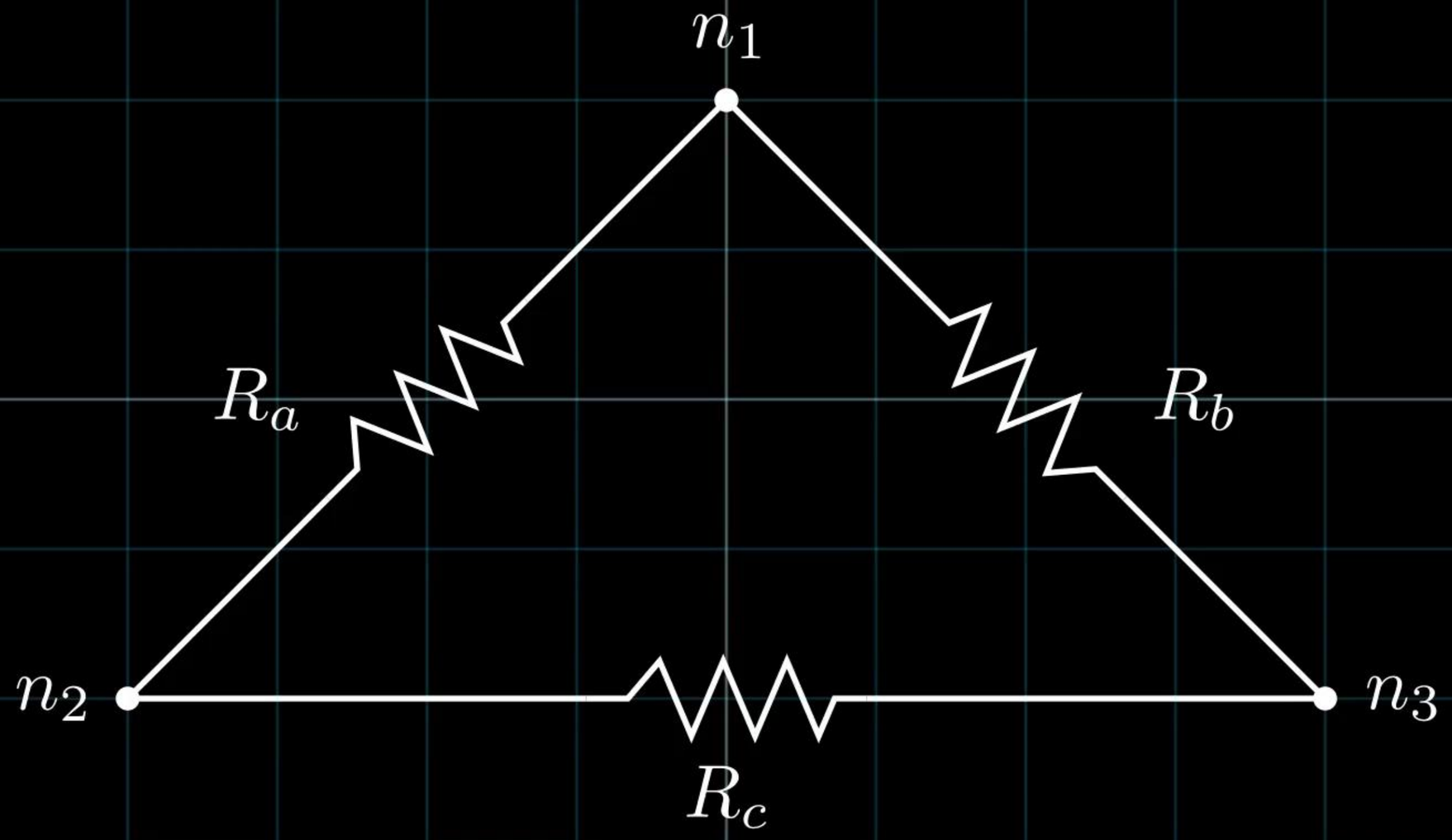
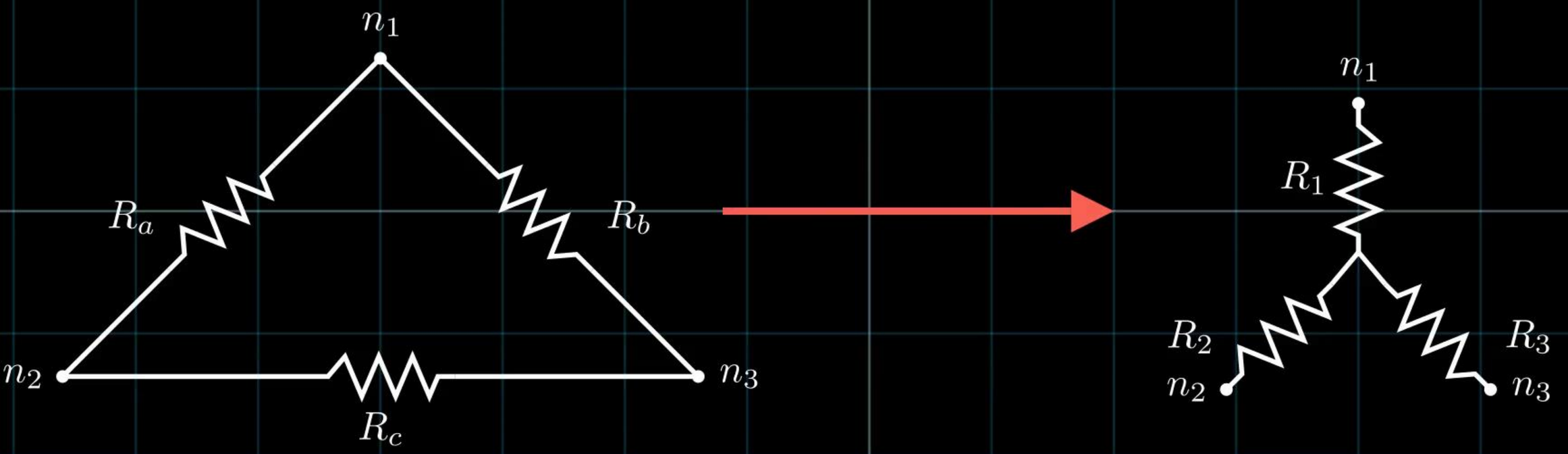
Delta-Wye Transform

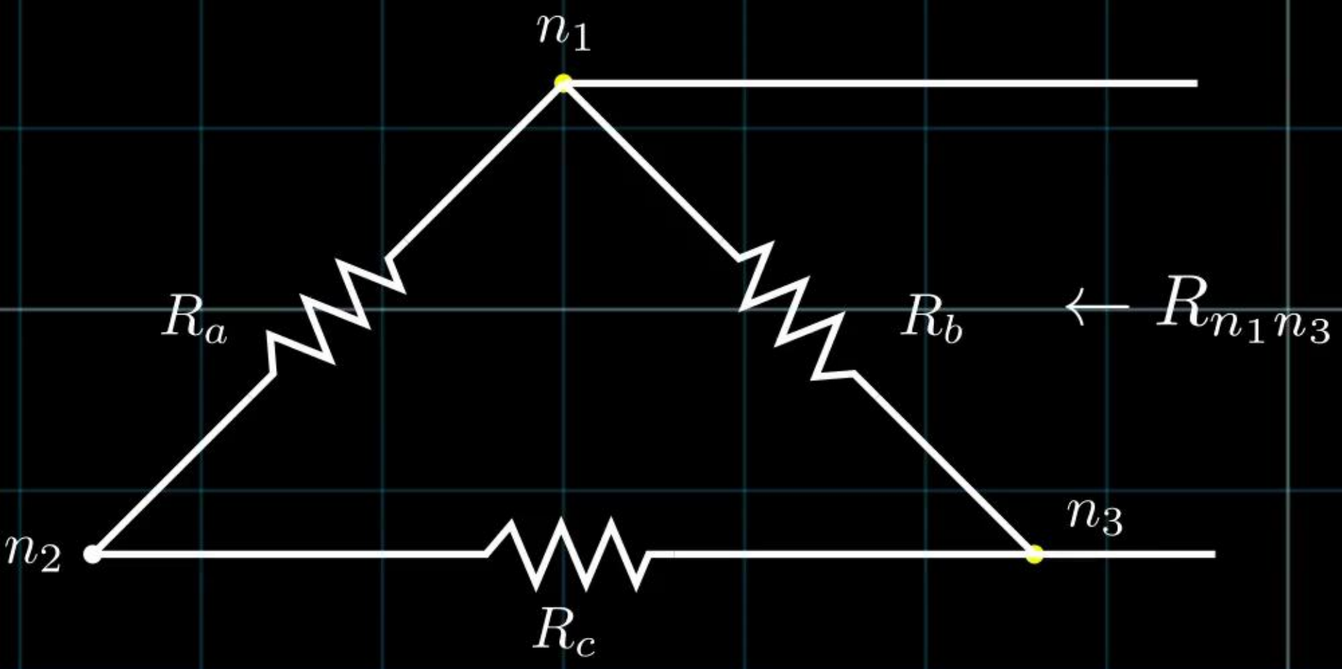
Delta-Wye Transform

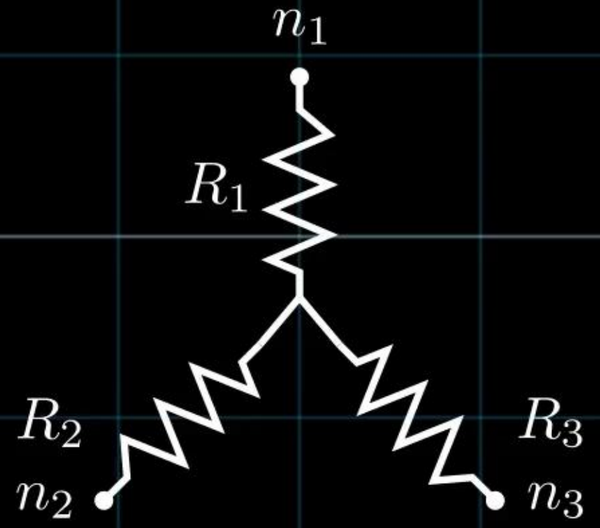


Delta-Wye Transform

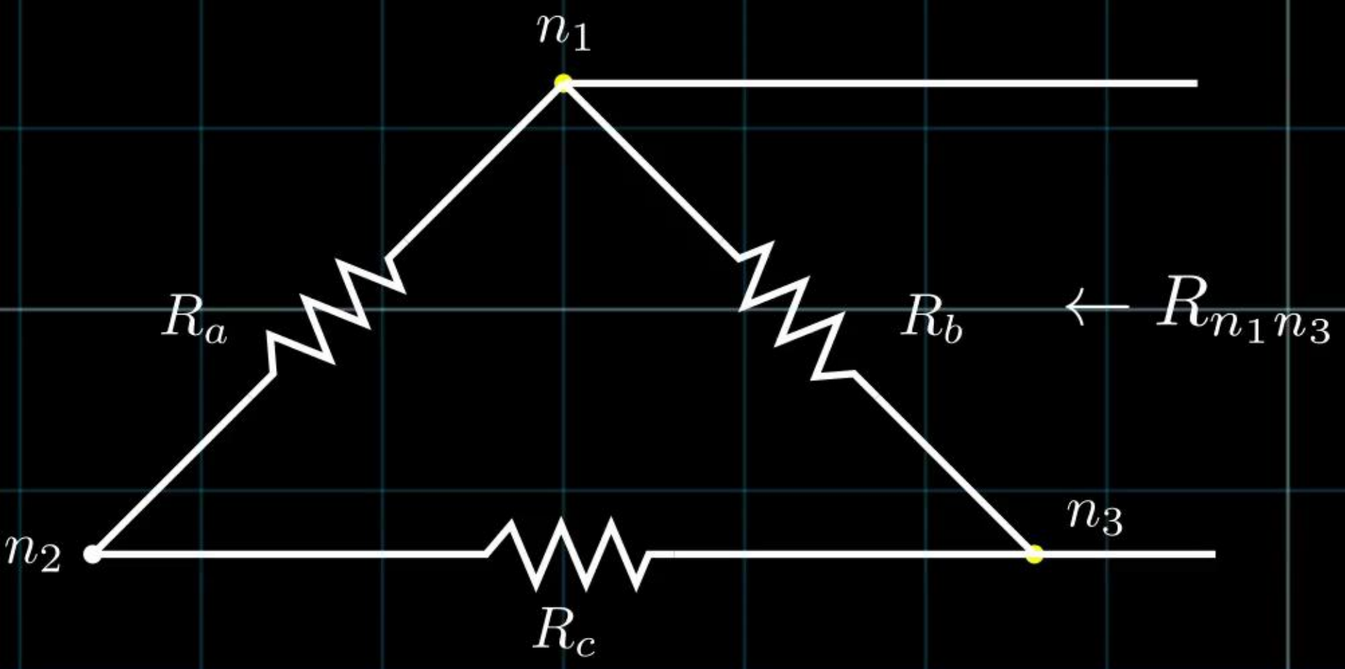


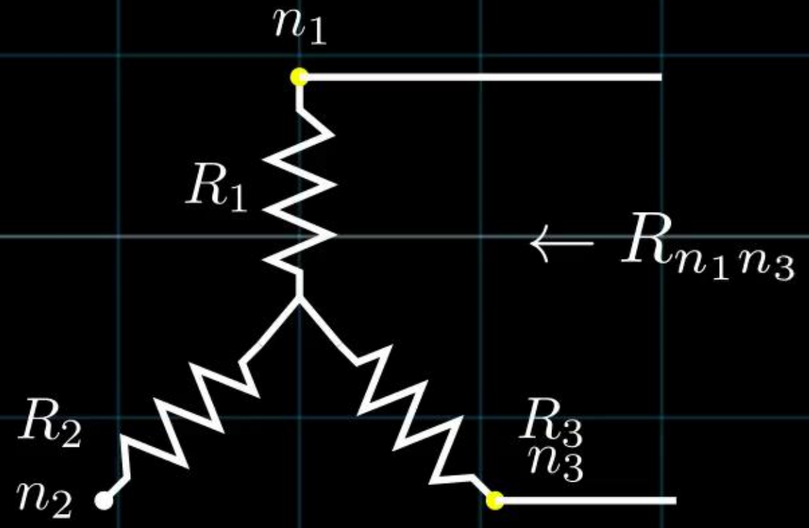
Delta-Wye Transform



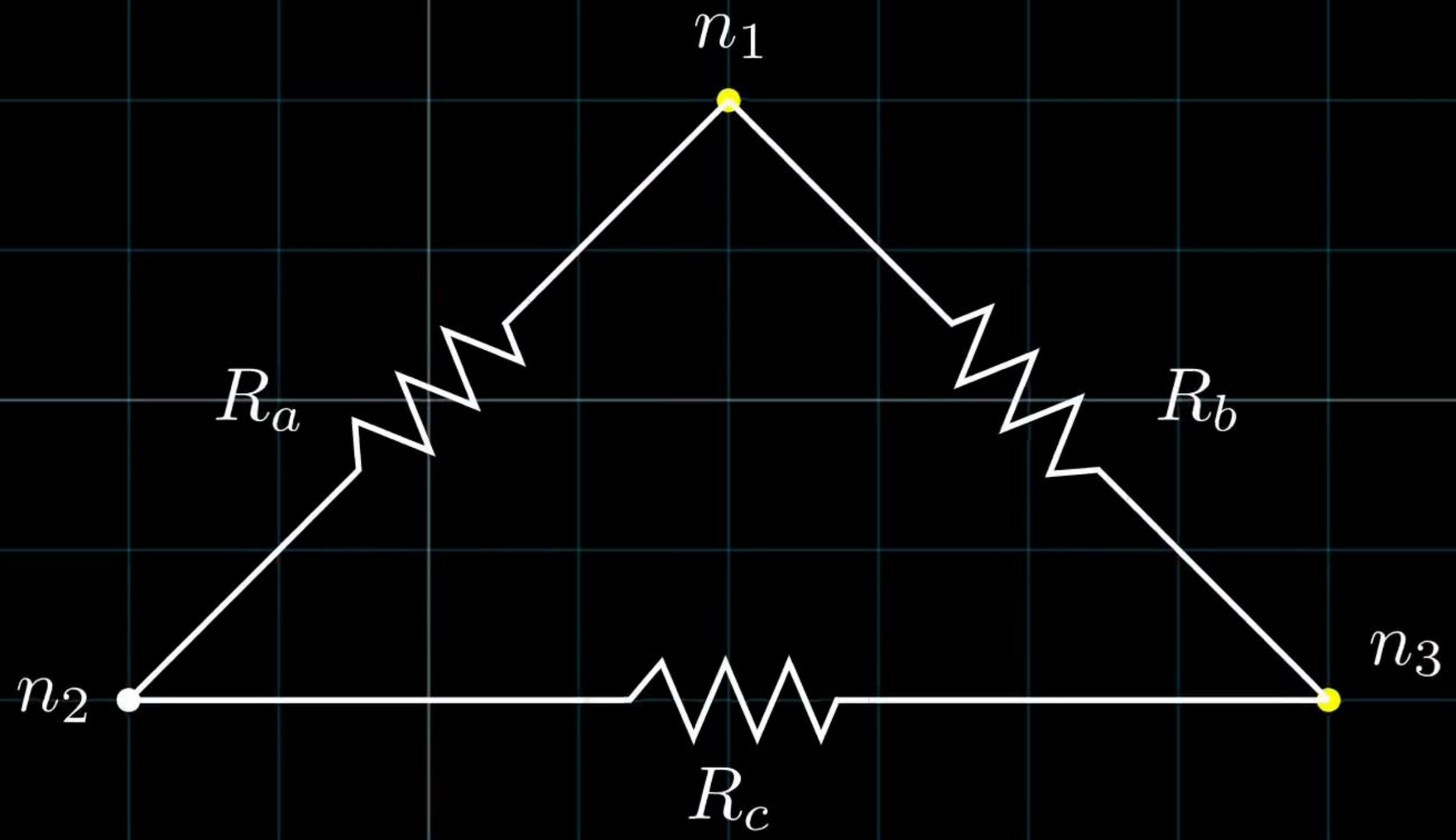


Delta-Wye Transform

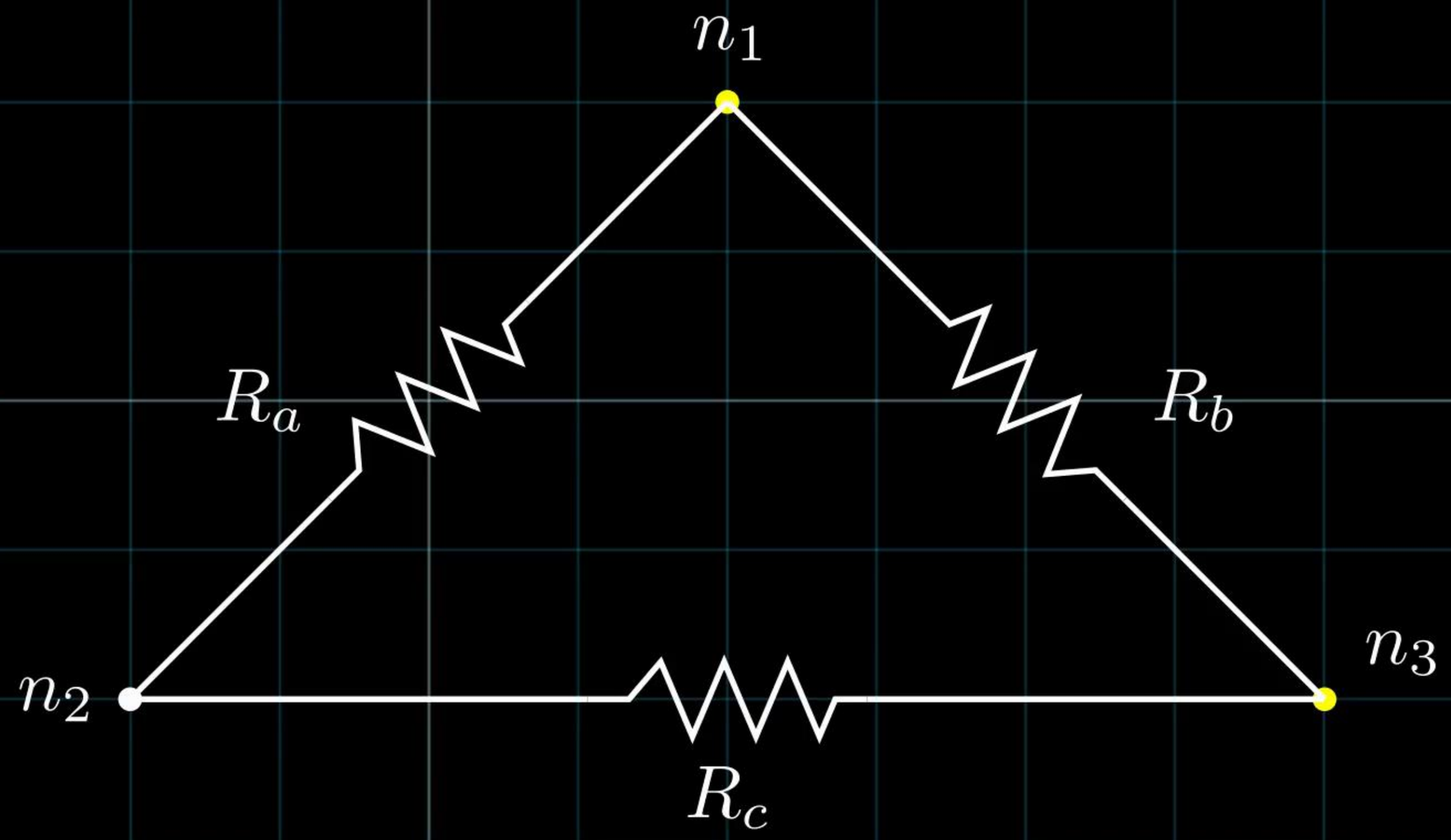




Delta-Wye Transform

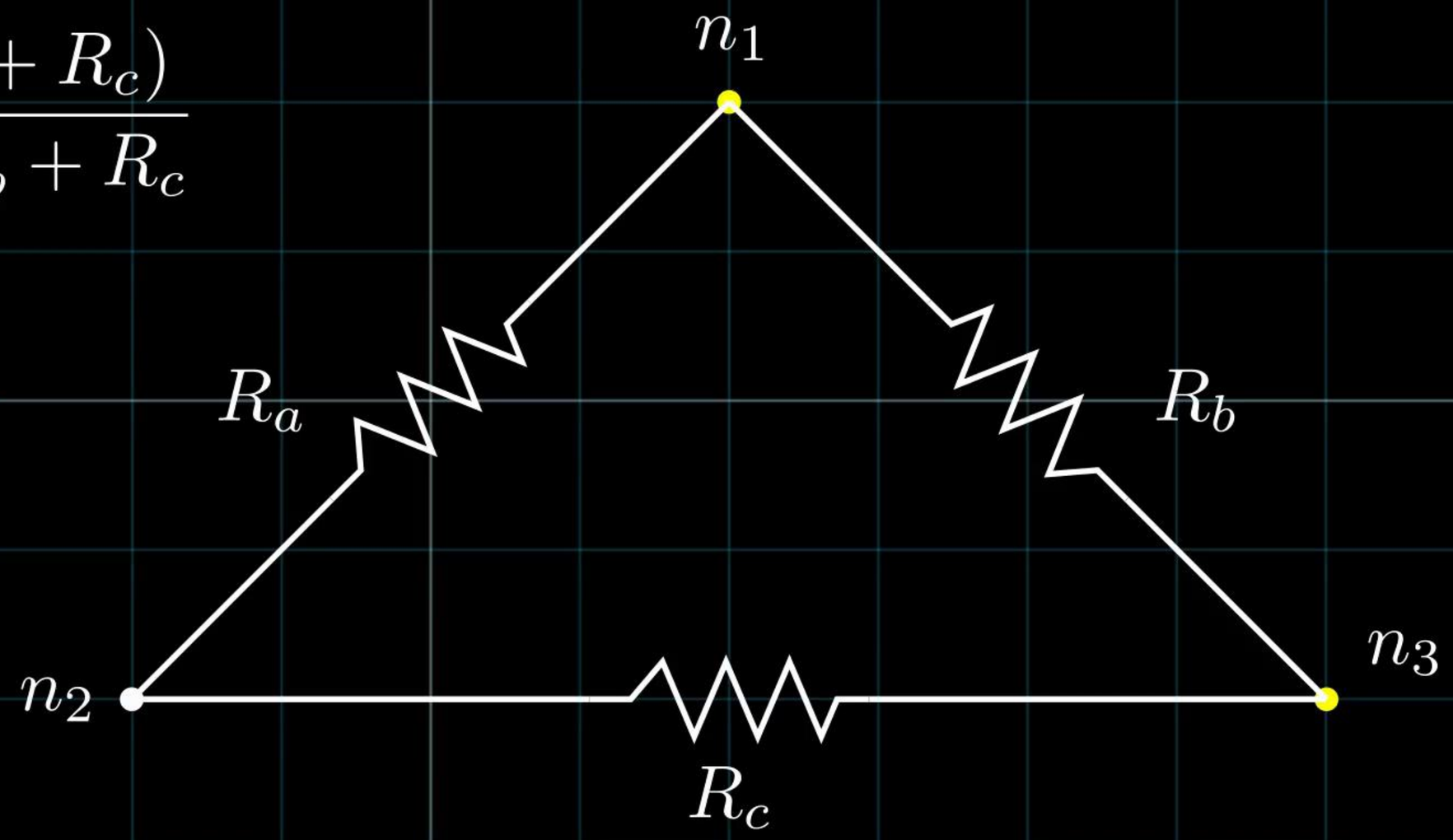


$$R_{n_1 n_3} = R_b || (R_a + R_c)$$



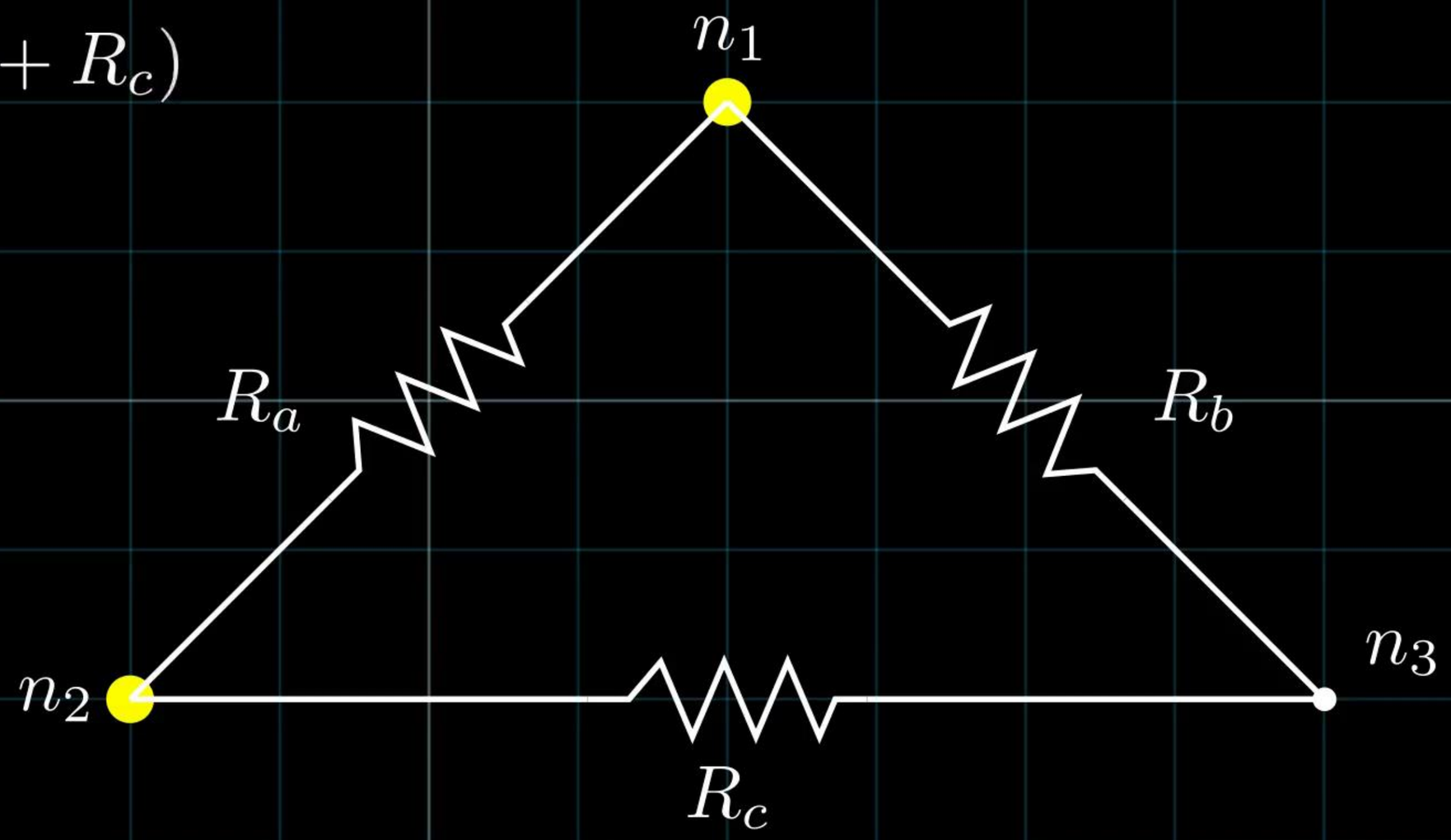
$$R_{n_1 n_3} = R_b || (R_a + R_c)$$

$$R_{n_1 n_3} = \frac{R_b (R_a + R_c)}{R_a + R_b + R_c}$$



$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

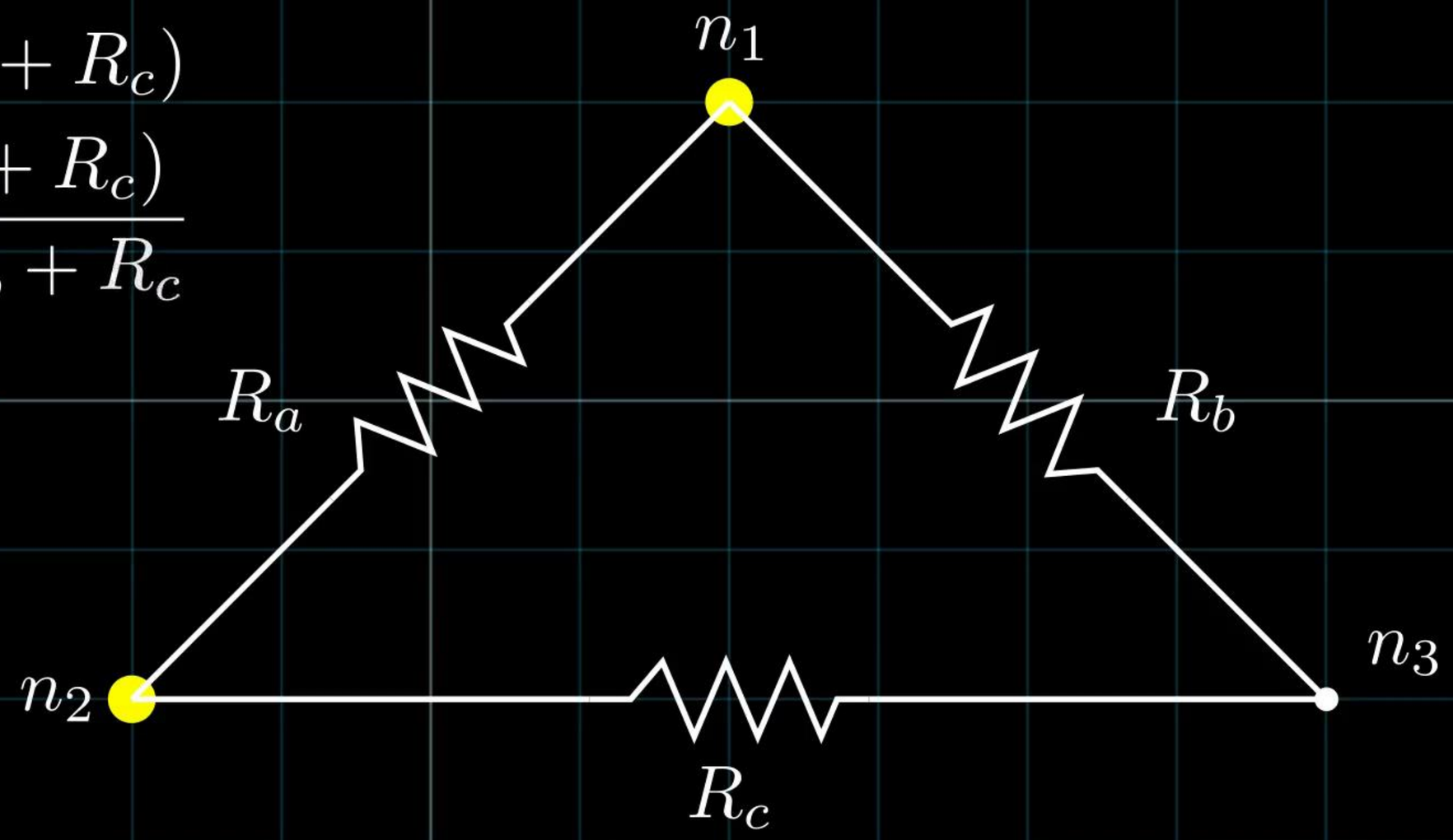
$$R_{n_1 n_2} = R_a || (R_b + R_c)$$



$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = R_a || (R_b + R_c)$$

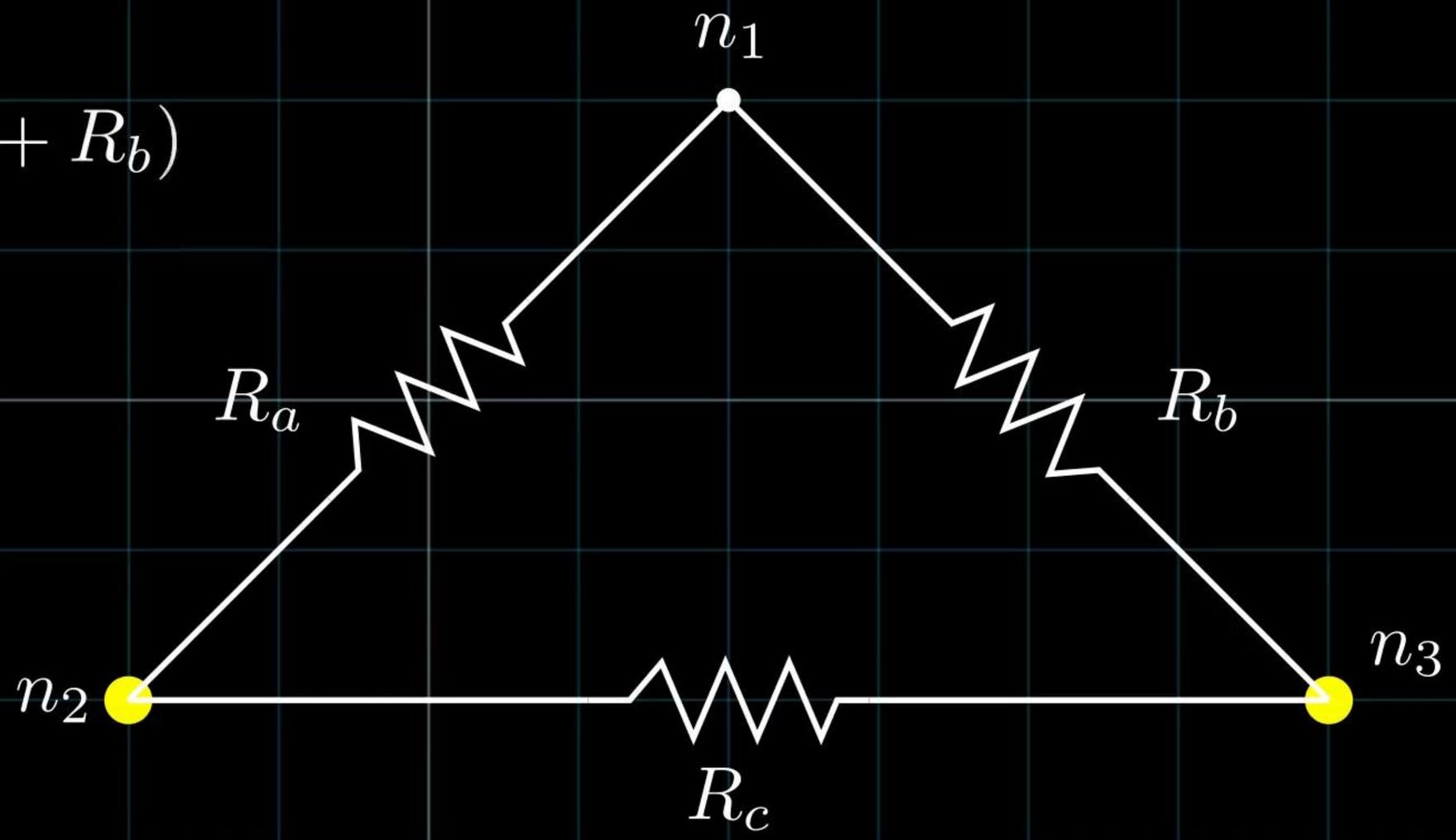
$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$



$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2 n_3} = R_c || (R_a + R_b)$$

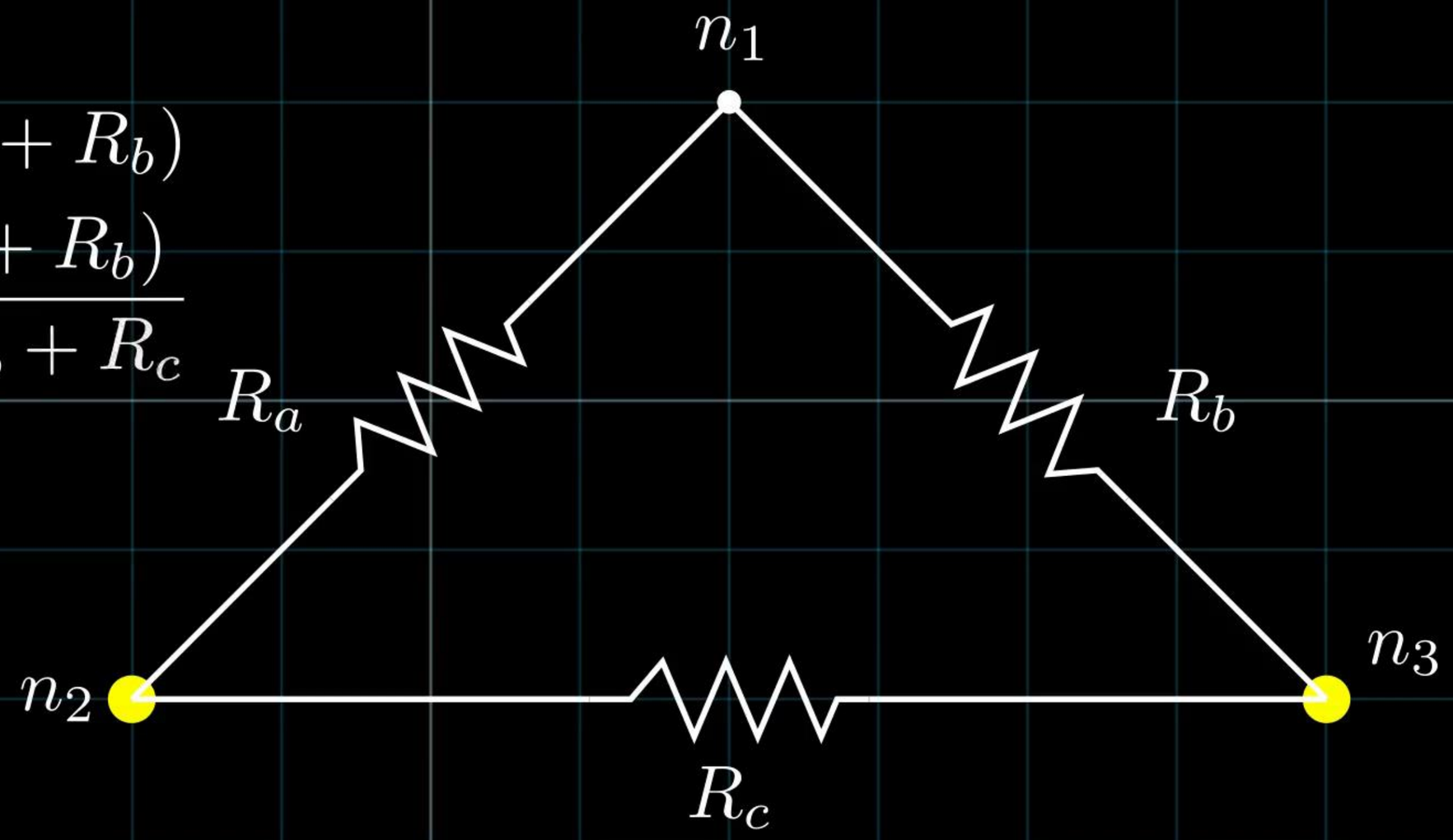


$$R_{n_1n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2n_3} = R_c \| (R_a + R_b)$$

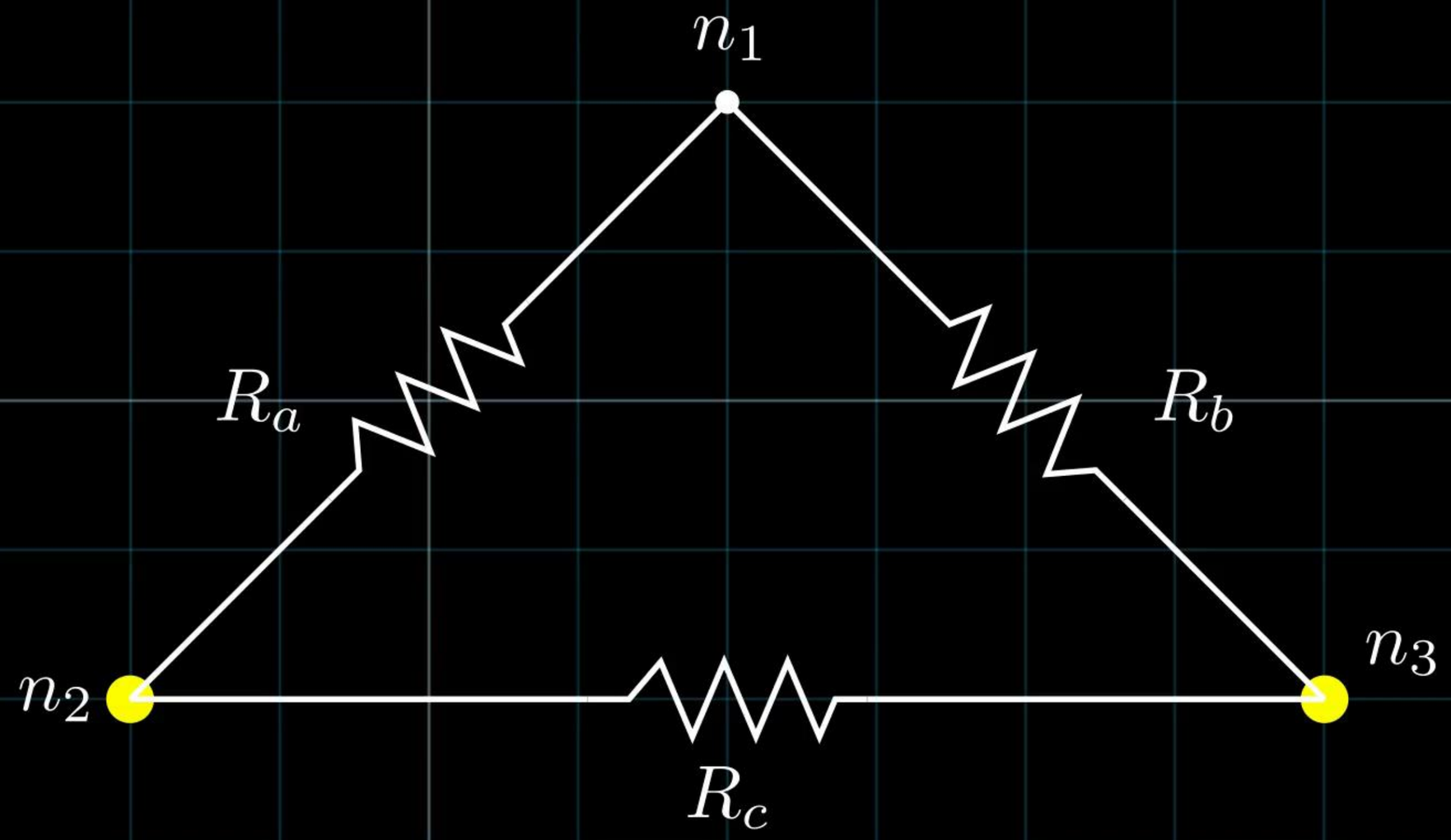
$$R_{n_2n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$



$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2 n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

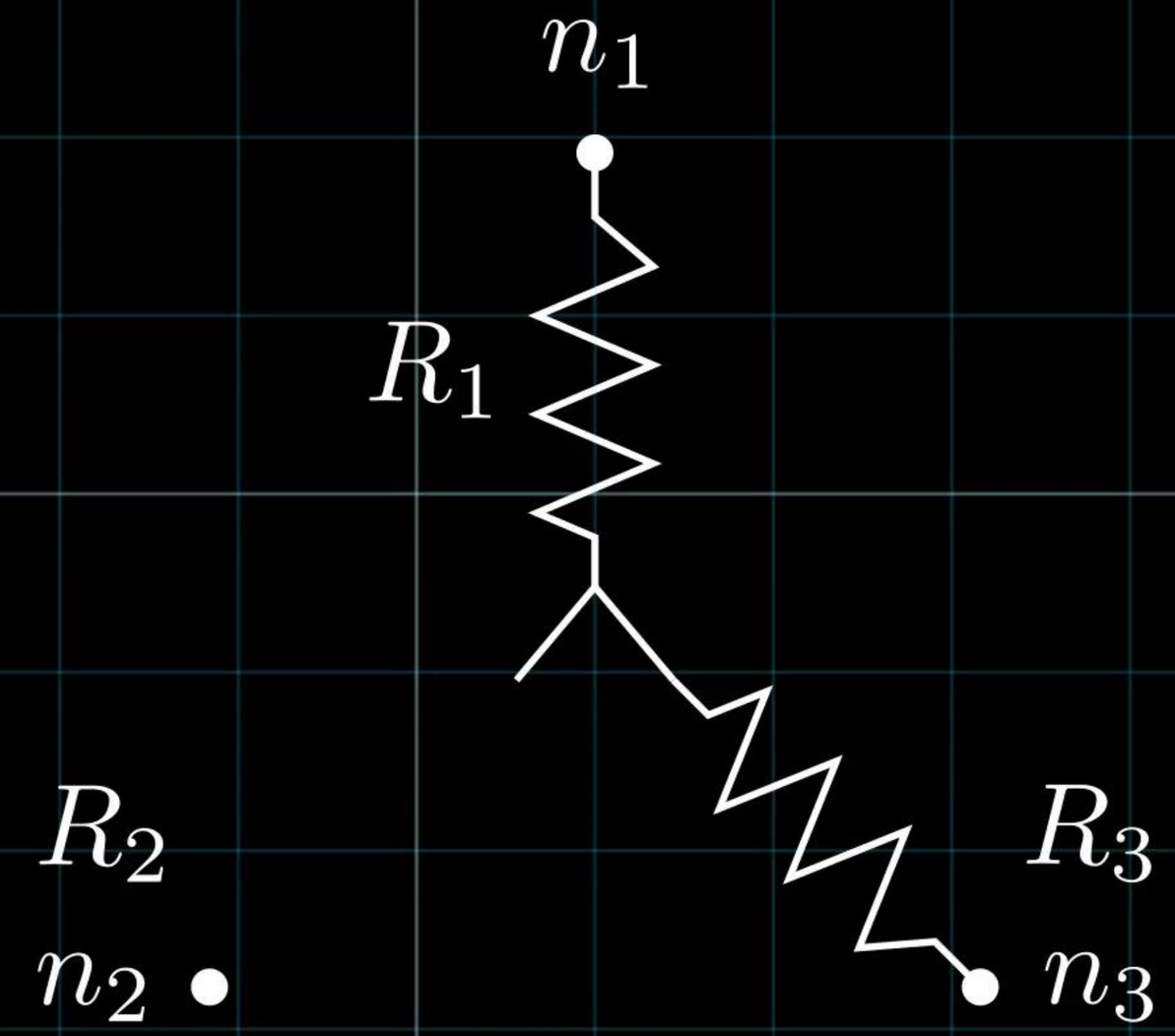


$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2 n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1 n_3} = R_1 + R_3$$



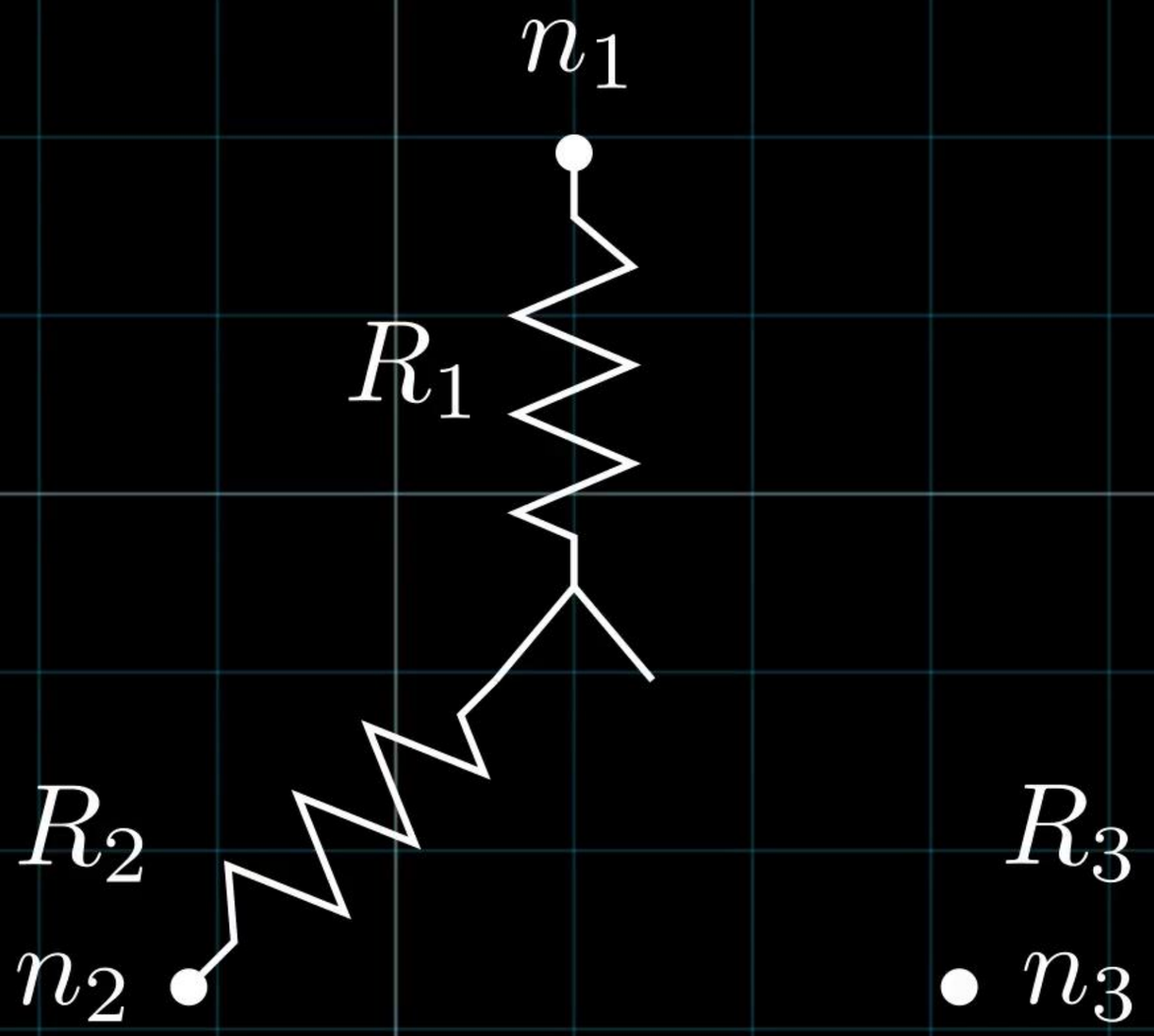
$$R_{n_1n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1n_3} = R_1 + R_3$$

$$R_{n_1n_2} = R_1 + R_2$$



$$R_{n_1n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

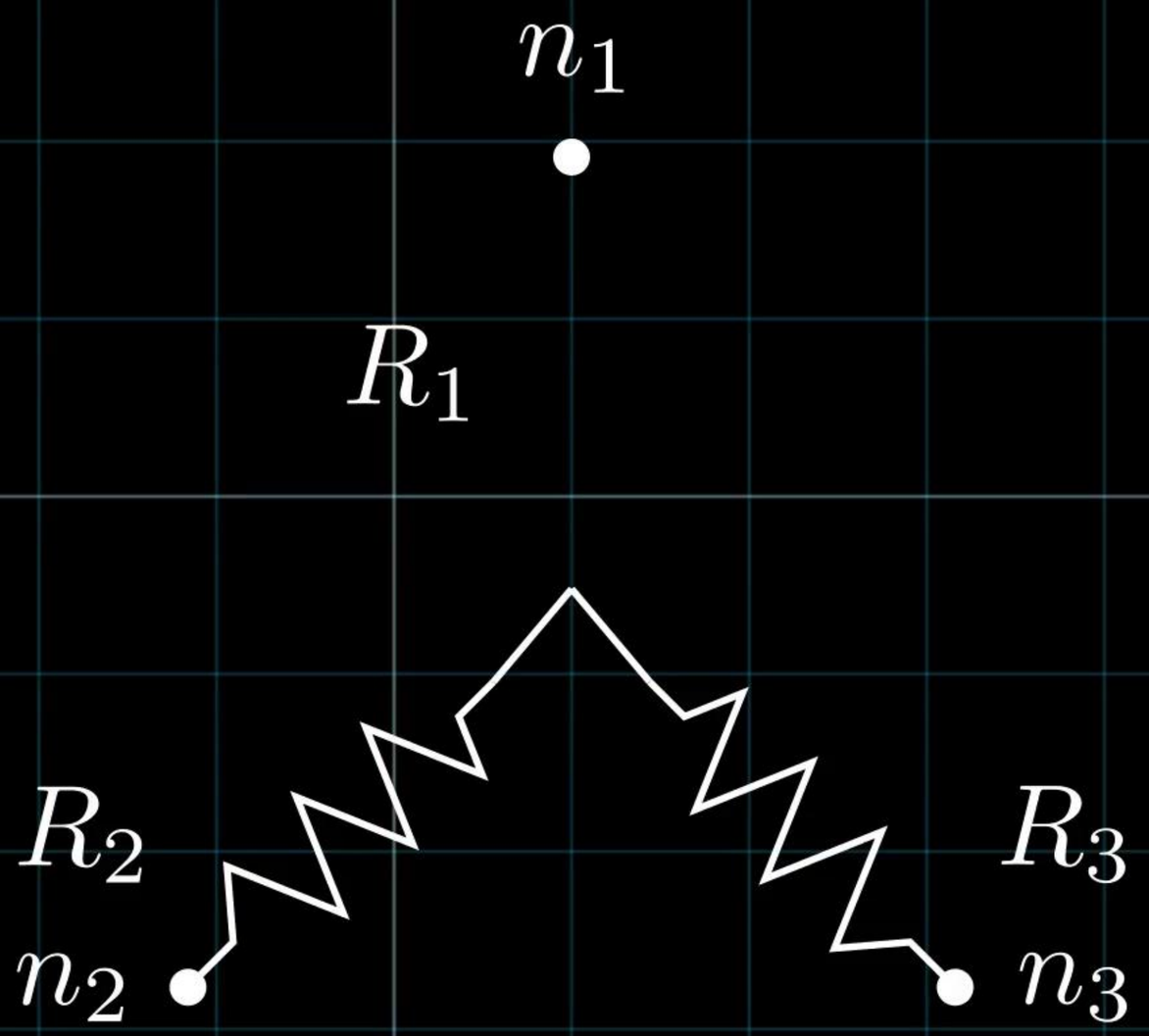
$$R_{n_1n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1n_3} = R_1 + R_3$$

$$R_{n_1n_2} = R_1 + R_2$$

$$R_{n_2n_3} = R_2 + R_3$$



$$R_{n_1n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

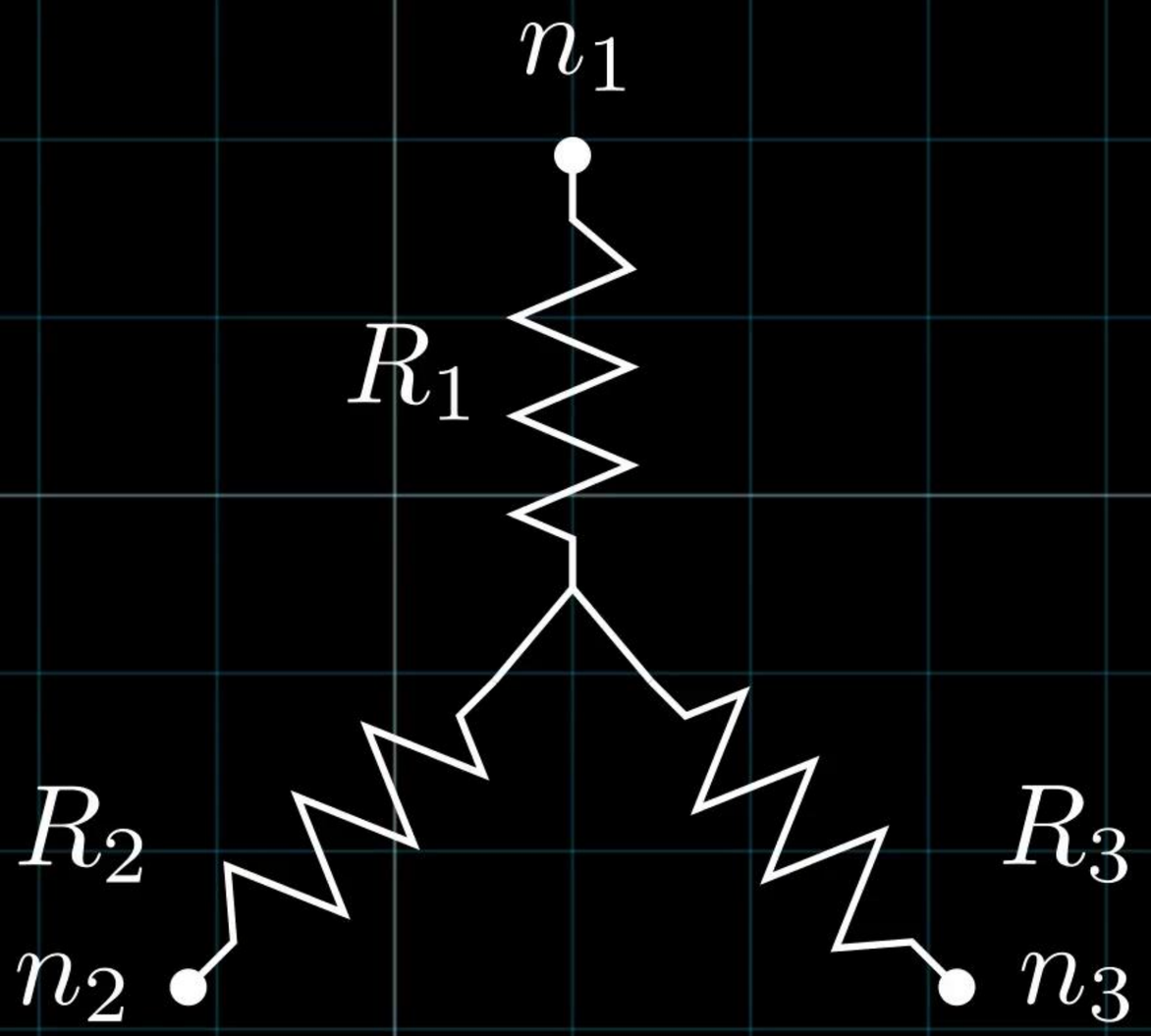
$$R_{n_1n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1n_3} = R_1 + R_3$$

$$R_{n_1n_2} = R_1 + R_2$$

$$R_{n_2n_3} = R_2 + R_3$$



$$R_{n_1 n_3} = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2 n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1 n_3} = R_1 + R_3$$

$$R_{n_1 n_2} = R_1 + R_2$$

$$R_{n_2 n_3} = R_2 + R_3$$

$$R_{n_1 n_2} = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2 n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$R_{n_1 n_2} = R_1 + R_2$$

$$R_{n_2 n_3} = R_2 + R_3$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$R_{n_2n_3} = R_2 + R_3$$

$$R_{n_2n_3} = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

Solving for Individual Resistors

Eq. 1 + Eq. 2 - Eq. 3

$$(R_1 + R_2) + (R_1 + R_3) - (R_2 + R_3) = 2R_1$$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

Solving for Individual Resistors

Eq. 1 + Eq. 2 - Eq. 3

$$(R_1 + R_2) + (R_1 + R_3) - (R_2 + R_3) = 2R_1$$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$$

Eq. 1 + Eq. 3 - Eq. 2

$$(R_1 + R_2) + (R_2 + R_3) - (R_1 + R_3) = 2R_2$$

$$R_2 = \frac{R_a R_c}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

Solving for Individual Resistors

Eq. 1 + Eq. 2 - Eq. 3

$$(R_1 + R_2) + (R_1 + R_3) - (R_2 + R_3) = 2R_1$$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$$

Eq. 1 + Eq. 3 - Eq. 2

$$(R_1 + R_2) + (R_2 + R_3) - (R_1 + R_3) = 2R_2$$

$$R_2 = \frac{R_a R_c}{R_a + R_b + R_c}$$

Eq. 2 + Eq. 3 - Eq. 1

$$(R_1 + R_3) + (R_2 + R_3) - (R_1 + R_2) = 2R_3$$

$$R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$\Delta \rightarrow Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$$

$$R_2 = \frac{R_a R_c}{R_a + R_b + R_c}$$

$$R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$$Eq.1 : R_1 + R_2 = \frac{R_a(R_b + R_c)}{R_a + R_b + R_c}$$

$$Eq.2 : R_1 + R_3 = \frac{R_b(R_a + R_c)}{R_a + R_b + R_c}$$

$$Eq.3 : R_2 + R_3 = \frac{R_c(R_a + R_b)}{R_a + R_b + R_c}$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c}$$

$$R_2 = \frac{R_a R_c}{R_a + R_b + R_c}$$

$$R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$1) R_1 R_2 = \frac{R_a^2 R_b R_c}{(R_a + R_b + R_c)^2}$$

$$2) R_1 R_3 = \frac{R_a R_b^2 R_c}{(R_a + R_b + R_c)^2}$$

$$3) R_2 R_3 = \frac{R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$1) R_1 R_2 = \frac{R_a^2 R_b R_c}{(R_a + R_b + R_c)^2} \qquad 1) + 2) + 3) = R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a^2 R_b R_c + R_a R_b^2 R_c + R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$2) R_1 R_3 = \frac{R_a R_b^2 R_c}{(R_a + R_b + R_c)^2}$$

$$3) R_2 R_3 = \frac{R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$1) R_1 R_2 = \frac{R_a^2 R_b R_c}{(R_a + R_b + R_c)^2}$$

$$2) R_1 R_3 = \frac{R_a R_b^2 R_c}{(R_a + R_b + R_c)^2}$$

$$3) R_2 R_3 = \frac{R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$1) + 2) + 3) = R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a^2 R_b R_c + R_a R_b^2 R_c + R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a R_b R_c (R_a + R_b + R_c)}{(R_a + R_b + R_c)^2} = \frac{R_a R_b R_c}{R_a + R_b + R_c}$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$1) R_1 R_2 = \frac{R_a^2 R_b R_c}{(R_a + R_b + R_c)^2}$$

$$2) R_1 R_3 = \frac{R_a R_b^2 R_c}{(R_a + R_b + R_c)^2}$$

$$3) R_2 R_3 = \frac{R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$1) + 2) + 3) = R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a^2 R_b R_c + R_a R_b^2 R_c + R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a R_b R_c (R_a + R_b + R_c)}{(R_a + R_b + R_c)^2} = \frac{R_a R_b R_c}{R_a + R_b + R_c}$$

$$R_1 R_2 + R_1 R_3 + R_2 R_3 = R_a \frac{R_b R_c}{R_a + R_b + R_c} = R_a R_3$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$1) R_1 R_2 = \frac{R_a^2 R_b R_c}{(R_a + R_b + R_c)^2}$$

$$2) R_1 R_3 = \frac{R_a R_b^2 R_c}{(R_a + R_b + R_c)^2}$$

$$3) R_2 R_3 = \frac{R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$1) + 2) + 3) = R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a^2 R_b R_c + R_a R_b^2 R_c + R_a R_b R_c^2}{(R_a + R_b + R_c)^2}$$

$$R_1 R_2 + R_1 R_3 + R_2 R_3 = \frac{R_a R_b R_c (R_a + R_b + R_c)}{(R_a + R_b + R_c)^2} = \frac{R_a R_b R_c}{R_a + R_b + R_c}$$

$$R_1 R_2 + R_1 R_3 + R_2 R_3 = R_a \frac{R_b R_c}{R_a + R_b + R_c} = R_a R_3$$

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

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$R_1R_2 + R_1R_3 + R_2R_3 = \frac{R_a R_b R_c}{R_a + R_b + R_c} \quad Ra = \frac{R_1R_2 + R_1R_3 + R_2R_3}{R_3}$$

$$R_1R_2 + R_1R_3 + R_2R_3 = R_b \frac{R_a R_c}{R_a + R_b + R_c} = R_b R_2 \qquad R_b = \frac{R_1R_2 + R_1R_3 + R_2R_3}{R_2}$$

$\Delta \to Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \to \Delta$

$$R_1R_2 + R_1R_3 + R_2R_3 = \frac{R_aR_bR_c}{R_a + R_b + R_c} \quad Ra = \frac{R_1R_2 + R_1R_3 + R_2R_3}{R_3}$$

$$R_1R_2 + R_1R_3 + R_2R_3 = R_b\frac{R_aR_c}{R_a + R_b + R_c} = R_bR_2 \qquad R_b = \frac{R_1R_2 + R_1R_3 + R_2R_3}{R_2}$$

$$R_1R_2 + R_1R_3 + R_2R_3 = R_c\frac{R_aR_b}{R_a + R_b + R_c} = R_cR_1 \qquad R_c = \frac{R_1R_2 + R_1R_3 + R_2R_3}{R_1}$$

$\Delta \rightarrow Y$

$$R_1 = \frac{R_a R_b}{R_a + R_b + R_c} \qquad R_2 = \frac{R_a R_c}{R_a + R_b + R_c} \qquad R_3 = \frac{R_b R_c}{R_a + R_b + R_c}$$

$Y \rightarrow \Delta$

$$Ra = \frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_3} \qquad R_b = \frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_2} \qquad R_c = \frac{R_1 R_2 + R_1 R_3 + R_2 R_3}{R_1}$$