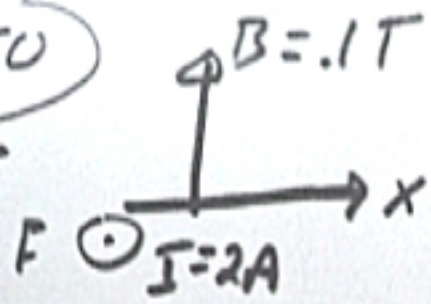


250

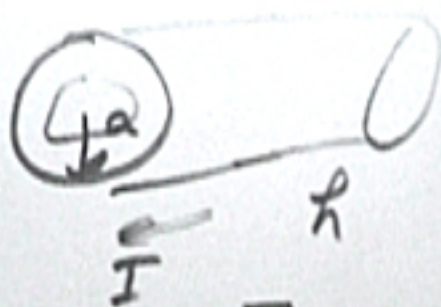


$L = 3\text{ m}$   
 $\otimes$

$$\vec{F} = I \vec{L} \times \vec{B}$$

$$|\vec{F}| = 2 \cdot 3 \cdot 1 = 0.6 \text{ N}$$

I: A	}	$\mathcal{E} = - \frac{d\phi}{dt}$
L: m		$V = \frac{Tm^2}{s}$
B: T $[\frac{N}{Am}]$		$T = \frac{Vs}{m^2} \quad \frac{Js}{cm^2}$



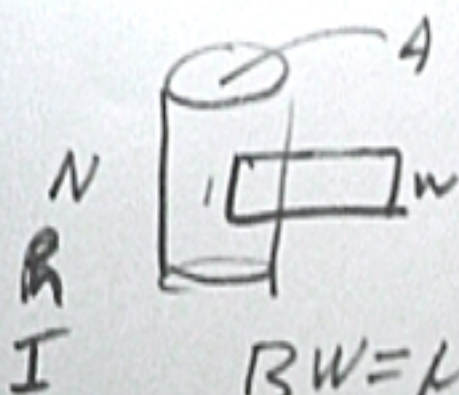
$$J = \frac{I}{\pi a^2} \quad \vec{B}:$$

$$\oint \vec{B} \cdot d\vec{s} = \mu_0 I_c$$

$$B(2\pi r) = \mu_0 \left( I \left( \frac{r^2}{a^2} \right) \right)$$

$$B = \mu_0 I \frac{r}{2\pi a^2}$$

$$\begin{aligned} \oint \vec{B} \cdot d\vec{A} &= \oint \vec{B} \cdot d\vec{A} \\ &= 2\pi \int B \cdot r \, dr \end{aligned} \quad L = \frac{\Phi_M}{I}$$



$$Bw = \mu_0 I (Nw)$$

$$B = \mu_0 I N$$

$$\Phi_M = N (\mu_0 I N A)$$

$$= \mu_0 N^2 I (A l)$$

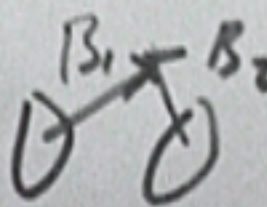
Vol

$$L = \frac{\Phi_M}{I} = \mu_0 N^2 (A l)$$

$$U_M = \frac{1}{2} L I^2$$

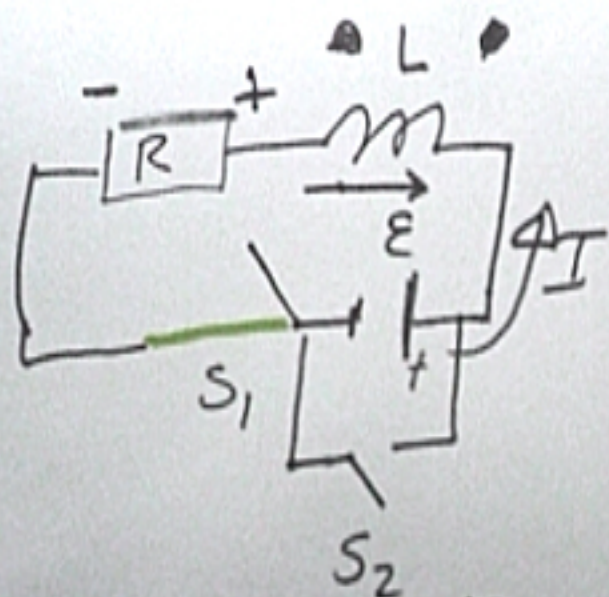
$$U_M = \frac{1}{2} \mu_0 n^2 (AR) \left( \frac{B^2}{\mu_0 n^2} \right)$$

$$U_E = \frac{U_M}{(AR)} = \frac{B^2}{2\mu_0}$$



$$\vec{B} = \vec{B}_1 + \vec{B}_2$$

$$U_{E_1} + U_{E_2} = 2\vec{B}_1 \cdot \vec{B}_2$$



$$\varepsilon - L \frac{dI}{dt} - IR = 0$$

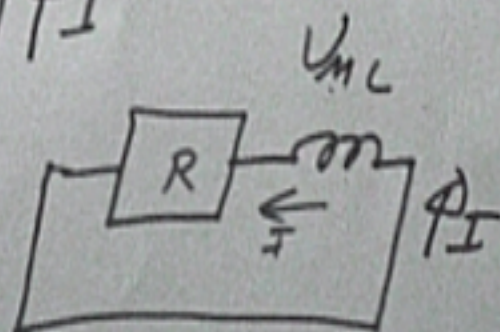
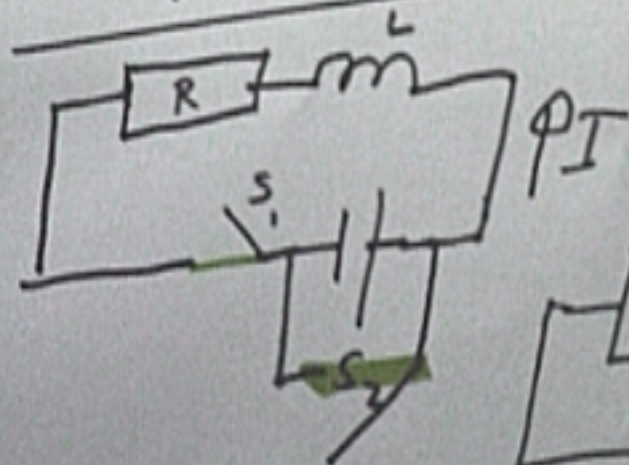
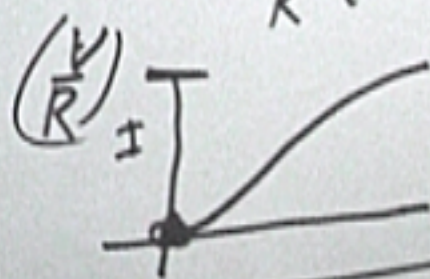
$$V - IR - L \frac{dI}{dt} = 0 \quad \left( \begin{array}{l} \frac{V}{R} - I \\ - \frac{L}{R} \frac{dI}{dt} = \psi \end{array} \right)$$

$$X \equiv \frac{V}{R} - I$$

$$X + \psi \frac{dX}{dt} = 0 \quad \psi = \frac{L}{R}$$

$$x = x_0 e^{-t/\tau}$$

$$I = \frac{V}{R} (1 - e^{-t/\tau})$$



$$V_L - IR = 0$$

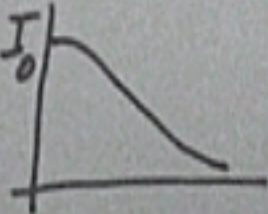
$$\mathcal{E} = - \frac{d\Phi_M}{dt} \Rightarrow V_L = -L \frac{dI}{dt}$$

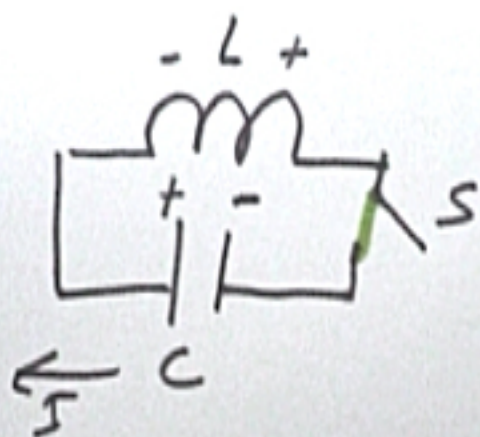
$$-L \frac{dI}{dt} - IR = 0 \quad \div R$$

$$\frac{dI}{dt} = -\frac{I}{\tau} \quad \tau = \frac{L}{R}$$

$$\int \frac{dI}{I} = \int -\frac{dt}{\tau} \Rightarrow \ln\left(\frac{I}{I_0}\right) = -\frac{t}{\tau}$$

$$I = I_0 e^{-t/\tau}$$





$$V_C - V_L = 0$$

$$V_C = \frac{\Phi}{C} \quad V_L = -L \frac{dI}{dt}$$

$$\frac{\Phi}{C} + \frac{1}{L} \frac{d\Phi}{dt} = 0$$

$$\frac{I}{C} + \frac{1}{L} \frac{d^2 I}{dt^2} = 0$$

$$\text{if } \tau = \frac{L}{R}$$

$$L = \frac{\Phi_M}{I} \quad \frac{d\Phi_M}{dt} = \frac{dI}{dt}$$

=

$$L = \frac{V}{A/s}$$

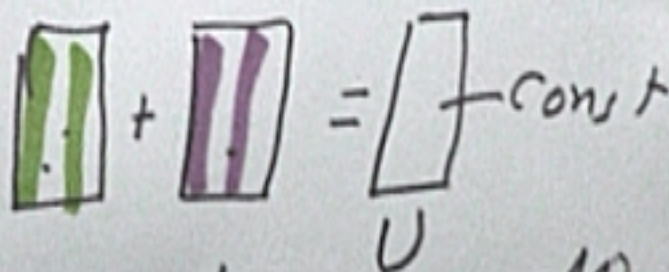
$$\tau_{LR} = \frac{V/A/s}{V/A} = \frac{L}{s} = s$$

$$V = IR$$

$$\tau_{RC} = RC$$

$$\frac{d^2 I}{dt^2} + \frac{I}{LC} = 0$$

$$I(t) = I_m \sin(\omega t + \phi)$$



A diagram illustrating the superposition of two waveforms. On the left, there are two vertical rectangles. The first has green vertical stripes, and the second has purple vertical stripes. A plus sign is between them. To the right is a larger white rectangle with the word 'const' written inside it. Below this rectangle is the letter 'U'.

$$\omega = \frac{1}{\sqrt{LC}} \quad I = \frac{dQ}{dt}$$

$$V = -L \frac{dI}{dt}$$

$$U_m = \frac{L I_m^2}{2} \sin^2(\omega t + \phi)$$

$$U_C = \frac{Q_0^2}{2C} \cos^2(\omega t + \phi)$$