When we have a reaction network as below,

To a pathway with n nodes and n-1 steps,

The pathway probability has a form of

For example, for path with length n=1-3, the general pathway probabilities are

|  |  |  |
| --- | --- | --- |
| n | Pre-factor |  |
| 1 | 1 |  |
| 2 |  |  |
| 3 |  |  |

Since in our case,, we there exists singularity in the denominator of pre-factors when , we can use L'Hôpital’s rule evaluate the general expression of pathway probability to gain an analytical expression here. For example, if n=2,

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If n=3, we pull out factor of first, then let ,

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=

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Now let,

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