EE2210 Electric Circuits, Spring 2017

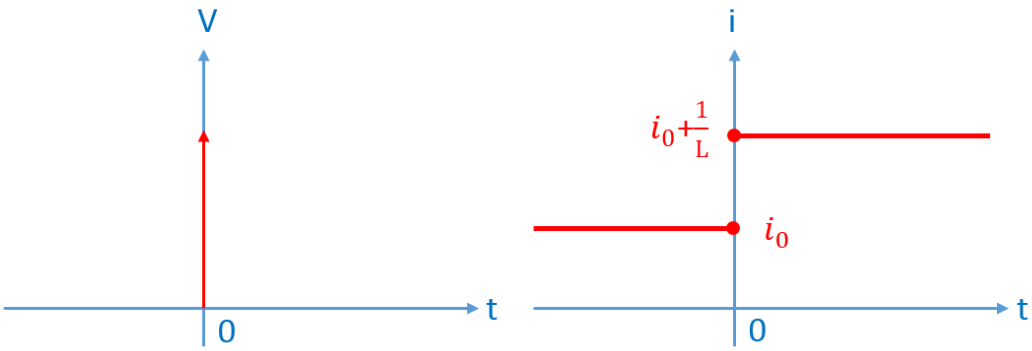
Practice Problems Solutions (Lecture4-Lecture7)

Problem 2 update

2.

$$\mathrm{V(t)} = \mathrm{L}\frac{di}{dt} \rightarrow \frac{1}{\mathrm{L}}\mathrm{V(t)}dt = di \rightarrow \frac{1}{\mathrm{L}}\int_{-\infty}^{\mathrm{t}} \mathrm{V(t)}dt = i$$

$$i = \frac{1}{\mathrm{L}}\int_{-\infty}^{0} \mathrm{V(t)}dt + \frac{1}{\mathrm{L}}\int_{0}^{\mathrm{t}} \mathrm{V(t)}dt = i_0(initial\ value\ at\ t = 0^-) + \frac{1}{\mathrm{L}}$$



Supplement:

The Dirac delta can be loosely thought of as a function on the real line which is zero everywhere except at the origin, where it is infinite,

$$\delta(x) = \begin{cases} +\infty, & x = 0 \\ 0, & x \neq 0 \end{cases}$$

and which is also constrained to satisfy the identity

$$\int_{-\infty}^{\infty} \delta(x)\,dx = 1.$$[19]

From WIKI