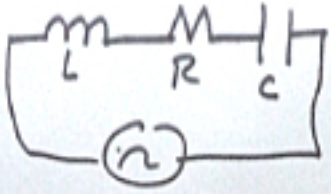
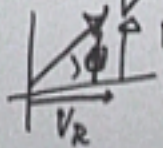
220



$X_L = \omega L \quad X_C = \frac{1}{\omega C}$

$Z = \sqrt{R^2 + (X_L + X_C)^2} \quad V_{RMS} = \frac{V}{\sqrt{2}}$



$I_{RMS} = \frac{I}{\sqrt{2}}$

$V_{RMS} = I_{RMS} Z$

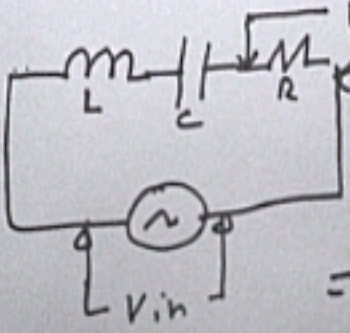
$\tan\phi = \frac{V_L - V_C}{V} = \frac{X_L - X_C}{Z}$

$\cos\phi = \frac{V_R}{V_Z} = \frac{R}{Z}$

$\langle P \rangle = IV\cos\phi$

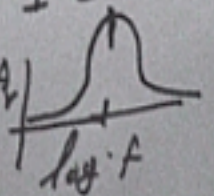
$X_L = \omega L$: Lf — Hf —

$X_C = \frac{1}{\omega C}$: Lf — Hf —



$$A_V = \frac{V_{out}}{V_{in}} = \frac{IR}{IZ} = \frac{R}{Z}$$

$$A_V = \frac{R}{\sqrt{R^2 + (X_L - X_C)^2}}$$

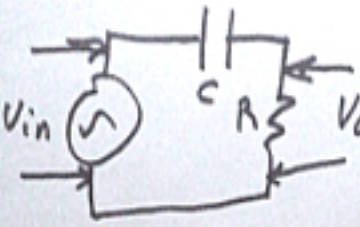


$$\omega = \frac{1}{\sqrt{LC}} = 2\pi f$$

at Resonance

$X_L = X_C$

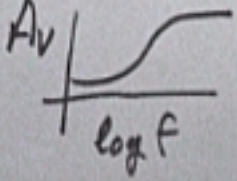
$\omega L = \frac{1}{\omega C}$

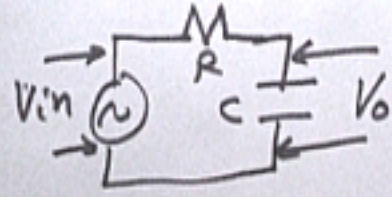


HP

$$A_V = \frac{V_{out}}{V_{in}} = \frac{IR}{IZ} = \frac{R}{Z}$$

$$Z = \sqrt{R^2 + \left(\frac{1}{\omega C}\right)^2} \Rightarrow A_V = \frac{\omega RC}{\sqrt{1 + (\omega RC)^2}}$$

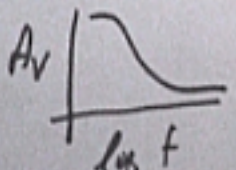


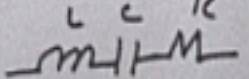


$A_V = \frac{V_{out}}{V_{in}}$

LF: $A_V = 1$ — _

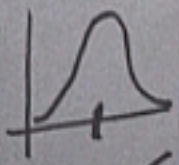
HF: $A_V = 0$

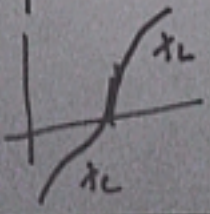




$\tan\phi = \frac{X_L - X_C}{Z}$

$\langle P \rangle = IV\cos\phi$





$$\sum \vec{B}_i \cdot \Delta \vec{s}_i = \mu_0 I_c$$

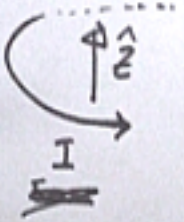
$$= \mu_0 I$$

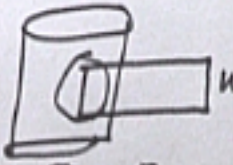
$$B(2\pi s) = \mu_0 I$$

$$\vec{B} = \frac{\mu_0 I}{2\pi s} \hat{\theta}$$

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

$$\vec{B} = \frac{\mu_0 I s}{2\pi a^2} \hat{\theta}$$





$$\sum \vec{B}_i \cdot \Delta\vec{s}_i = \mu_0 I_c$$

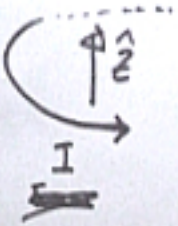
$$n = \frac{N}{h}$$

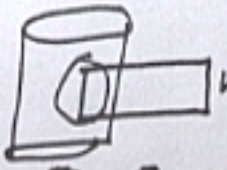
$$Bw = \mu_0 NI$$

$$B = \mu_0 \left(\frac{N}{w}\right) I = \mu_0 nI$$

$$\Phi_M = N\,BA = \mu_0 nINA$$

$$= \mu_0 n^2 I(Ah)$$





$$\sum \vec{B}_i \cdot \Delta\vec{S}_i = \mu_0 I_c$$

$$n = \frac{N}{h}$$

$$Bw = \mu_0 NI$$

$$B = \mu_0 \left(\frac{N}{w}\right) I = \mu_0 n I$$

$$\Phi_M = N\,BA = \mu_0 n I N A$$

$$= \mu_0 n^2 I (Ah)$$

$$L = \frac{\Phi_M}{I} = \mu_0 n^2 (Ah)$$

$$U_M = u_E \cdot (Ah)$$

$$= \frac{B^2}{2\mu_0} (Ah)$$

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

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

$$1T = \frac{1N}{1m\,1A}$$

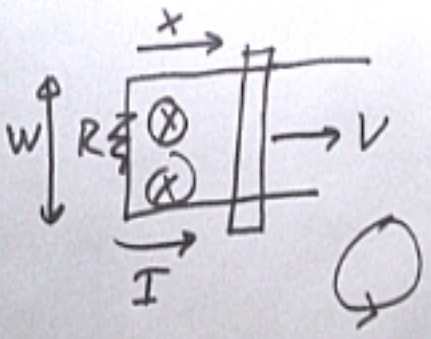
$$L = \frac{\Phi_M}{I} = \mu_0 n^2 (AR)$$

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

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

B [T] $\quad \vec{F} = I \vec{L} \times \vec{B} \quad 1T = \frac{1N}{1m\,1A}$

L [h] $\quad \frac{[Tm^2]}{[A]} \quad \frac{J}{m^3} \quad J$



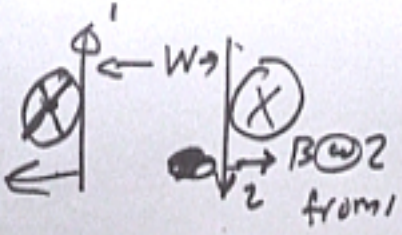
$$\phi_m = BA = BWx$$

$$\mathcal{E} = -\frac{\Delta \phi_m}{\Delta t} = -BW\frac{\Delta x}{\Delta t}$$

$$x = x_0 + Vt \Rightarrow \frac{\Delta x}{\Delta t} = V$$

$$\mathcal{E} = -BVW \qquad |\mathcal{E}| = BVW$$

$$I = \frac{|\mathcal{E}|}{R} = BVW$$



$B_{\odot 2}$: $\oint B(2\pi W) = \mu_0 I_1$

$$B_{\odot 2} = \frac{\mu_0 I_1}{2\pi W}$$

$\vec{F} = I\vec{l} \times \vec{B}$ $\quad F = \dfrac{\mu_0 I_1 I_2 L_2}{2\pi W}$

F[N] B[T]