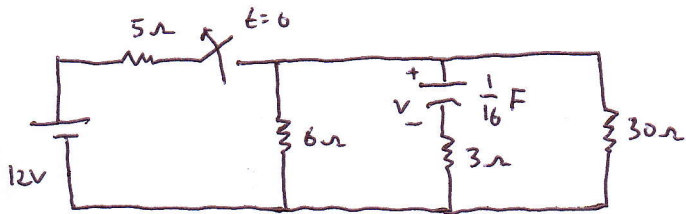
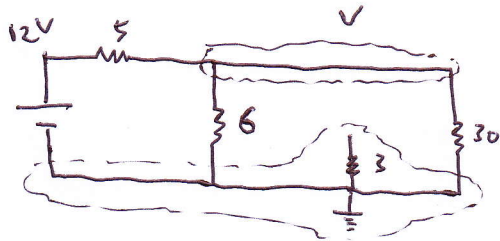


Tentukan v untuk $t > 0$



Jawab:

Rangkaian saat $t=0^-$:



KCL node v :

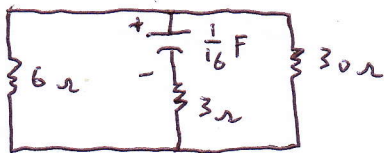
$$\frac{V-12}{5} + \frac{V}{6} + \frac{V}{30} = 0 \quad \times 30$$

$$6V - 12 \cdot 6 + 5V + V = 0$$

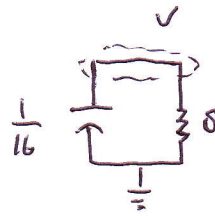
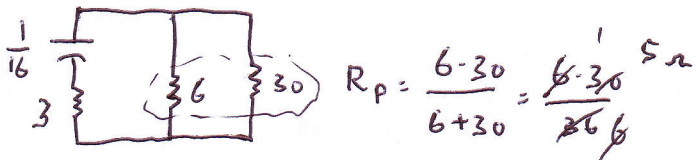
$$12V = 12 \cdot 6$$

$$V = 6 \text{ volt}$$

Rangkaian saat $t=0^+$:



Rangkaian dapat disederhanakan sbb:



$$\frac{1}{16} \frac{dv}{dt} + \frac{v}{3} = 0 \quad \times 16$$

$$\frac{dv}{dt} + 2v = 0$$

$$\frac{dv}{v} = -2v$$

$$\int \frac{dv}{v} = \int -2 dt$$

$$\ln v = -2t$$

$$v = e^k \cdot e^{-2t}$$

Saat $t=0$:

$$V = 6$$

$$6 = e^k \cdot e^{-2 \cdot 0}$$

$$= e^k \cdot 1$$

$$e^k = 6$$

$$\therefore V = 6 \cdot e^{-2t} \text{ volt}$$