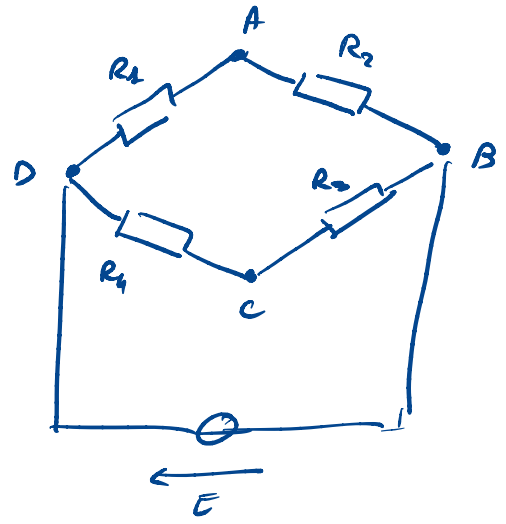
Exercice 5 Wheatstone.

1)



$$U_{AB} = \frac{R_2}{R_1 + R_2} E \qquad (\text{pdt})$$

$$U_{CB} = \frac{R_4}{R_4 + R_3} E$$

$$U_{AC} = V_A - V_C = V_A - V_B + V_B - V_C$$

$$U_{AC} = U_{AB} - U_{BC}$$

$$U_{AC} = \left(\frac{R_2}{R_1 + R_2} - \frac{R_4}{R_4 + R_3} \right) E$$

or $U_{AC} = 0$ car le pont est équilibré

donc $\frac{R_2}{R_1 + R_2} = \frac{R_4}{R_4 + R_3}$

$$R_3 R_4 + R_2 R_3 = R_1 R_4 + R_2 R_4$$

$$\boxed{R_2 R_3 = R_1 R_4}$$

2) $R_4 = \frac{R_2 R_3}{R_1}$

A.N. $R_4 = \frac{150 \times 200}{100} = 300\ \Omega$

[3] Cf Q1 $U_{AC} = \left(\frac{R_2}{R_1+R_2} - \frac{R_4}{R_3+R_4} \right) E$