

Connected Graph
(Branch) b

(Treebranch) Tree

$$n_t = n - 1 \downarrow$$

Fundamental Cut-Set



Independent KCL

$$n - 1$$

{ Complete KCL



\sum KCL for all nodes = 0

n KCL equations are dependent

Cotree (Link)

$$n_l = b - n_t = b - n + 1$$

↓
Fundamental Loop



Independent KVL

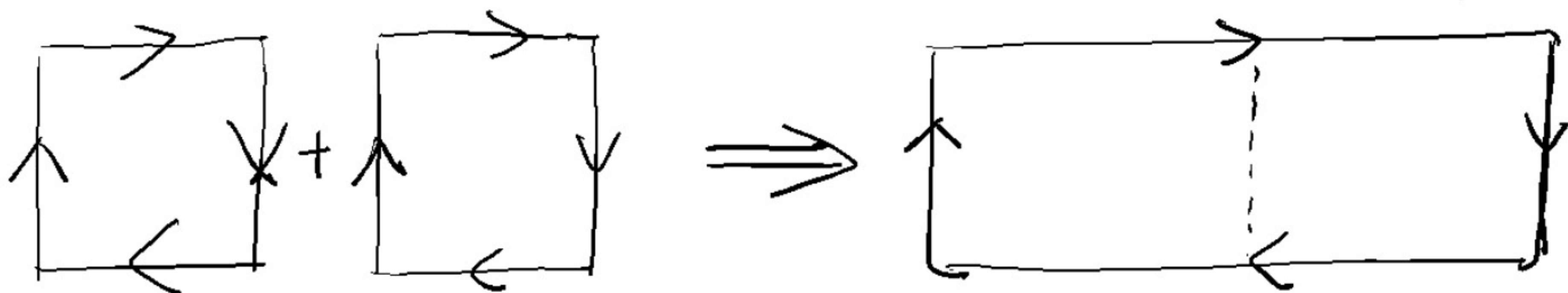
$$b - n + 1$$

{ Complete KVL



* According to Euler's Formula, $b - n + 1 = m$ exactly the inner mesh

* Principle of Superposition



Any mesh can be decomposed into inner meshes.

m KVL equations are complete.