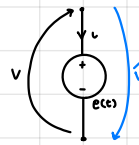
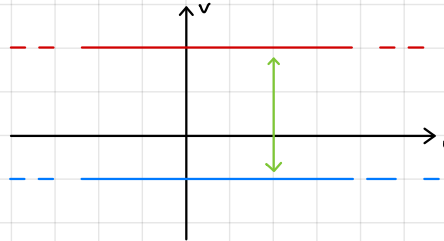


#### 4.4 GENERATORE INDIPENDENTE DI TENSIONE



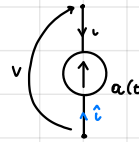
- EQ. COSTITUTIVA:  $v = e(t)$  ( $\hat{v} = -e(t)$ )
- adattivo
  - tempo variabile
  - linearità: se  $e(t) = 0 \forall t$  è lineare  
altrimenti non lineare
  - corrente definito



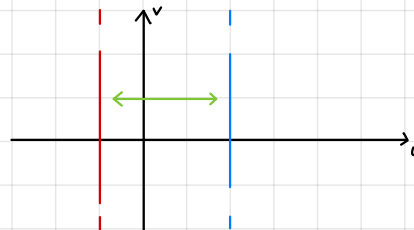
$pa \geq 0 \rightarrow$  ATTIVO  
 $e(t) = 0 \forall t \rightarrow$  INERTE

Se  $e(t)$  è nullo il generatore indipendente di tensione è equivalente a un corto circuito.

#### 4.5 GENERATORE INDIPENDENTE DI CORRENTE



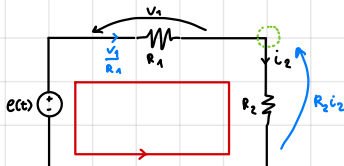
- EQ. COSTITUTIVA:  $i = -a(t)$  ( $\hat{i} = a(t)$ )
- adattivo
  - tempo variabile
  - linearità: se  $a(t) = 0 \forall t$  è lineare  
altrimenti non lineare
  - tensione definito



$pa \geq 0 \rightarrow$  ATTIVO  
 $a(t) = 0 \forall t \rightarrow$  INERTE

Se  $a(t)$  è nullo il generatore indipendente di corrente è equivalente ad un circuito aperto.

#### ESERCIZIO



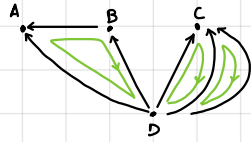
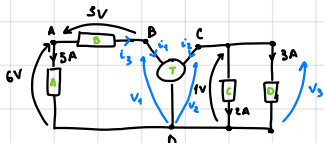
$$\begin{cases} i_2 = \frac{V_2}{R_2} \\ R_2 i_2 + V_1 - e(t) = 0 \end{cases} \quad \begin{cases} i_2 = \frac{V_1}{R_1} \\ \frac{R_2}{R_1} V_1 + V_1 = e(t) \end{cases} \quad \begin{cases} i_2 = e(t) \frac{1}{R_1 + R_2} \\ V_1 = e(t) \frac{R_1}{R_1 + R_2} \end{cases}$$

#### 4.6 CONNESSIONE IN SERIE DI BIPOLI

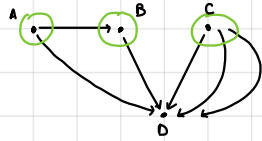
Due bipoli si dicono connessi in serie se condividono esclusivamente un nodo. I due bipoli sono attraversati, perciò, dalla stessa corrente.

## ESERCITAZIONE

### ESERCIZIO 1

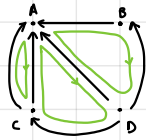
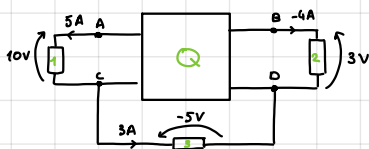


$$\begin{cases} -V_1 + 6V - 3V = 0 \\ -1V + V_2 = 0 \\ -V_3 + 1V = 0 \end{cases} \quad \begin{cases} V_1 = 3V \\ V_2 = 1V \\ V_3 = 1V \end{cases}$$

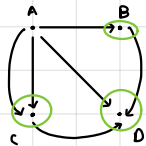


$$\begin{cases} +5A + i_3 = 0 \\ -i_3 + i_1 = 0 \\ 2A + 3A + i_2 = 0 \end{cases} \quad \begin{cases} i_3 = -5A \\ i_1 = i_3 = -5A \\ i_2 = -5A \end{cases}$$

### ESERCIZIO 2

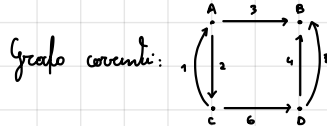
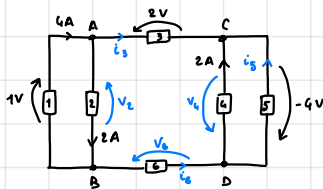


$$\begin{cases} +V_{AC} = 10V \\ -V_{AD} - 5V + 10V = 0 \\ -3V + V_{AD} - V_{AB} = 0 \end{cases} \quad \begin{cases} V_{AC} = 10V \\ V_{AD} = 5V \\ V_{AB} = 2V \end{cases}$$



$$\begin{cases} 5A + i_{AC} - 3A = 0 \\ i_{AD} + 3A - 4A = 0 \\ i_{AB} = -4A \end{cases} \quad \begin{cases} i_{AC} = -2A \\ i_{AD} = 1A \\ i_{AB} = -4A \end{cases}$$

### ESERCIZIO 3



$$KCL: \begin{cases} -i_1 + i_2 + i_3 = 0 \\ -i_3 - i_4 - i_5 = 0 \\ i_1 - i_2 + i_6 = 0 \end{cases} \quad \begin{cases} i_3 = 2A \\ i_5 = -4A \\ i_6 = -2A \end{cases}$$

	1	2	3	4	5	6
A	-1	+1	+1	0	0	0
B	0	0	-1	-1	-1	0
C	1	-1	0	0	0	1
D	0	0	0	1	1	-1