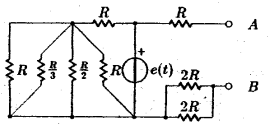
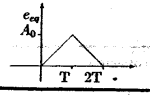
Per il circuito in figura, posto $R = \frac{7}{2}\Omega$, ricavare l' equivalete Thevenin ai morsetti A e B.

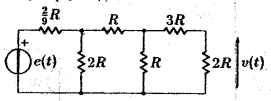


$$e(t) = \begin{cases} 0 & t < 0 \\ \frac{4a}{T}t & 0 \le t < T \\ -\frac{4a}{T}(t-2t) & T \le t < 2T \\ 0 & t \ge 2T \end{cases}$$

Riposta: $R_{eq} = 7\Omega$

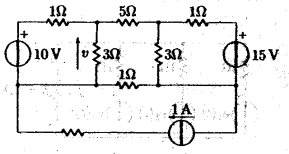


Calcolare $v(t)$, noto $e(t) = E_0 sin(\omega_0 t + \phi)$ V



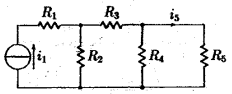
Riposta: $v(t) = \frac{9}{61}e(t)$ V

Nel circuito rappresentato determinare v



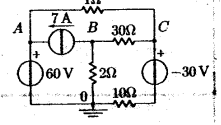
Riposta: $v = \frac{63}{8}$ V ≈ 7.875 V

Determinare il valore di i_5, in funzione dei parametri del circuito. Il risultato dipende da R_1 ?



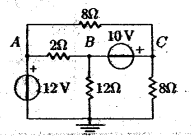
Riposta: $i_5 = \frac{R_2 R_4}{(R_2+R_3)(R_4+R_5)+R_4 R_5} i_1$

Trovare le tensioni ai nodi A,B,C rispetto il nodo di riferimento 0



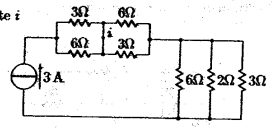
Riposta: $v_A = 60$ V, $v_B = -10$ V, $v_C = 50$ V

Calcolare v_A, v_B, v_C



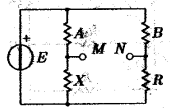
Riposta: $v_A = 12$ V, $v_B = 6$ V, $v_C = 16$ V

Determinare la corrente i



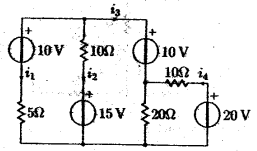
Riposta: $i = 1$ A

Determinare: il generatore equivalente tipo serie del bipolo M,N in funzione di E,A,R,B,X; la relazione che devono soddisfare A, B, R, X affinché sia $v_{MN} = 0$ V.



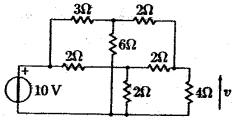
Riposta: $v_{MN} = (\frac{X}{A+X} - \frac{R}{B+R})E$, $R_{eq} = (A \| X + B \| R)$, $v_{MN} = 0 \Leftrightarrow (AR = BX \vee E = 0)$

Valutare i_1, i_2, i_3, i_4



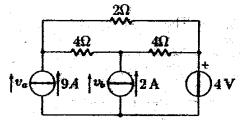
Riposta: $i_1 = \frac{10}{9}$ A, $i_2 = \frac{1}{18}$ A, $i_3 = -\frac{7}{6}$ A, $i_4 = \frac{13}{9}$ A

Valutare v



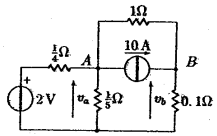
Riposta: $v = 4$ V

Valutare v_a, v_b



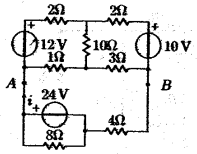
Riposta: $v_a = 20$ V, $v_b = 16$ V

Calcolare le tensioni v_a, v_b



Riposta: $v_a = -0.11$ V, $v_b = 0.9$ V

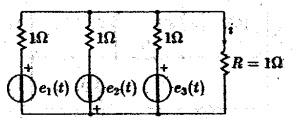
Determinare la corrente i, usando il circuito equivalente serie del bipolo (A,B)



Riposta: $i = \frac{1165}{284}$ A ≈ 4.1 A

ESERCITAZIONE 2

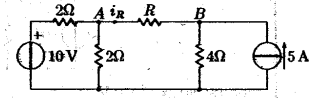
Calcolare la corrente i e la potenza entrante resistore R



$e_1 = cos(\omega t)$ V
$e_2 = 2cos(\omega t)$ V
$e_3 = sin(\omega t)$ V

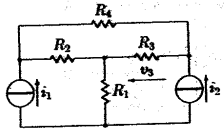
Riposta: $i = \frac{\sqrt{2}}{4} sin(\omega t - \frac{\pi}{4})$ A, $P_R = \frac{1}{16}(1 - sin2\omega t) W$

Mediante la rapresentazione Thevenin del bipolo ai capi del resistore R calcolare la corrente i_R



Riposta: $i_R = -\frac{15}{5+R}$ A

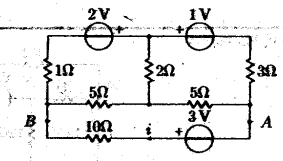
Calcolare la tensione v_3



$R_i = 4\Omega$
$i_1 = 6$ A
$i_2 = 10$ A

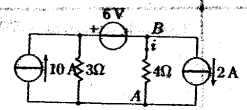
Riposta: $v_3 = -24$ V

Mediante la rappresentazine Thevenin del bipolo tra (A,B) calcolare la corrente i



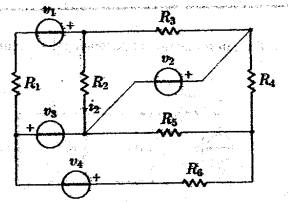
Riposta: $i = \frac{16}{49}$ A ≈ 0.33 A

Calcolare la corrente i servendosi dell' equivalente Norton del bipolo A,B



Riposta: $i \approx 2.6$ A

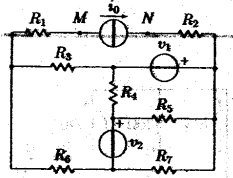
Determinare il valore della corrente i_2



$R_i = 10i\Omega$
$v_i = 10i$ V

Riposta: $i_2 = \frac{14}{11}$ A ≈ 1.27 A

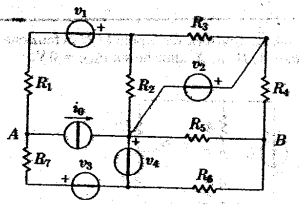
Determinare il valore della tensione v_{MN}



$R_i = 10i\Omega$
$v_i = 10i$ V
$i_0 = 1$ A

Riposta: $v_{MN} = -64$ V

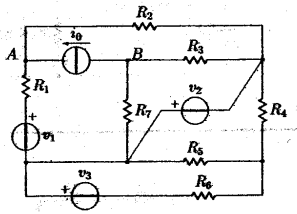
Determinare v_{AB}



$R_i = 10i\Omega$
$v_i = 10i$ V
$i_0 = 1$ A

Riposta: $v_{AB} = -\frac{15275}{851}$ V ≈ -17.95 V

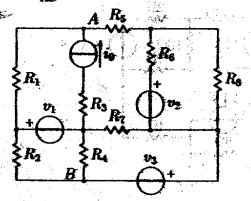
Determinare v_{AB} con Thevenin.



$R_i = 10i\Omega$
$v_i = 10i$ V
$i_0 = 1$ A

Riposta: $v_{AB} \approx 41.6$ V

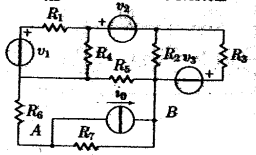
Determinare v_{AB}



$R_i = 10i\Omega$
$v_i = 10i$ V
$i_0 = 1$ A

Riposta: $v_{AB} \approx -84.1173$ V

Determinare v_{AB} con Thevenin e Norton.



$R_i = 10i\Omega$
$v_i = 10i$ V
$i_0 = 1$ A

Riposta: $v_{AB} \approx -27.72$ V