

$$F = k \frac{|q_1||q_2|}{r^2}$$

$$k = \frac{1}{4\pi\epsilon_0}$$

$$\vec{E} = \frac{\vec{F}}{q_0}$$

$$E = k \frac{|q|}{r^2}$$

$$E = \frac{\sigma}{\epsilon_0}$$

$$\Phi_E = \Sigma(E \cos \theta) \Delta A$$

$$\Phi_E = \frac{Q_{encl}}{\epsilon_0}$$

$$V = \frac{EPE}{q_0}$$

$$V_B - V_A = \frac{-W_{AB}}{q_0}$$

$$V = \frac{kq}{r}$$

$$E = -\frac{\Delta V}{\Delta s}$$

$$EPE = k \frac{q_1 q_2}{r}$$

$$q = CV$$

$$\kappa = \frac{E_0}{E}$$

$$C = \frac{\kappa \epsilon_0 A}{d}$$

$$Energy = \frac{1}{2} CV^2$$

$$I = \frac{\Delta q}{\Delta t}$$

$$V = IR$$

$$R = \rho \frac{L}{A}$$

$$\rho = \rho_0 [1 + \alpha(T - T_0)]$$

$$P = IV = I^2 R = \frac{V^2}{R}$$

$$V = V_0 \sin \omega t$$

$$I = I_0 \sin \omega t$$

$$\omega = 2\pi f$$

$$I_{rms} = \frac{I_0}{\sqrt{2}}$$

$$V_{rms} = \frac{V_0}{\sqrt{2}}$$

$$P_{avg} = I_{rms} V_{rms}$$

$$R_{eq} = R_1 + R_2 + \dots$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$$

$$\frac{1}{C_{eq}} = \frac{1}{C_1} + \frac{1}{C_2} + \dots$$

$$C_{eq} = C_1 + C_2 + \dots$$

$$q = q_0(1 - e^{-t/(RC)})$$

$$q = q_0 e^{-t/(RC)}$$

$$\tau = RC$$

.....constants.....

$$g = 9.8 \text{ m/s}^2$$

$$k \approx 9 \times 10^9 \text{ N} \cdot \text{m}^2/\text{C}^2$$

$$\epsilon_0 = 8.854 \times 10^{-12} \text{ C}^2/\text{N} \cdot \text{m}^2$$

$$e = 1.60 \times 10^{-19} \text{ C}$$