Mason's Rules

Path: continuous succession of branches transversed in their indicated direction, no node being encountered more than once.
Forward Path: Path connecting input to output nodes.
Input Node: A node having only out-going branches.
Output Node: A node having only in-going branches.
Path Gain: Product of the branch multiplier.
Loop: Patch which originates and terminates at the same node, no node being encountered more than once.
Loop Gain: Product of the branch multipliers around the loop.
Mason's Rule:

- Select input and output nodes.
- The gain T is then:

$$T = \frac{\Sigma_k T_k \Delta_k}{\Delta}$$

with T_k the path gain of the k-th forward path and with Δ and Δ_k given by:

Δ = 1 - (sum of all individual loop gains)

+ (sum of the loop gain products of all possible combinations of two non-touching loops)

- (sum of the loop gain products of all possible combinations of three non-touching loops)

+ (sum of the loop gain products of all possible combinations of four non-touching loops)

- ...

Δ_k = the value of Δ for the loops not touching the k-th path.