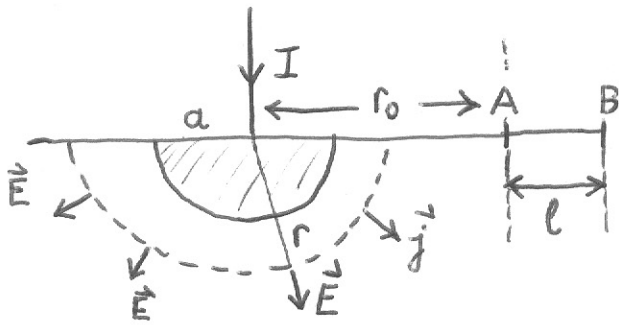


13.) $I = 10 \text{ kA}$ $\gamma = 0,01 \frac{1}{\text{cm}}$ $a = 10 \text{ cm}$ $r_0 = 10 \text{ m}$ $l = 75 \text{ cm}$

a.) U_f b.) $R = ?$ c.) $U_{AB} = ?$



$U = 0$
 $r \rightarrow \infty$

$$U_A = \int_A^{\infty} \vec{E} \cdot d\vec{l}$$

$$I = \int_A \vec{j} \cdot d\vec{A}$$

$$\vec{j} = \gamma \vec{E}$$

$$U_{AB} = \int_A^B \vec{E} \cdot d\vec{l}$$

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

a.) $j = \frac{I}{2r^2\pi}$ $\vec{E} = \frac{\vec{j}}{\gamma}$ sugárirányú: $\vec{E} \cdot d\vec{l} = Edl = Edr$

$$U(r) = \int_r^{\infty} E dr = \int_r^{\infty} \frac{j}{\gamma} dr = \int_r^{\infty} \frac{I}{2\gamma r^2\pi} dr = \frac{I}{2\gamma\pi} \left[-\frac{1}{r} \right]_r^{\infty} = \frac{I}{2\gamma\pi r} \quad (r > a)$$

$$U_f = U(r=a) = \dots$$

b.) $R = \frac{U_f}{I} = \dots$

c.) $U_{AB} = U_A - U_B = U(r_0) - U(r_0 + l) = \dots$