Welcome Tutorial :-)
Tutorial 9

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1. Please prove that $\beta A + \beta^2 A^2 + \beta^3 A^3 + \cdots = (I - \beta A)^{-1} - I$, where $\beta \in [0, 1]$.

2. Let W be transition probability matrix of a random walk, please prove that the hitting time matrix
   $H = W + 2W^2 + 3W^3 + \cdots = ((I - W)^{-1} - I)(I - W)^{-1}$.

3. Please analysis the differences between PageRank and random walk with restart.