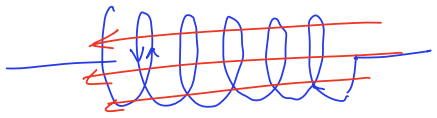


$$\mathcal{E} - IR - L \frac{dI}{dt} = 0$$

$$I\mathcal{E} = I^2 R + \underbrace{LI \frac{dI}{dt}}$$

$$\frac{dU}{dt} = LI \frac{dI}{dt} \rightarrow \int_{U=0}^{U=U} dU = \int_{I=0}^{I=I} LI dI \Rightarrow \boxed{U = \frac{1}{2} LI^2}$$

www



$$L = \mu_0 n^2 V$$

$$B = \mu_0 n I$$

$$U = \frac{1}{2} LI^2 \Rightarrow U = \frac{1}{2} \mu_0 n^2 V \left(\frac{B}{\mu_0 n} \right)^2$$

$$U = \frac{1}{2} \frac{B^2}{\mu_0} V$$

$$\boxed{\frac{U}{V} = \frac{B^2}{2\mu_0}} \text{ Solenoid.}$$

↳ general formula