**Current Division**

By KCL: \( I_t = I_1 + I_2 \)

By KVL: \( I_1 * Z_1 = I_2 * Z_2 = I_t * Z_1 * Z_2 / (Z_1 + Z_2) \)

Therefore, \( I_1 = I_t * Z_2 / (Z_1 + Z_2) \) and \( I_2 = I_t * Z_1 / (Z_1 + Z_2) \); or in words, *current division*: the current in a parallel branch is equal to the total current times the impedance of the opposite branch divided by the sum of the impedances.

By KCL: \( I_t = I_1 + I_2 + I_3 \)

By KVL: \( I_1 * Z_1 = I_2 * Z_2 = I_3 * Z_3 = I_t * (Z_1 || Z_2 || Z_3) \)

Therefore, \( I_1 = I_t * Z_2 * Z_3 / (Z_1 * Z_2 + Z_2 * Z_3 + Z_3 * Z_1) \), etc.; or in words, *current division*: the current in a parallel branch is equal to the total current times the product of the impedances of the opposite branches divided by the sum of the product of all combinations of impedance taken two at a time.