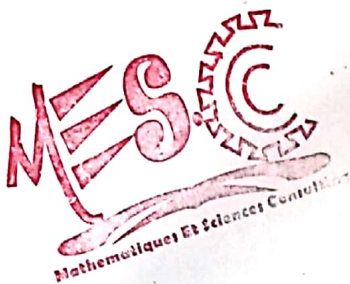


④ a) Berdasarkan hukum Ohm,

$$i = \frac{V}{R} = \frac{V}{\rho \frac{L}{A}} = \frac{V}{\rho \frac{L}{\frac{1}{4}\pi d^2}} = \frac{\pi V d^2}{4 \rho L}$$

$$i = \frac{\pi V d^2}{4 \rho L}$$



$$i = (3,14)(1,20V) \left[(0,0400 \text{ in}) (2,54 \times 10^{-2} \text{ m/in}) \right]^2$$

$$\frac{4(1,69 \times 10^{-8} \Omega \text{ m})(33 \text{ m})}{}$$

$$i = 1,74 \text{ A}$$

b) Besar kerapatan arus adalah

$$|\vec{j}| = \frac{i}{A} = \frac{i}{\frac{1}{4}\pi d^2} = \frac{4i}{\pi d^2}$$

$$|\vec{j}| = \frac{4(1,74 \text{ A})}{3,14 \left[(0,0400 \text{ inch}) (2,54 \times 10^{-2} \text{ m/inch}) \right]^2}$$

$$|\vec{j}| = 2,15 \times 10^6 \text{ A/m}^2$$

c) Medan listrik,

$$E = \frac{V}{L} = \frac{1,20V}{33 \text{ m}} = 3,63 \times 10^{-2} \text{ V/m}$$