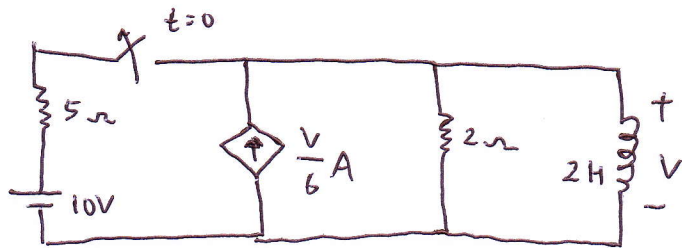
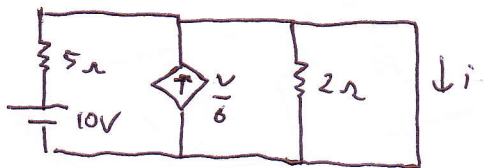


Tentukan V untuk $t > 0$



Jawab:

Rangkaian saat $t = 0^-$:

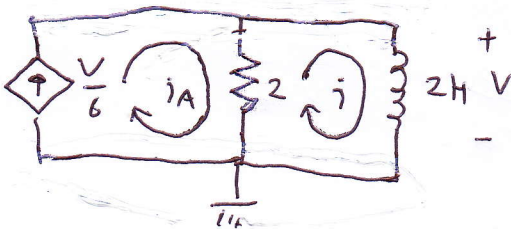


Rangkaian diatas dapat disederhanakan menjadi:



$$i = \frac{10}{5} = 2 \text{ A}$$

Rangkaian saat $t = 0^+$



$$i_A = \frac{V}{6}$$

$$V = L \frac{di}{dt} = 2 \frac{di}{dt} \quad \left. \vphantom{V = L \frac{di}{dt}} \right\} i_A = \frac{1}{3} \frac{di}{dt}$$

KVL loop i:

$$2(i - i_A) + L \frac{di}{dt} = 0$$

$$2i - 2i_A + 2 \frac{di}{dt} = 0$$

$$2i - \frac{2}{3} \frac{di}{dt} + 2 \frac{di}{dt} = 0$$

$$2i + \frac{4}{3} \frac{di}{dt} = 0$$

$$\frac{4}{3} \frac{di}{dt} = -2i \quad \times \frac{3}{4}$$

$$\frac{di}{dt} = -\frac{3}{2} i$$

$$\int \frac{di}{i} = \int -\frac{3}{2} dt$$

$$\ln i = -\frac{3}{2} t + k$$

$$i = e^k \cdot e^{-\frac{3}{2} t}$$

Saat $t = 0$

$$i = 2 = e^k \cdot e^0$$

$$e^k = 2$$

$$\therefore i = 2 \cdot e^{-\frac{3}{2} t}$$

$$V = 2 \frac{di}{dt} = 2 \cdot \frac{d(2 \cdot e^{-\frac{3}{2} t})}{dt}$$

$$= 2 \cdot 2 \cdot -\frac{3}{2} e^{-\frac{3}{2} t}$$

$$= -6 e^{-\frac{3}{2} t} \text{ volt}$$