

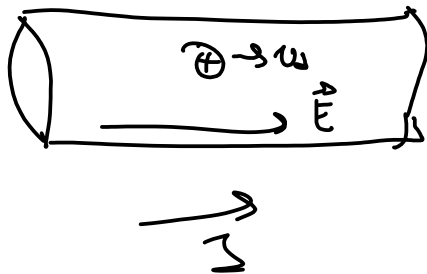
(TAUER 6)

Corriente

Conductores idealizados

$$\Delta x = v_d \Delta t$$

→ Velocidad de
arrastre.



A diagram of a small cylindrical volume element with cross-sectional area A and length dx . An arrow labeled n points to the volume, and an arrow labeled v_d points to the length dx . The equation $V = A v_d dt$ is written to the right, and $dx = v_d dt$ is written below the cylinder.

$$V = A v_d dt$$
$$dx = v_d dt$$

$$\#_e = n V = n A v_d dt$$

$$dQ = q n A v_d dt$$

$$I = \frac{dQ}{dt} = q n A v_d$$



Corriente

$$[I] = [A]$$

Densidad de corriente

$$\vec{J} = \frac{I}{A} = nq\vec{v}_d$$

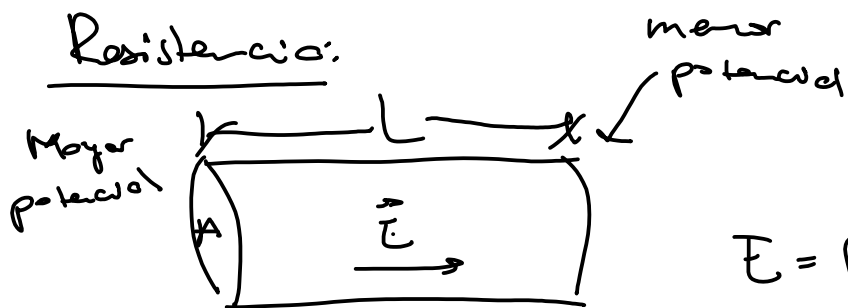
↳ E.c. Continuidad $\nabla \cdot \vec{J} + \frac{\partial \rho}{\partial t} = 0$

$E \propto J \rightarrow \boxed{\rho J = E}$ 'Ley' de Ohm

$\rho \rightarrow$ resistividad $[\Omega \cdot m]$

$\frac{1}{\rho} = \sigma =$ conductividad \downarrow
Ohm

Resistencia:



$$E = \rho J$$

$$\frac{V_{ab}}{L} = \rho \frac{I}{A}$$

$$V = \boxed{\rho \frac{L}{A}} I$$

↳ R Resistencia

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

$$[R] = [\Omega]$$

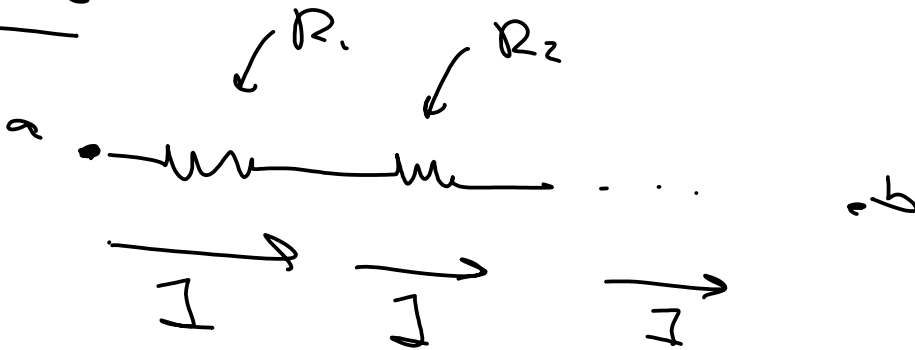
Ohms.

$$\boxed{V = RI}$$

Corriente Directa (DC)

Arreglos

Serie

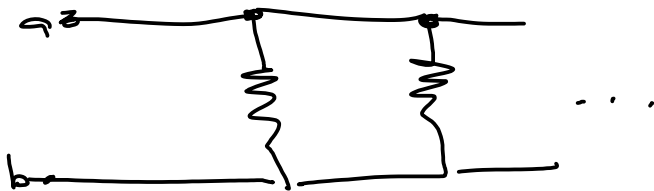


$$V_T = V_a + V_b + \dots$$

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

$$\therefore R_{eq} = \sum R_i$$

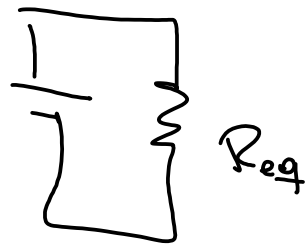
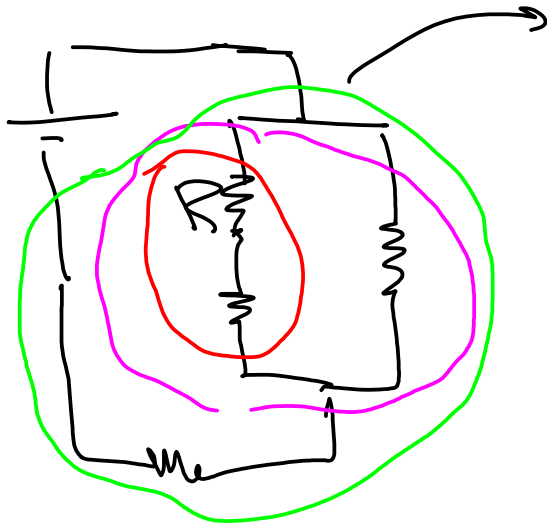
Paralelo



$$I_T = I_1 + I_2 + \dots$$

$$\frac{V_T}{R_{eq}} = \frac{V_a}{R_1} + \frac{V_b}{R_2} + \dots \quad \therefore \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$$

Example:

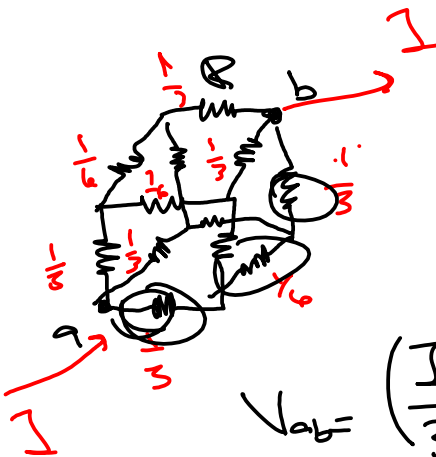


$$R = 2R$$

$$\frac{1}{R} = \frac{1}{2R} + \frac{1}{R} = \frac{3}{2R}$$

$$R = \frac{2R}{3}$$

$$R = \frac{5}{3} R$$



$$V_{ab} = \left(\frac{I}{3}\right) R + \left(\frac{I}{3}\right) R + \left(\frac{I}{6}\right) R = \frac{5}{6} IR$$

$$V_{ab} = I \left(\frac{5}{6} R \right)$$

$$\boxed{R_{eq}}$$

Leys de Kirchhoff

$\sum I = 0$ en los nodos

$\sum V = 0$ en los Mallos

Nodo: Vértices. \rightarrow Conservación de carga

Malla: Regiones \rightarrow Conservación de energía

