1 EMag

1.1 Formulae

- $E_x = \int \frac{1}{4\pi\varepsilon_0}\frac{1}{r^2}\mathrm{d}q = \int \frac{1}{4\pi\varepsilon_0}\frac{\lambda}{r^2}\mathrm{d}r$
- $i = I(1 - e^{-\tau/t})$
- $\tau_{\mathrm{RL}} = \frac{L}{R}$; $\tau_{RC} = RC$
- $\varepsilon_{\mathrm{induced}} = \vec{B}v\ell$; $I_{\mathrm{induced}} = \frac{\vec{B}v\ell}{R}$
- $F_{\mathrm{mag}} = ILB$
- $\Phi_E = \frac{Q}{\varepsilon_0} = \oint E \cdot \mathrm{d}A$

1.2 Notes

- Current/Charge is at max after 5 τ's
- Terminal velocity occurs when $F_{\text{mag}} = F_{\text{ext/grav}}$