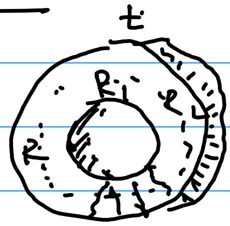
2.1.10



$\sigma \qquad R = ? \qquad I = \frac{U}{R}$

$\vec{i} = \sigma \cdot \vec{E}$

$\nabla \cdot \vec{i} = 0 = \sigma \nabla \cdot \vec{E} = \sigma \Delta \varphi = 0$

($\nabla \cdot \vec{E} \to -\Delta\varphi$)

(GAUSS) ANALOGIE – ELSTAT. – VÁLCOVÝ KONDENZÁTOR

$E = \frac{1}{4\pi\varepsilon_0}\frac{\lambda}{r} \qquad \varphi = \sim \ln r$

$E \sim \frac{1}{r} \qquad E = \frac{q}{r}$

$I = \int_{\square r} \vec{i} \cdot d\vec{S} = i \cdot 2\pi r \cdot t$

$= \sigma \frac{q}{r} \cdot 2\pi r t$

$U = q \cdot \ln \frac{R_2}{R_1}$

$R = \frac{U}{I} = \frac{q \cdot \ln \frac{R_2}{R_1}}{\sigma q 2\pi t}$

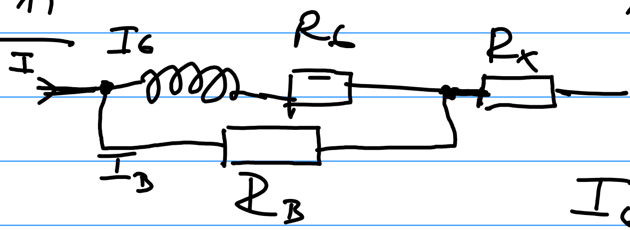
DÚ

– ŘEŠENÍ POMOCÍ MONTE CARLO NÁHODNÉ PROCH.

0 | · | 1 $\qquad \varphi(r)$ = pst, že dojde k "1"

5.1.11

10x SNÍŽIT CITLIVOST



$I_G = \frac{I}{10} = \frac{I_G + I_B}{10}$

$9 I_G = I_B$

$$R_6 I_6 = R_3 \cdot I_B$$

$$R_B = \frac{1}{9} R_6$$

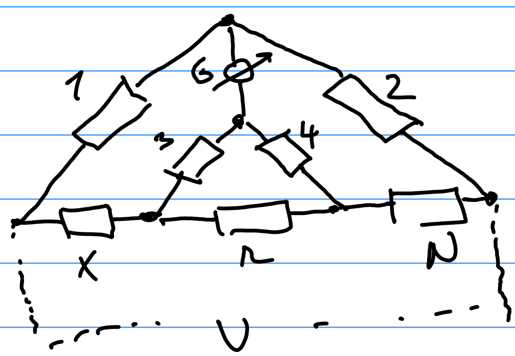
$$\frac{1}{\frac{1}{R_6} + \frac{1}{R_B}} + R_x = R_6$$

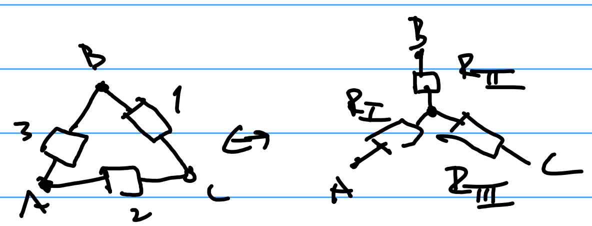
$$\frac{1}{\frac{1}{R_6} + \frac{9}{R_6}} \qquad \frac{R_6}{10} + R_x = R_6$$

$$R_x = \frac{9}{10} R_6$$

5.1.33

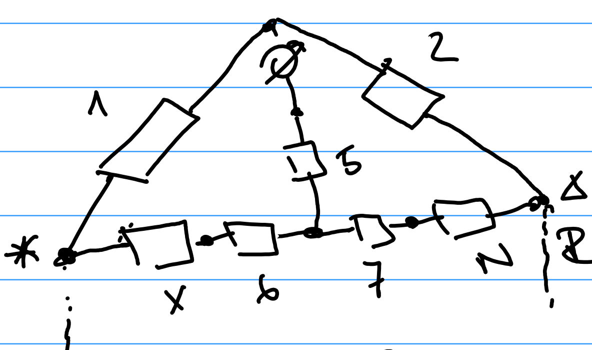
THOMSONŮV MŮSTEK





$$\frac{1}{\frac{1}{R_1 + R_2} + \frac{1}{R_3}} = R_I + R_{II}$$

$$\frac{R_1 R_3 + R_2 R_3}{R_1 + R_2 + R_3} = R_I + R_{II}$$

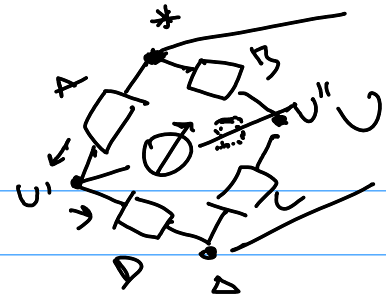


$$R_I = \frac{R_3 R_2}{R_1 + R_2 + R_3}$$

$$R_5 = \frac{R_3 R_4}{R_3 + R_4 + n} \qquad R_6 = \frac{R_3 n}{\Sigma} \qquad R_7 = \frac{n R_4}{\Sigma}$$

WHEATSTONEŮV MŮSTEK

↓



$$I_A = I_D$$
$$I_B = I_C$$

$$R_A \cdot I_A = R_B \cdot I_B$$
$$R_D \cdot I_D = R_C \cdot I_C$$

$$\frac{R_A}{R_D} = \frac{R_B}{R_C}$$

$$\frac{R_x + R_6}{R_7 + N} = \frac{R_1}{R_2}$$

a) $$\frac{R_1}{R_2} = \frac{R_x + \frac{R_3 r}{R_3 + R_4 + r}}{R_N + \frac{R_4 r}{R_3 + R_4 + r}}$$

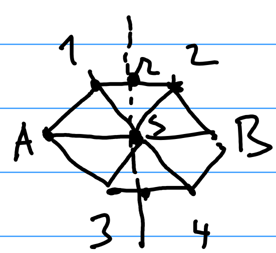
b) $r \to 0$ $$\frac{R_1}{R_2} = \frac{R_x}{R_N}$$

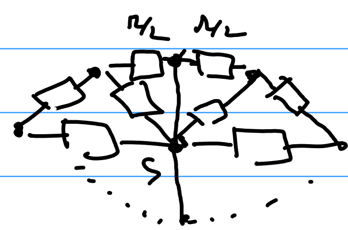
c) $R_1 = k R_3$ $\quad R_2 = k R_4$ $$\frac{R_3}{R_4} = \frac{R_x + \frac{R_3 r}{\ldots}}{\ldots}$$

PŘIPOČÍTAT ....

... $$\frac{R_1}{R_2} = \frac{R_x}{R_N}$$

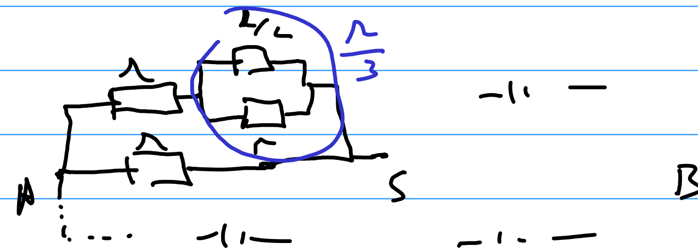
5.1.4





$$R_{AS} = \left(\frac{1}{\frac{2}{3} r} + \frac{1}{r}\right)^{-1}$$

$$= \frac{2}{5} r$$



$$R = 2 \cdot R_{AS} = \frac{4}{5} r \quad (?)$$