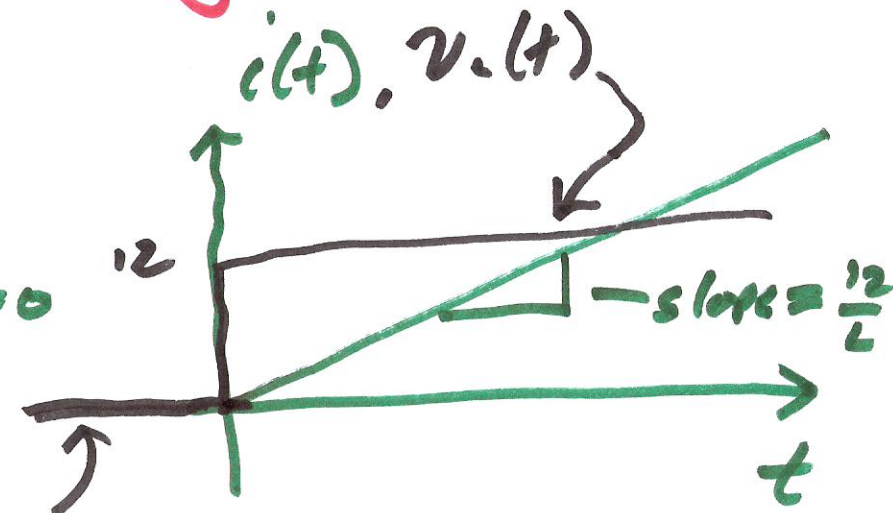
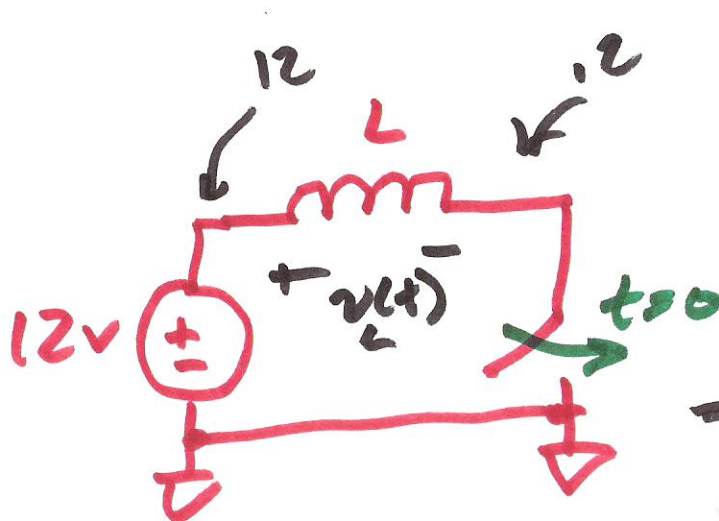


## Lecture 3 Aug. 30, 2010



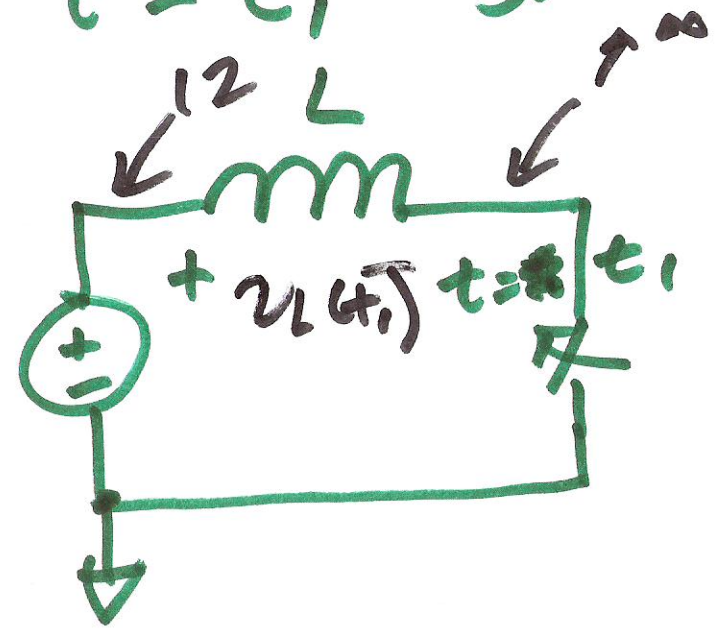
$$i_L(t) = \frac{1}{L} \int_0^t v_L(t) \cdot dt$$

$$i_L(t) = \frac{12}{L} \cdot t$$

1)

at  $t = t_1$ , Switch shuts off

$V = IR$



$$i(t_1) = \frac{12}{L} \cdot t_1$$

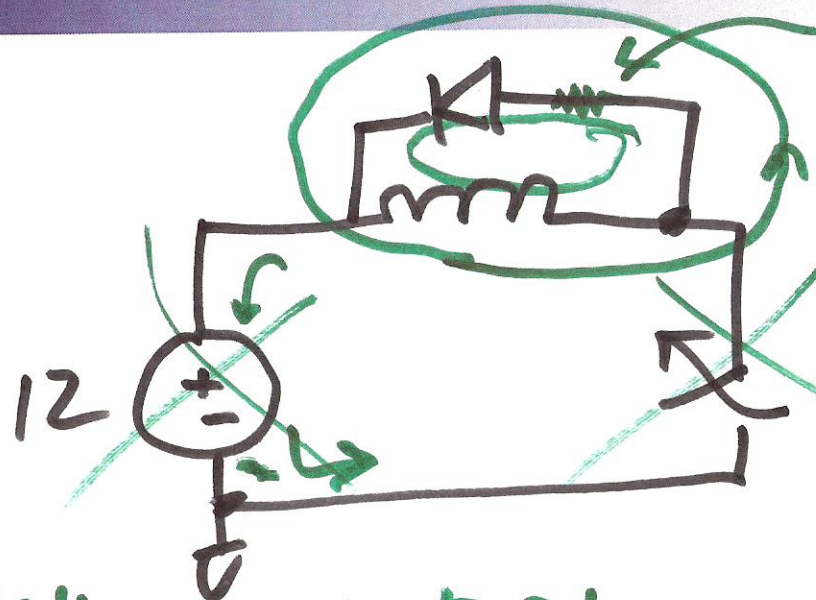
$$W = \frac{1}{2} L \cdot \left(\frac{12}{L} t_1\right)^2$$

$$W = \frac{144 \cdot t_1^2}{2L}$$

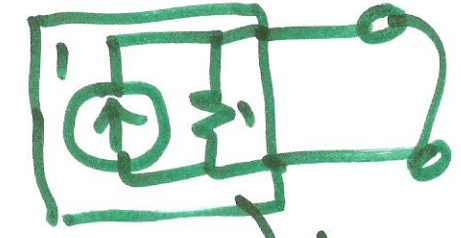
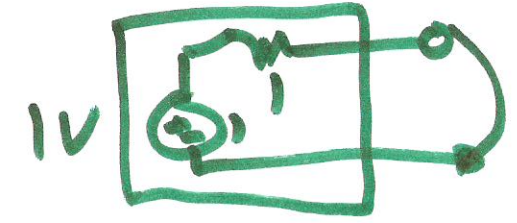
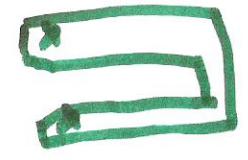
@  $t = t_1$

$$v_L(t_1) = -\infty$$

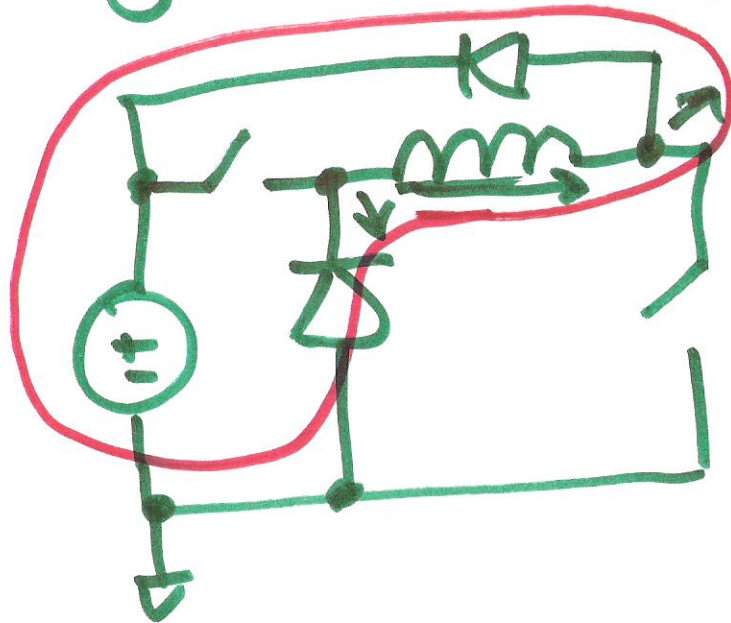
2)



$$\frac{1}{2} L i^2(t_1)$$



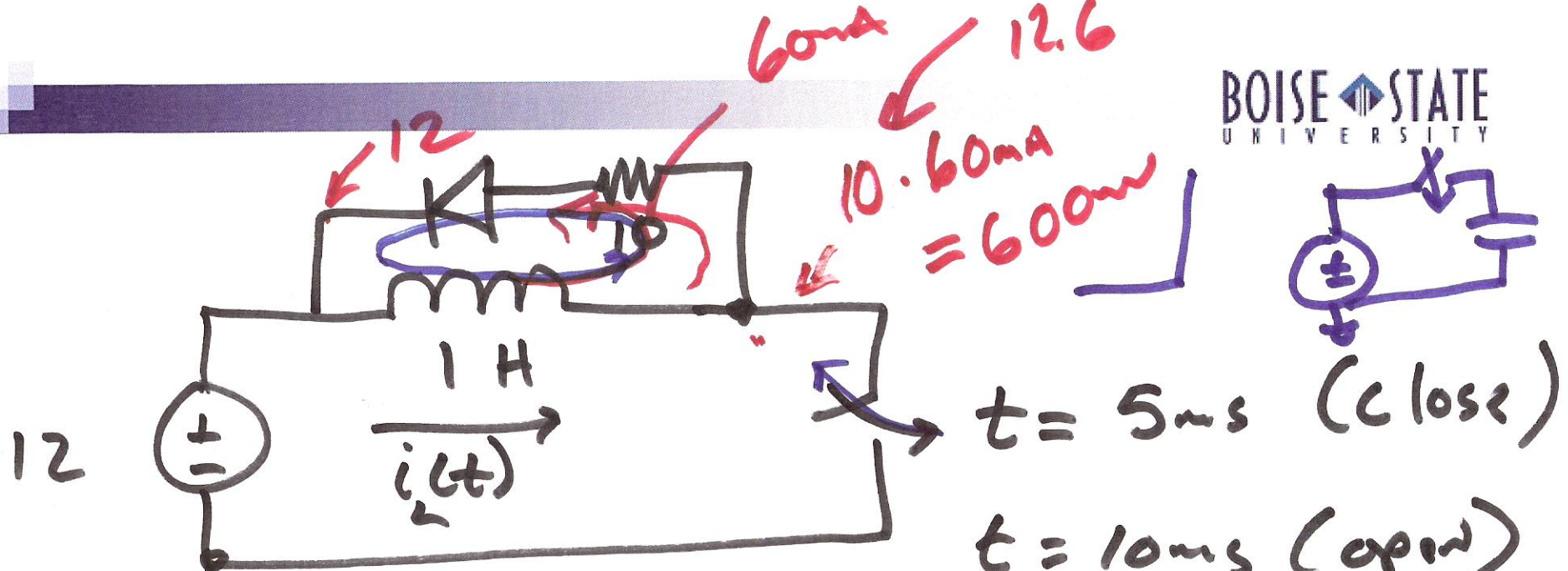
Energy recovery



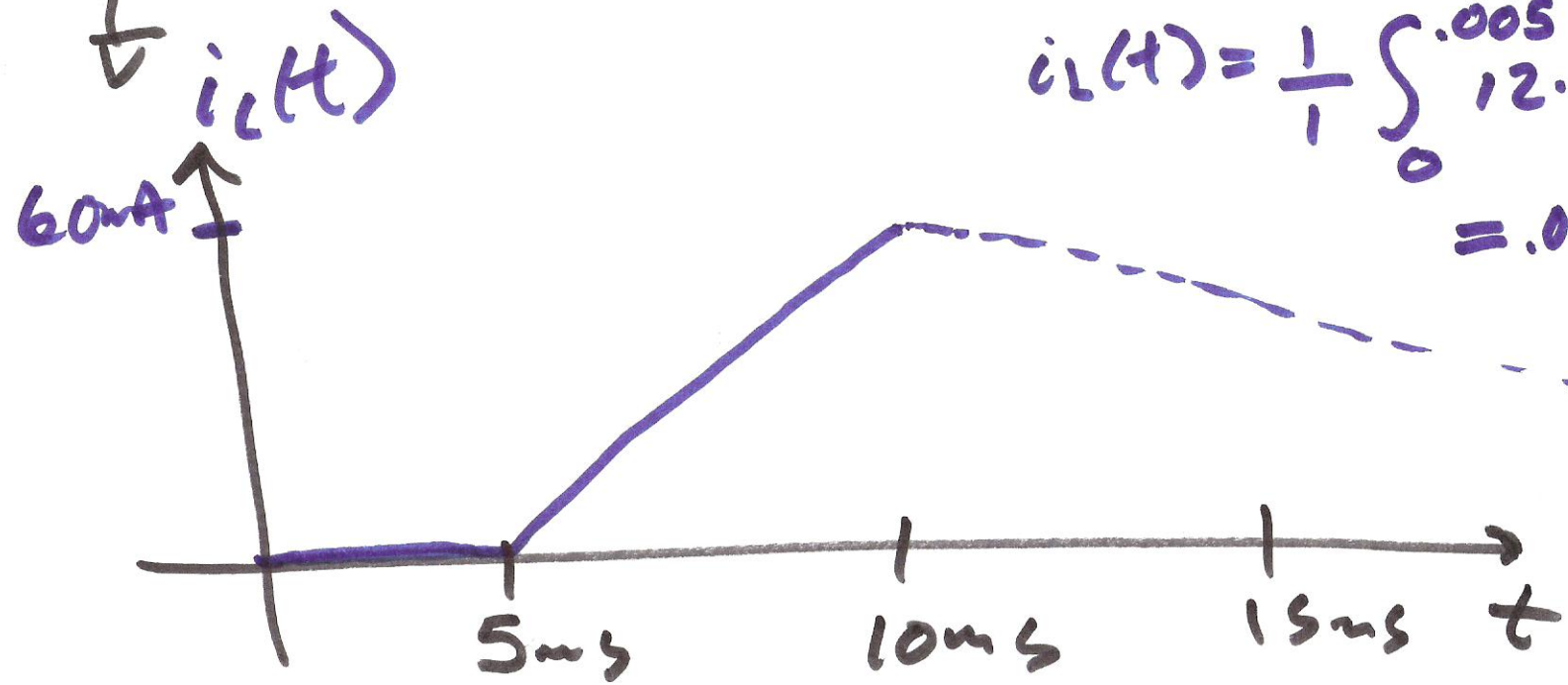
Give an example of Energy recovery.

3)

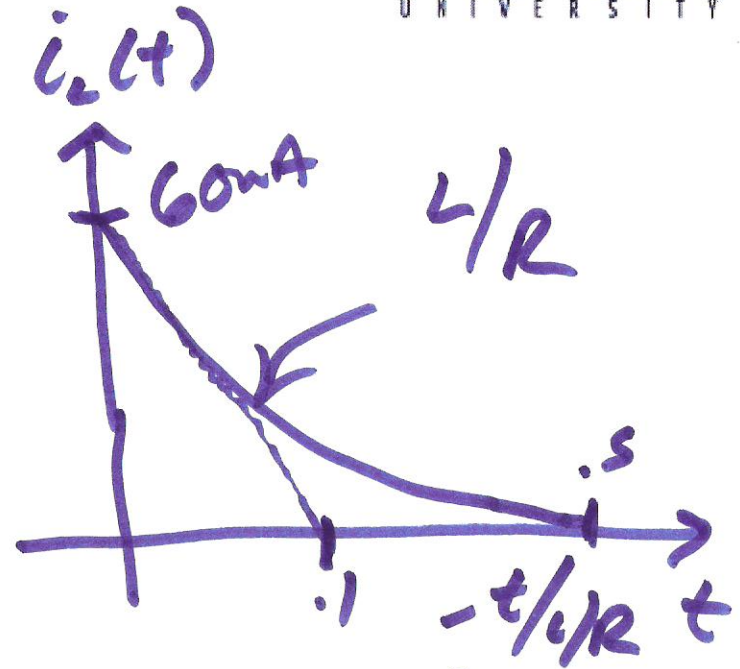
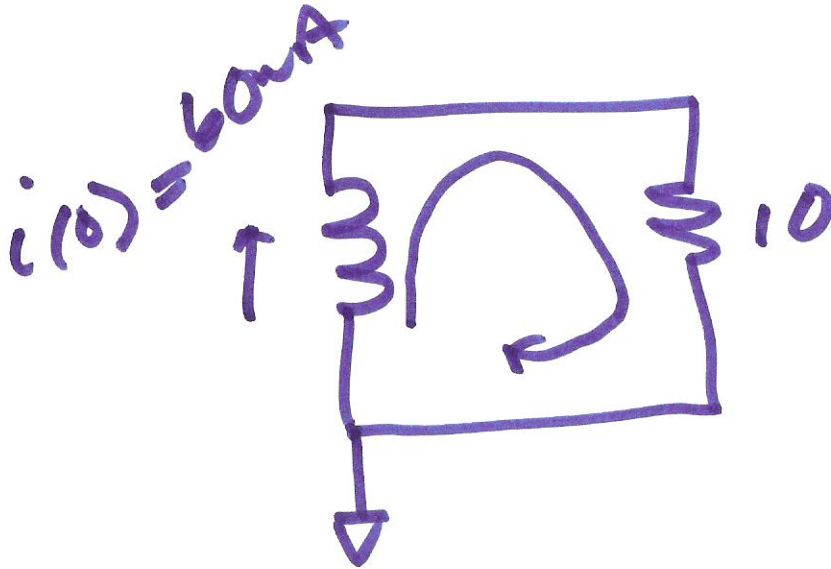




$$i_L(t) = \frac{1}{1} \int_0^{.005} 12 \cdot dt = .06$$



4)



$$i_L(t) = 60\text{mA} e^{-t/0.1}$$

$$\frac{L}{R} = 0.1\text{s} \quad -t/0.1$$

$$i_L(t) = 60\text{mA} e^{-t/0.1}$$

5)