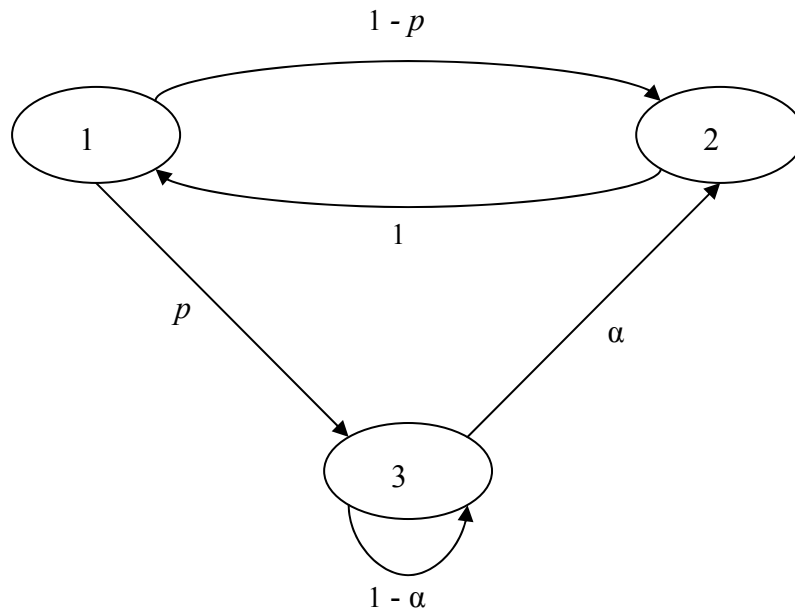


2.5 Consider the homogeneous Markov chain whose state diagram is



- Find \mathbf{P} , the probability transition matrix.
- Under what conditions (if any) will the chain be irreducible and aperiodic?
- Solve for the equilibrium probability vector π .
- What is the mean recurrence time for state E_2 ?
- For which values of α and p will have $\pi_1 = \pi_2 = \pi_3$? (Give a physical interpretation of this case)