Review 1 (Sept. 13)

1. Markov chain:

- a. Definition: Given the present state, the future movement of a process is independent of its past history.
- b. Components:
 - i. { X_n , n = 0, 1, 2, ...}
 - ii. State space: $S = \{1, 2, 3, ...\}$
 - iii. Transition probabilities:

$$p_{ij} = P(X_{n+1} = j | X_n = j), i, j \in S.$$

2. Chapman-Kolmogorov equation:

$$p_{ij}^{m+n} = \sum_k p_{ik}^m p_{kj}^n \,.$$