

$$I = C \frac{dV}{dt}$$

EE 220

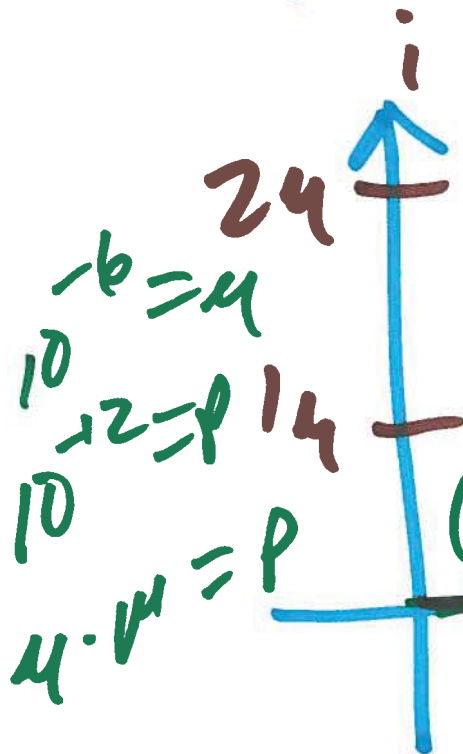
Circuits I

I

$$V = \frac{1}{C} \int_{t_{initial}}^{t_{final}} i \cdot dt$$

$$V = \frac{1}{C} \int_{0}^{24} i \cdot dt$$

Lecture 16



① $V = \frac{1}{C} \int_0^{24} i \cdot dt$

② $V = \frac{1}{C} \int_0^{14} i \cdot dt$

③ $V = \frac{1}{C} \int_0^{14} i \cdot dt + \frac{1}{C} \int_{14}^{24} i \cdot dt$

④ $V = \frac{1}{C} \left(\frac{t^2}{2} - 14t \right) \Big|_0^{14}$

⑤ $V = \frac{1}{C} \left(\frac{t^2}{2} - 14t \right) \Big|_0^{24}$

$0V = \frac{1}{10\mu F} \left[\frac{4t^2}{2} - 24t \right]$

$4t^2 - 48t = 0$

$t(4t - 48) = 0$

$t = 0$ or $t = 12$

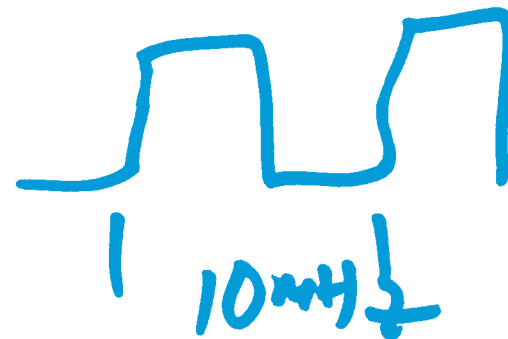
$$i = 1t - 14A$$

17

$$1\text{kHz} = f$$

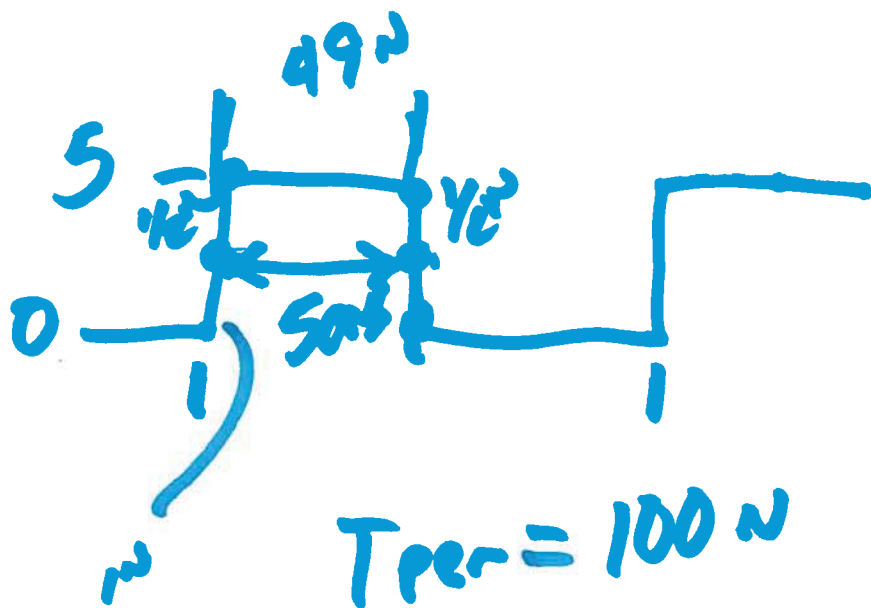


$$T = \frac{1}{f} = 1\text{ms}$$



$$T = \frac{1}{10\text{kHz}}$$

$$= 100\text{ns}$$
$$= 0.1\mu\text{s}$$



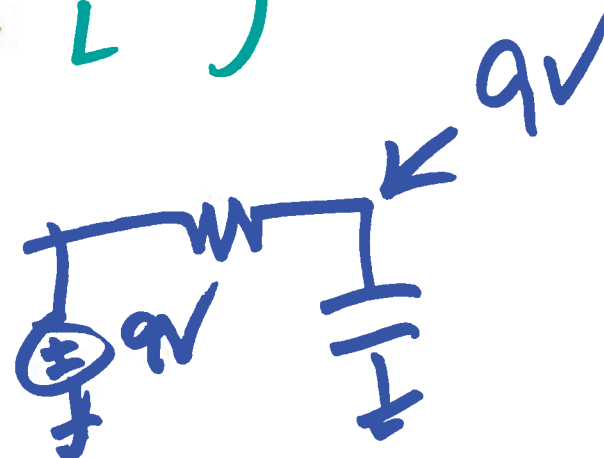
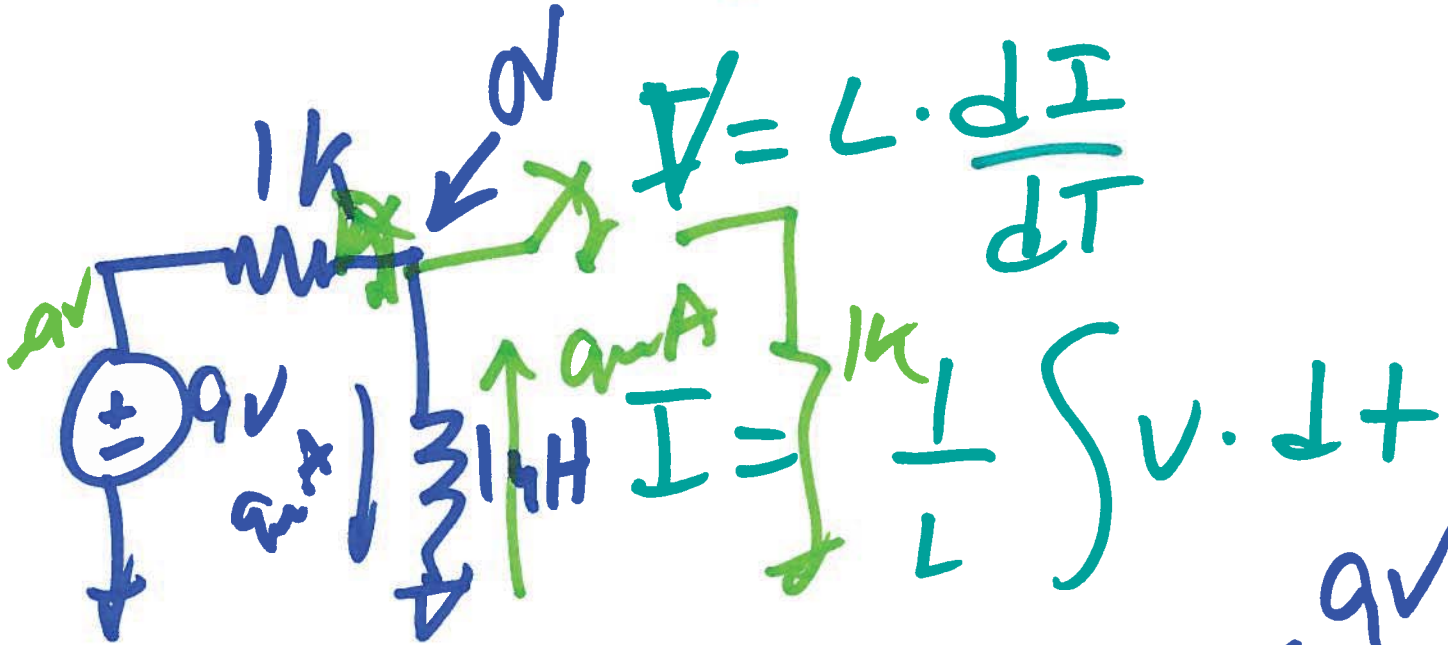
cap
can't change
voltage
instantaneously

Inductors

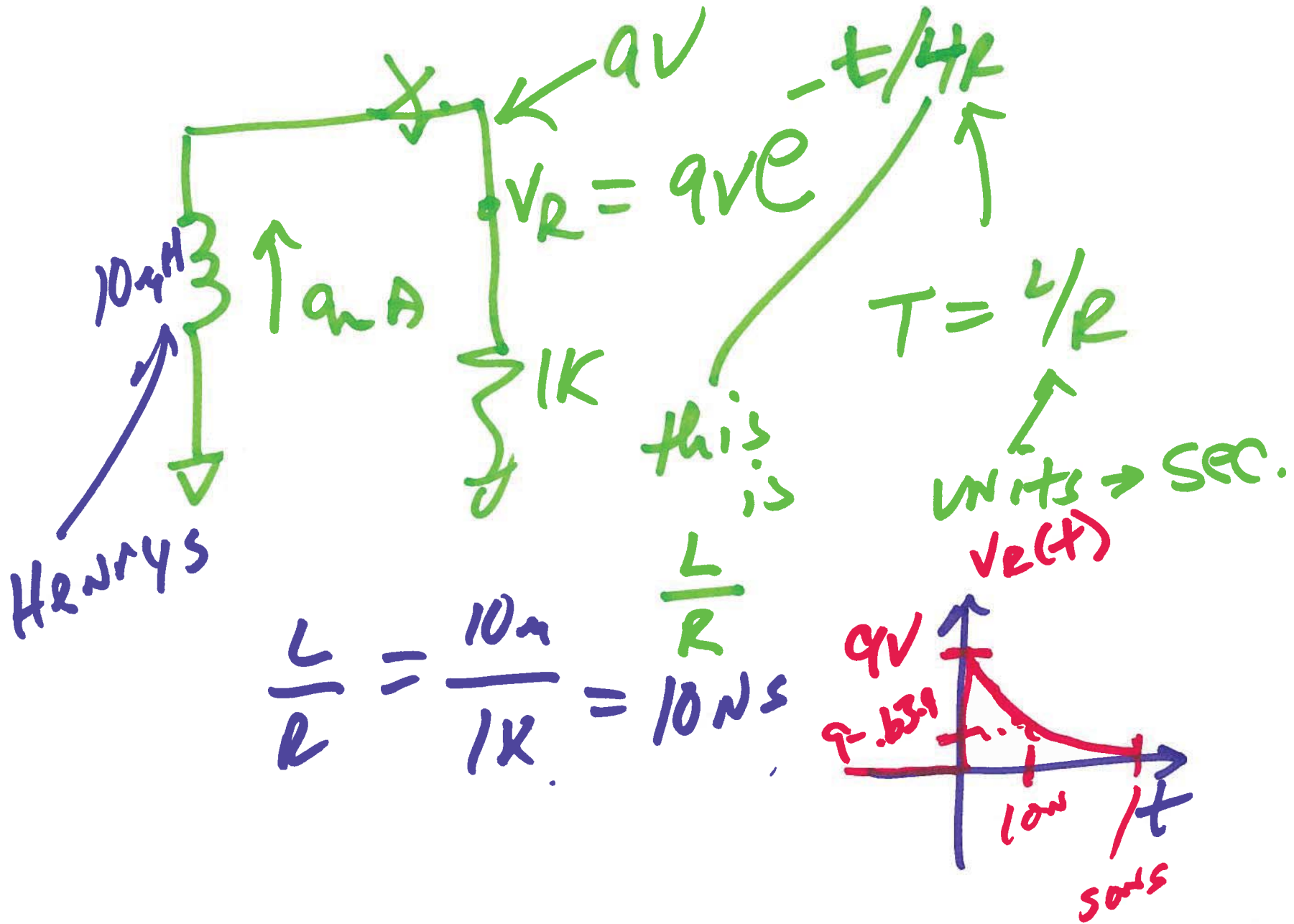


Bunch of
wire wrapped
around a
core

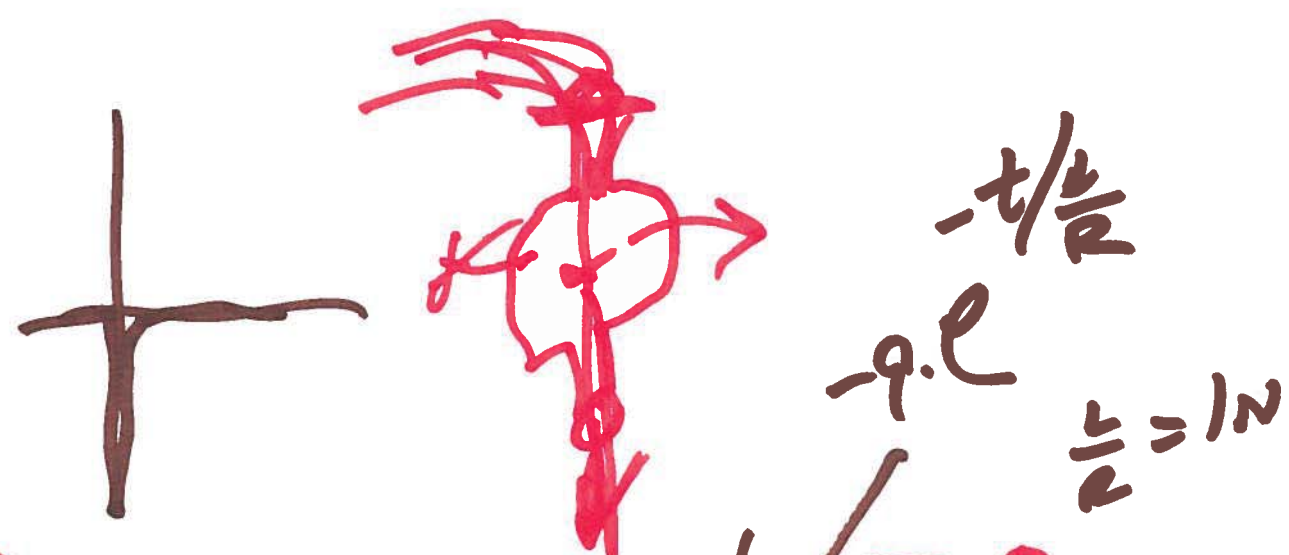
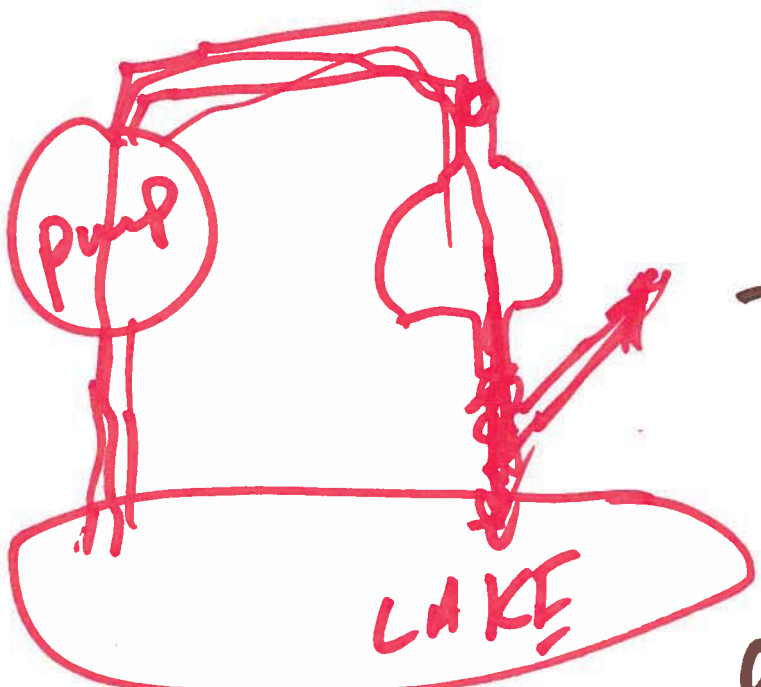
~~can't~~
can't
change
current
instantaneously



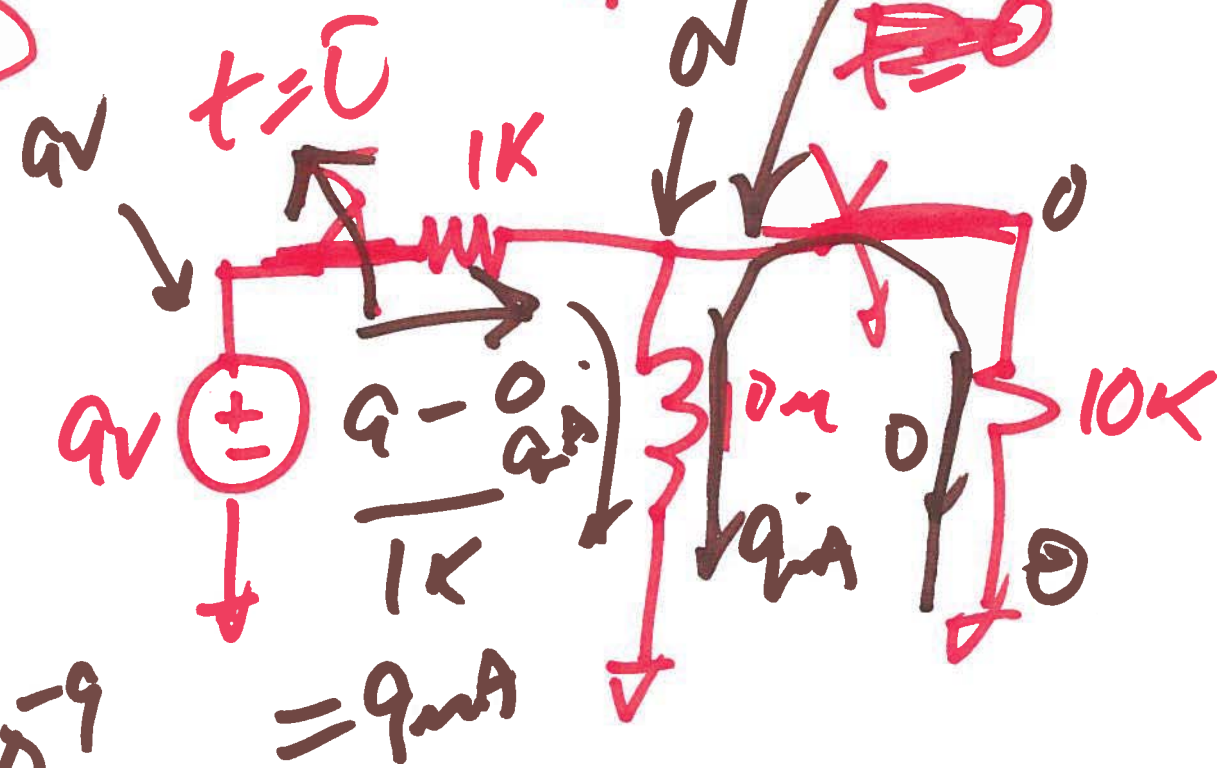
3)



4/



$$\frac{10\mu}{10K} = 10^{-6} / 10^4 = 10^{-9}$$



$$-t/\frac{R}{2}$$

$$-q \cdot R$$

$$R/\frac{t}{2} = 1N$$

5)

