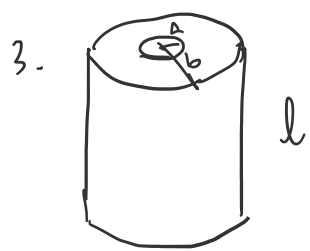


补充题

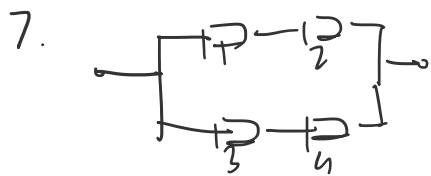
2022年4月19日 星期二 下午2:04

电阻

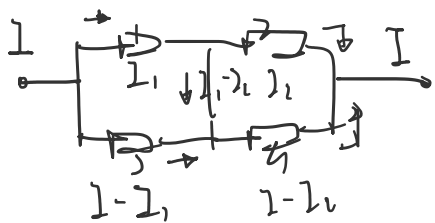


$$dR = \int \frac{dl}{\sigma S} = \frac{l}{\sigma (\pi a^2 - \pi b^2)}$$

$$dR = \frac{dl}{\sigma \cdot \pi a^2}$$



$$R = \frac{(R_1 + R_2)(R_3 + R_4)}{R_1 + R_2 + R_3 + R_4}$$



$$I - I_2 = I_1 - I_2 + I - I_1$$

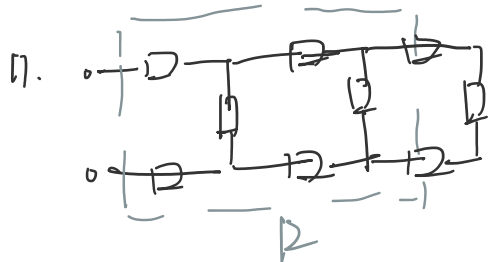
$$R_1 I_1 = R_3 (I - I_1) = U_1$$

$$R_2 I_2 = R_4 (I - I_2) = U_2$$

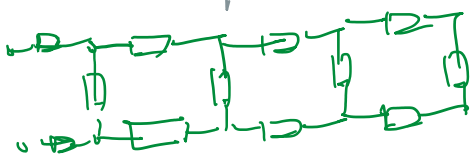
$$(R_1 + R_3) I_1 = R_3 I, \quad I_1 = \frac{R_3}{R_1 + R_3} I, \quad I_2 = \frac{R_4}{R_2 + R_4} I$$

$$U_1 + U_2 = \frac{R_1 R_3 I}{R_1 + R_3} + \frac{R_2 R_4 I}{R_2 + R_4}$$

$$R = \frac{U_1 + U_2}{I} = \frac{R_1 R_3}{R_1 + R_3} + \frac{R_2 R_4}{R_2 + R_4} = \frac{R_1 R_3 (R_2 + R_4) + R_2 R_4 (R_1 + R_3)}{(R_1 + R_3)(R_2 + R_4)}$$



$$\frac{R(r_1 + r_2 + r_3)}{R + (r_1 + r_2 + r_3)} = R$$



$$R_{eq} = r_1 + r_3 + \frac{r_2 R_{eq}}{r_1 + R_{eq}} = R_{eq}$$