

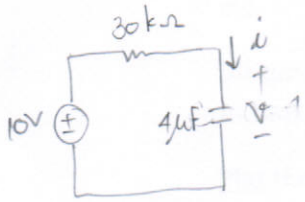
- ①  $t_1 = 0 \text{ ms}$  ①  $\rightarrow$  ②
- ②  $t_2 = 25 \text{ ms}$  ②  $\rightarrow$  ①
- ③  $t_3 = 50 \text{ ms}$  ①  $\rightarrow$  ②
- ④  $t_4 = 75 \text{ ms}$  ②  $\rightarrow$  ①
- ⑤  $t_5 = 100 \text{ ms}$  ①  $\rightarrow$  ②

plot  $v(t)$  for time  $t > 0$   
 $v(t_5) \approx 4.59 \text{ V}$

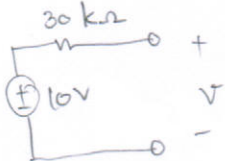
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No name!?

① for  $t < 0$



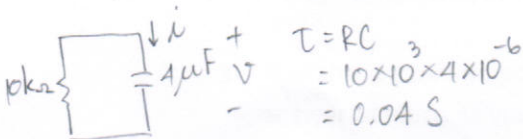
for  $t = 0^-$



$$v(0^-) = 10 \text{ V}$$

$$v(0) = v(0^-) = 10 \text{ V}$$

for  $0 < t < 0.025$



$$v(\infty) = 0 \text{ V}$$

$$v(t) = v(\infty) + (v(0) - v(\infty))e^{-t/\tau}$$

$$= 0 + (10 - 0)e^{-t/0.04}$$

$$= 10e^{-t/0.04} \text{ V}$$

$$v(0.025) = 10e^{-0.025/0.04}$$

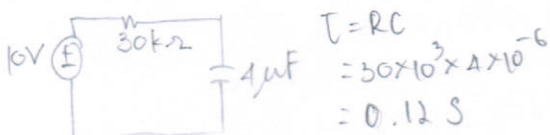
$$= 5.353 \text{ V}$$

② for  $0.025 \leq t < 0.05$

voltage of the capacitor is same as at  $t = 0.025$

$$v(0.025) = v(0) = 10 \text{ V}$$

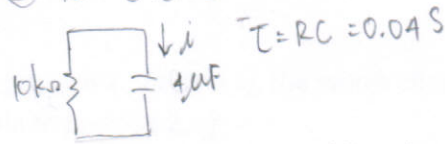
$$v(t) = v(\infty) + (v(0) - v(\infty))e^{-t/\tau}$$



$$v(t) = 10 + (5.353 - 10)e^{-t/0.12}$$

$$= 10 - 4.647e^{-t/0.12} \text{ V}$$

③ for  $0.05 \leq t < 0.075$

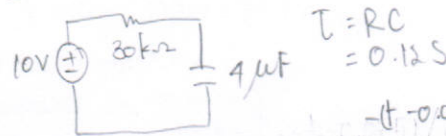


$$v(t) = 0 + (10 - 0)e^{-(t-0.05)/0.04}$$

$$v(0.075) = 6.227e^{-(0.075-0.05)/0.04}$$

$$= 3.333 \text{ V}$$

④ for  $0.075 \leq t < 0.1$



$$v(t) = 10 + (3.333 - 10)e^{-(t-0.075)/0.12}$$

$$v(0.1) = 10 - 6.667e^{-0.1+0.075/0.12}$$

$$= 4.587 \text{ V}$$

