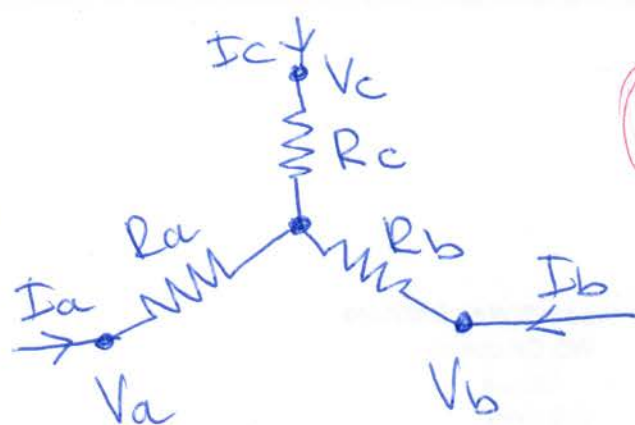


\equiv



$$V_a = R_{ab} \left(I_a - \frac{V_a - V_c}{R_{ac}} \right) + V_b$$

$$V_b = R_{cb} \left(I_b - \frac{V_b - V_a}{R_{ab}} \right) + V_c$$

$$V_c = R_{ac} \left(I_c - \frac{V_c - V_b}{R_{cb}} \right) + V_a$$

$$V_a = R_a I_a - R_b I_b + V_b$$

$$V_b = R_b I_b - R_c I_c + V_c$$

$$V_c = R_c I_c - R_a I_a + V_a$$

$$I_a + I_b + I_c = 0$$

$$V_a = R_{ab} I_a - \frac{R_{ab}}{R_{ac}} V_a + \frac{R_{ab}}{R_{ac}} V_c + V_b$$

$$V_a \left(1 + \frac{R_{ab}}{R_{ac}} \right) = R_{ab} I_a + \frac{R_{ab}}{R_{ac}} V_c + V_b$$

$$V_a = \frac{R_{ac}}{R_{ac} + R_{ab}} R_{ab} I_a + \frac{R_{ac}}{R_{ac} + R_{ab}} \cdot \frac{R_{ab}}{R_{ac}} V_c + \frac{R_{ac}}{R_{ac} + R_{ab}} V_b$$

$$V_a = \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \frac{R_{ab}}{R_{ab} + R_{ac}} V_c + \frac{R_{ac}}{R_{ac} + R_{ab}} V_b$$

$$V_b = R_{cb} I_b - \frac{R_{cb}}{R_{ab}} V_b + \frac{R_{cb}}{R_{ab}} V_a + V_c$$

$$V_b = \frac{R_{ab}}{R_{ab} + R_{cb}} R_{cb} I_b + \frac{R_{ab}}{R_{ab} + R_{cb}} \cdot \frac{R_{cb}}{R_{ab}} V_a + \frac{R_{ab}}{R_{ab} + R_{cb}} V_c$$

$$V_c = R_{ac} I_c - \frac{R_{ac}}{R_{cb}} V_c + \frac{R_{ac}}{R_{cb}} V_b + V_a$$

$$V_c = \frac{R_{cb}}{R_{cb} + R_{ac}} R_{ac} I_c + \frac{R_{cb}}{R_{cb} + R_{ac}} \frac{R_{ac}}{R_{cb}} V_b + \frac{R_{cb}}{R_{cb} + R_{ac}} V_a$$

$$V_a = \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \frac{R_{ab}}{R_{ab} + R_{ac}} V_c + \frac{R_{ac}}{R_{ac} + R_{ab}} V_b \quad (1)$$

$$V_b = \frac{R_{ab} R_{cb}}{R_{ab} + R_{cb}} I_b + \frac{R_{cb}}{R_{ab} + R_{cb}} V_a + \frac{R_{ab}}{R_{ab} + R_{cb}} V_c \quad (2)$$

$$V_c = \frac{R_{cb} R_{ac}}{R_{cb} + R_{ac}} I_c + \frac{R_{ac}}{R_{cb} + R_{ac}} V_b + \frac{R_{cb}}{R_{cb} + R_{ac}} V_a \quad (3)$$

$$\frac{R_{ab}}{R_{ab} + R_{cb}} V_c = V_b - \frac{R_{ab} R_{cb}}{R_{ab} + R_{cb}} I_b - \frac{R_{cb}}{R_{ab} + R_{cb}} V_a$$

$$V_c = \frac{R_{ab} + R_{cb}}{R_{ab}} V_b - \frac{R_{ab} + R_{cb}}{R_{ab}} \cdot \frac{R_{ab} R_{cb}}{R_{ab} + R_{cb}} I_b - \frac{R_{ab} + R_{cb}}{R_{ab}} \cdot \frac{R_{cb}}{R_{ab} + R_{cb}} V_a$$

$$\Rightarrow (1) \\ V_a = \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \frac{R_{ab}}{R_{ab} + R_{ac}} \left[\frac{R_{ab} + R_{cb}}{R_{ab}} V_b - R_{cb} I_b - \frac{R_{cb}}{R_{ab}} V_a \right] + \frac{R_{ac}}{R_{ac} + R_{ab}} V_b$$

$$V_a = \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \left[\frac{R_{ab} + R_{cb}}{R_{ab} + R_{ac}} + \frac{R_{ac}}{R_{ac} + R_{ab}} \right] V_b - \frac{R_{ab} R_{cb}}{R_{ab} + R_{ac}} I_b - \frac{R_{cb}}{R_{ab} + R_{ac}} V_a$$

$$V_a \left(1 + \frac{R_{cb}}{R_{ab} + R_{ac}} \right) = V_a \frac{R_{ab} + R_{ac} + R_{cb}}{R_{ab} + R_{ac}} = \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \frac{R_{ab} + R_{cb} + R_{ac}}{R_{ab} + R_{ac}} V_b - \frac{R_{ab} R_{cb}}{R_{ab} + R_{ac}} I_b$$

$$V_a = \frac{R_{ab} + R_{ac}}{R_{ab} + R_{ac} + R_{cb}} \cdot \frac{R_{ab} R_{ac}}{R_{ac} + R_{ab}} I_a + \frac{R_{ab} + R_{ac} \cancel{R_{cb}}}{R_{ab} + R_{ac} + R_{cb}} \cdot \frac{R_{ab} + R_{ab} + R_{ac}}{R_{ab} + R_{ac}} V_b - \frac{R_{ab} + R_{ac}}{R_{ab} + R_{ac} + R_{cb}} \cdot \frac{R_{ab} R_{cb}}{R_{ab} + R_{ac}} I_b \quad (3)$$

$$V_a = \frac{R_{ab} R_{ac}}{R_{ab} + R_{ac} + R_{cb}} I_a + V_b - \frac{R_{ab} R_{cb}}{R_{ab} + R_{ac} + R_{cb}} I_b$$

$$V_a = R_a I_a + V_b - R_b I_b$$

$$R_a = \frac{R_{ab} R_{ac}}{R_{ab} + R_{ac} + R_{cb}}$$

$$R_b = \frac{R_{ab} R_{cb}}{R_{ab} + R_{ac} + R_{cb}}$$

...

$$R_c = \frac{R_{ac} \cdot R_{cb}}{R_{ab} + R_{ac} + R_{cb}}$$