An example of the Transition Equations

Transition equations:  \( \pi_i(t+1) = \sum_j P_{ij} \pi_j(t) \)

For node 2, by total probability theorem, we have

\[
P(X(t+1) = 2) = \frac{P(X(t) = 1)}{P_21} \pi_1(t) + \frac{P(X(t) = 2)}{P_22} \pi_2(t) + \frac{P(X(t) = 4)}{P_24} \pi_4(t) + \frac{P(X(t) = 5)}{P_25} \pi_5(t)
\]

(1)

Thus, Equation 1 is equal to

\[
\pi_2(t+1) = P_{21} \pi_1(t) + P_{22} \pi_2(t) + P_{24} \pi_4(t) + P_{25} \pi_5(t)
\]

where \( P_{22} = 1 - P_{52} \).