

Equations Ch. 17-19

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

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

$$E = k \frac{|q|}{r^2} = \frac{1}{4\pi\epsilon_0} \frac{|q|}{r^2}$$

$$\vec{F}_{1,net} = \vec{F}_{12} + \vec{F}_{13} + \vec{F}_{14} + \dots + \vec{F}_{1n}$$

$$\epsilon_0 \Phi = q_{enc}$$

$$\Phi = EA \cos \theta$$

$$\Delta V = \frac{\Delta U}{q_0}$$

$$\Delta U = U_b - U_a = -q_0 Ed$$

$$\Delta V = V_b - V_a = -Ed$$

$$U = k \frac{q_0 q}{r} = q_0 V$$

$$V = k \frac{q}{r}$$

$$\frac{1}{2} m v_a^2 + q V_a = \frac{1}{2} m v_b^2 + q V_b$$

$$V_A = k \frac{q_1}{r_1} + k \frac{q_2}{r_2} + k \frac{q_3}{r_3} + \dots$$

$$q = CV$$

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

$$C = \kappa C_0$$

$$U = \frac{1}{2} QV = \frac{q^2}{2C} = \frac{1}{2} CV^2$$

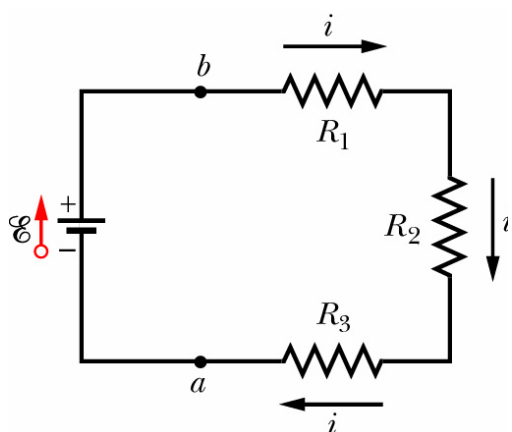
$$I = \frac{\Delta q}{\Delta t}$$

$$R = \frac{V}{I}$$

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

$$P = IV$$

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



in series

$$\mathcal{E} = V_1 + V_2 + V_3$$

$$I = I_1 = I_2 = I_3$$

$$R = R_1 + R_2 + R_3$$

in parallel

$$\mathcal{E} = V_1 = V_2 = V_3$$

$$I = I_1 + I_2 + I_3$$

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

