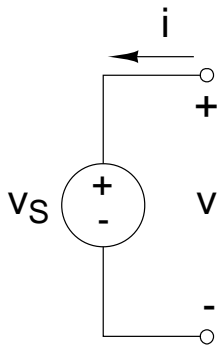
Perhaps the simplest circuit elements...



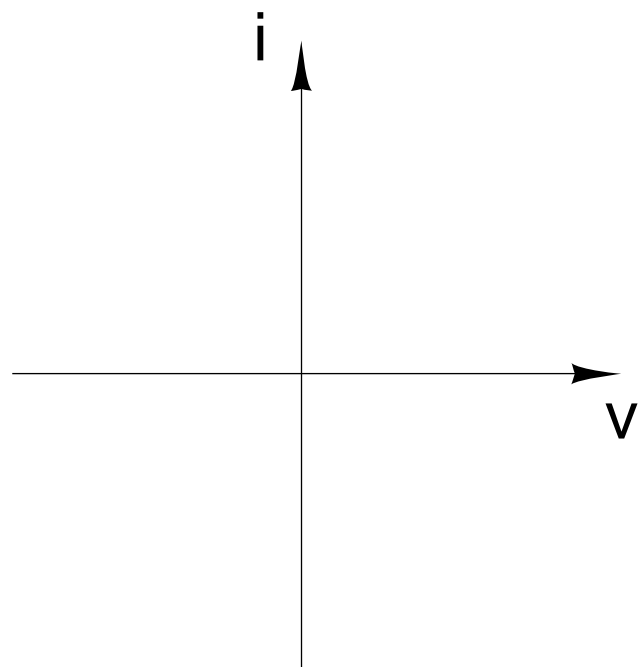
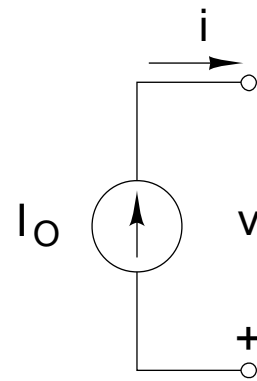
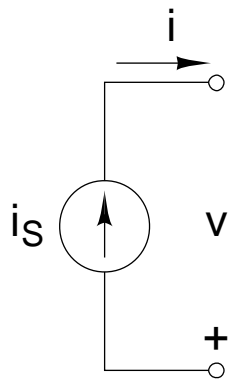
One of these things is not like the others...



### Ideal Voltage sources



## Ideal Current sources

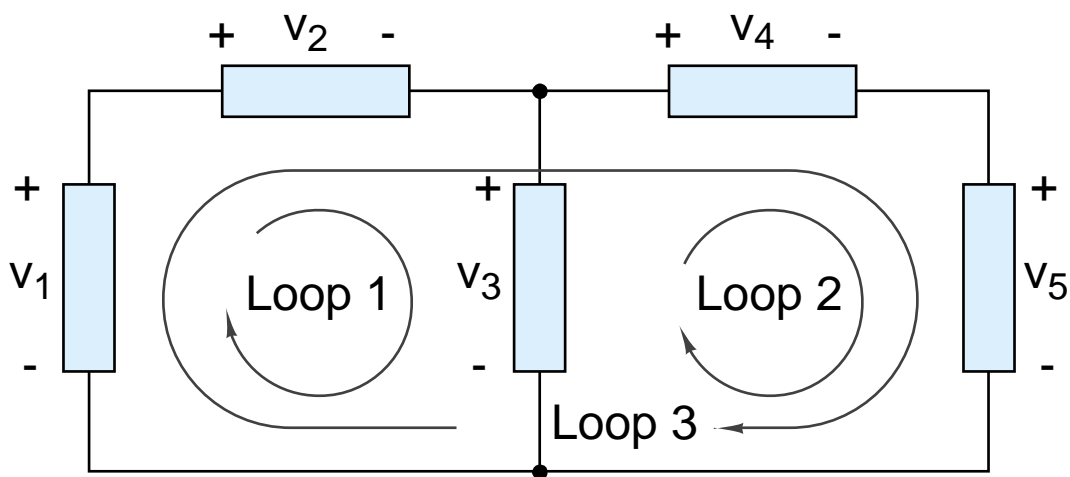




# Kirchhoff's Voltage Law (KVL)

KVL: The algebraic sum of the voltages around a loop is zero at every instant

note that convention arbitrarily dictates clockwise loops.



Loop 1:

Loop 2:

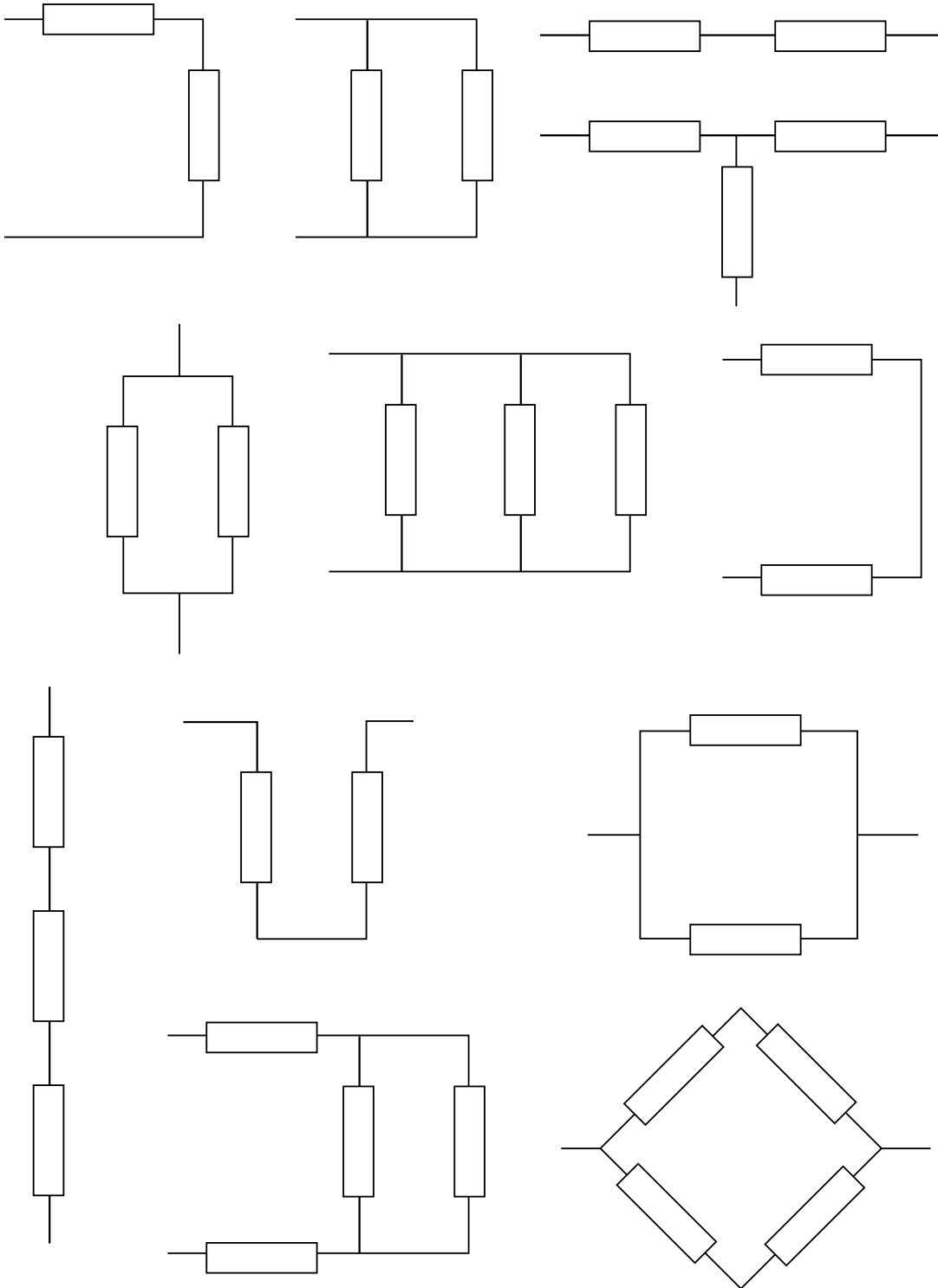
Loop 3:

## KVL Self Check

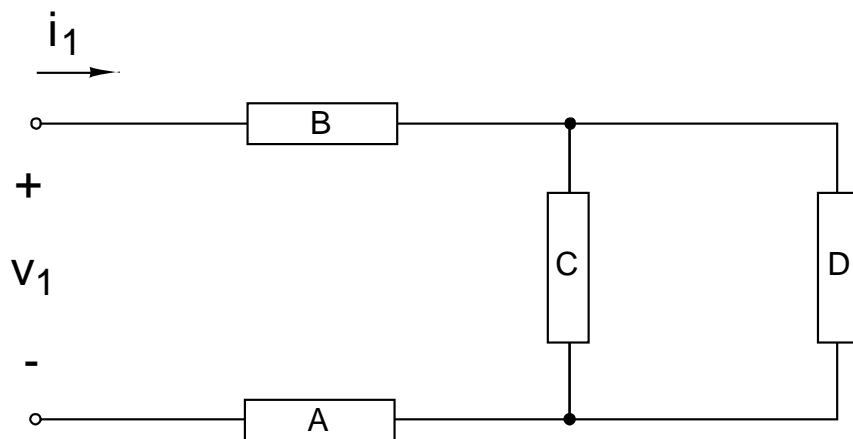
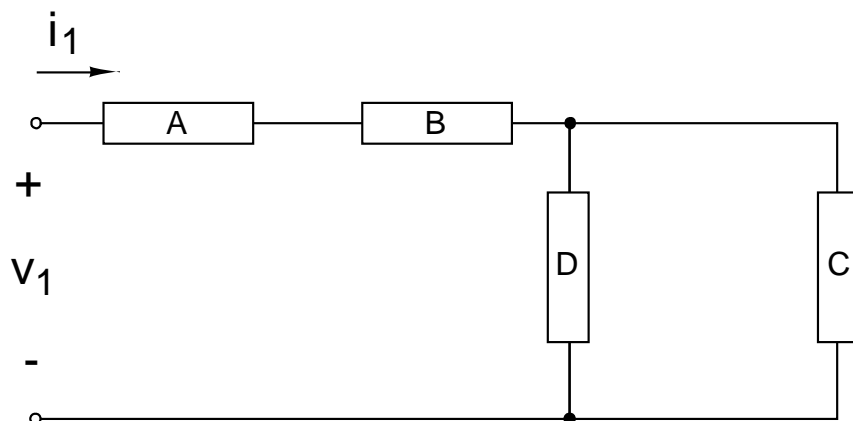
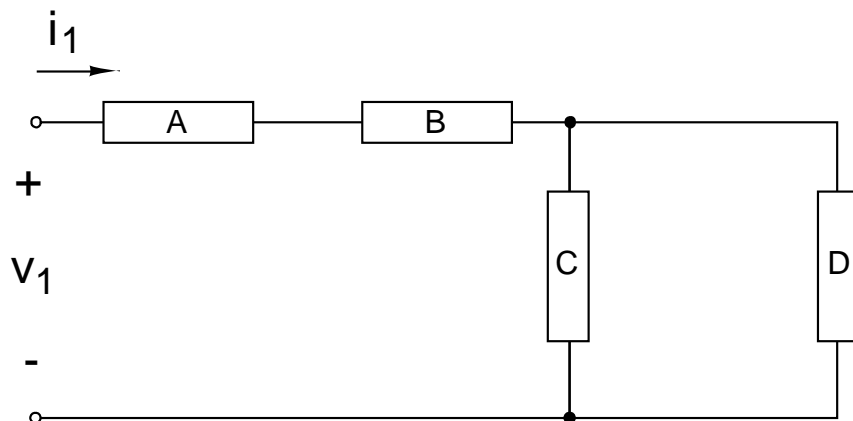
In a circuit containing a total of  $E$  two-terminal elements and  $N$  nodes, there are only  $E - N + 1$  independent KVL connection equations

# Parallel and Serial Connections

For the following 11 circuits, place a "P" under every circuit with elements in parallel and an "S" under every circuit with elements in series



### Parallel and Serial Connections



- 1) How does  $i_1$  and  $v_1$  change from circuit to circuit?
- 2) Get use to identifying these connections no matter what orientation they are at.

Putting it all together...

