proton charge: $e = 1.602 \times 10^{-19}\,\mathrm{C}$

electron charge: $-e$

electron mass: $m_e = 9.11 \times 10^{-31}\,\mathrm{kg}$

proton mass: $m_p = 1.67 \times 10^{-27}\,\mathrm{kg}$

$\varepsilon_0 = 8,854 \times 10^{-12}\,\mathrm{F\,m^{-1}}$

$\mu_0 = 4\pi \times 10^{-7}\,\mathrm{T\,m\,A^{-1}}$

$\mathbf{F}_{12} = K_e \frac{q_1 q_2}{r_{12}^2} \frac{\mathbf{r}_{12}}{r_{12}}$; $\mathbf{r}_{12} = \mathbf{r}_1 - \mathbf{r}_2$

$F_g = \gamma \frac{m_1 m_2}{r_{12}^2}$

$\mathbf{E}_{pq} = K_e \frac{q}{r_{pq}^2} \frac{\mathbf{r}_{pq}}{r_{pq}}$; $\mathbf{r}_{pq} = \mathbf{r}_p - \mathbf{r}_q$

$W_{AB} = \int_A^B \mathbf{F} \cdot d\mathbf{l} = \int_A^B (-\mathbf{F}_e) \cdot d\mathbf{l} = -q_0 \int_A^B \mathbf{E} \cdot d\mathbf{l}$

$\mathbf{E} = -\nabla \varphi$

$\Phi_{\mathbf{E}} = \oint \mathbf{E} \cdot d\mathbf{A} = \frac{q_{\text{inside}}}{\varepsilon_0}$

$K_e = \frac{1}{4\pi\varepsilon_0} \approx 8.99 \times 10^9 \,\frac{\mathrm{N\,m^2}}{\mathrm{C^2}}$

$\gamma = 6.67 \times 10^{-11} \,\frac{\mathrm{N\,m^2}}{\mathrm{kg^2}}$

$U = K_e \left[\frac{q_1 q_2}{r_{12}} + \frac{q_2 q_3}{r_{23}} + \frac{q_1 q_3}{r_{13}} + \cdots \right]$

$\frac{\Delta U}{q_0} = \varphi_B - \varphi_A = \frac{W_{AB}|_{\text{external agent}}}{q_0}$

$\varphi = K_e \frac{q}{r}$

$\lambda = \frac{Q}{L}$; $\quad \sigma = \frac{Q}{A}$; $\quad \rho = \frac{Q}{V}$

$C = \frac{Q}{V}$

C_{series}: $\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \frac{1}{\cdots}$

$C = \varepsilon_r C_0$

$\mathbf{E} = \frac{\mathbf{E}_0}{\varepsilon_r}$

$\mathbf{P} = \varepsilon_0 (\varepsilon_r - 1) \mathbf{E}$

$C = \frac{\varepsilon_0 A}{d}$ paralel plates

C_{paralel}: $C_{eq} = C_1 + C_2 + \cdots$

$U = \frac{1}{2} Q V$

$\mathbf{D} = \varepsilon \mathbf{E}$

$u_E = \frac{\varepsilon}{2} E^2$

$I = \frac{\Delta Q}{\Delta t} = q\, n\, A\, v$

$I = \int_S \mathbf{j} \cdot d\mathbf{S}$

$\mathbf{j} = \sigma \mathbf{E}$

$\rho = \frac{m}{V}$; $\quad n = \frac{N}{V}$; $\quad M_{(\text{molar mass})} = \frac{m}{\text{n}^{\text{o}}\ \text{mol}}$; $\quad N_{a\ (\text{Avogadro})} = \frac{N}{\text{n}^{\text{o}}\ \text{mol}}$

$R_{\text{série}}$: $R = R_1 + R_2$

point rule: $\sum_n I_n = 0$;

$V = RI$

$R = \frac{l}{S} \rho$

$\mathbf{j} = q_0 n \langle \mathbf{v} \rangle$

$P = VI$

R_{paralel}: $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

loop rule: $\sum_n V_n = 0$

$\mathbf{F} = q_0 (\mathbf{E} + \mathbf{v} \times \mathbf{B})$

$\mathbf{F}_{\mathbf{dl}} = I \mathbf{dl} \times \mathbf{B}$

$\mathbf{dB} = \frac{\mu_0}{4\pi} I \frac{\mathbf{dl} \times \mathbf{R}}{R^3}$

$\oint_\Gamma \mathbf{B} \cdot \mathbf{dl} = \mu_0 I = \mu_0 \int_S \mathbf{j} \cdot \mathbf{dS}$

$B_{\text{wire}} = \frac{\mu_0 I}{2\pi d}$, d is the smallest distance to the wire

$\Phi_B = \int_S \mathbf{B} \cdot \mathbf{dS} = \mathbf{0}$