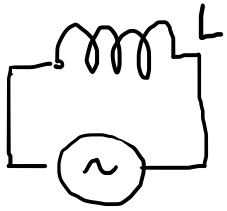
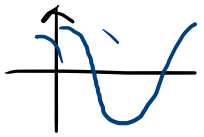
L in AC



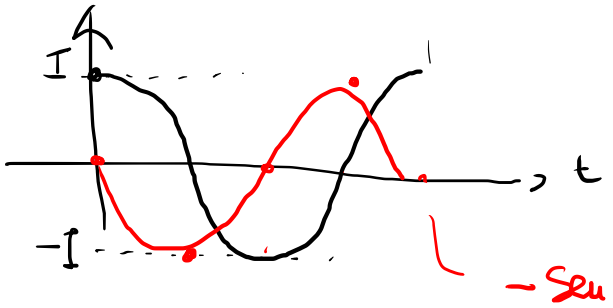
H ~ μH mH

$$V = L \frac{\Delta I}{\Delta t} \sim V = L \frac{dI}{dt}$$

$$I(t) = I \cdot \cos(\omega t + \varphi) \qquad \omega = 2\pi f$$



$$V(t) = L \cdot \frac{d}{dt}\left[I \cdot \cos(\omega t + \varphi) \right]$$

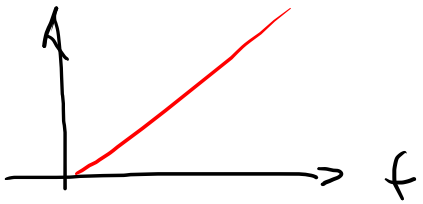


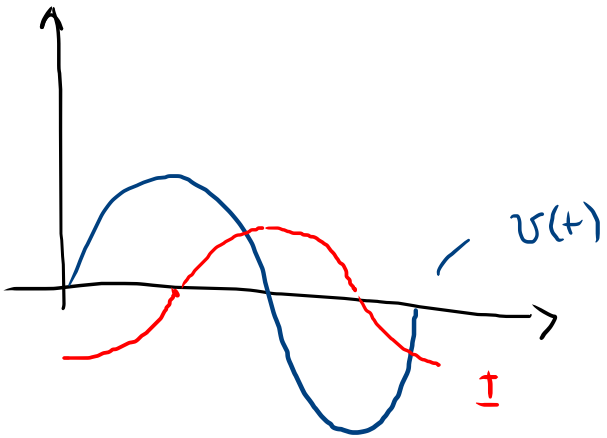
$$V(t) = L I \cdot \left(-\omega \operatorname{sen}(\omega t + \varphi)\right) =$$

$$= L\omega \cdot \left(-I \operatorname{sen}(\omega t + \varphi)\right) \rightsquigarrow \bar{V} = L\omega \cdot \bar{I}$$

X_L $\qquad V = RI$

$$X_L = 2\pi f \cdot L \quad [\Omega]$$




v(t)
t