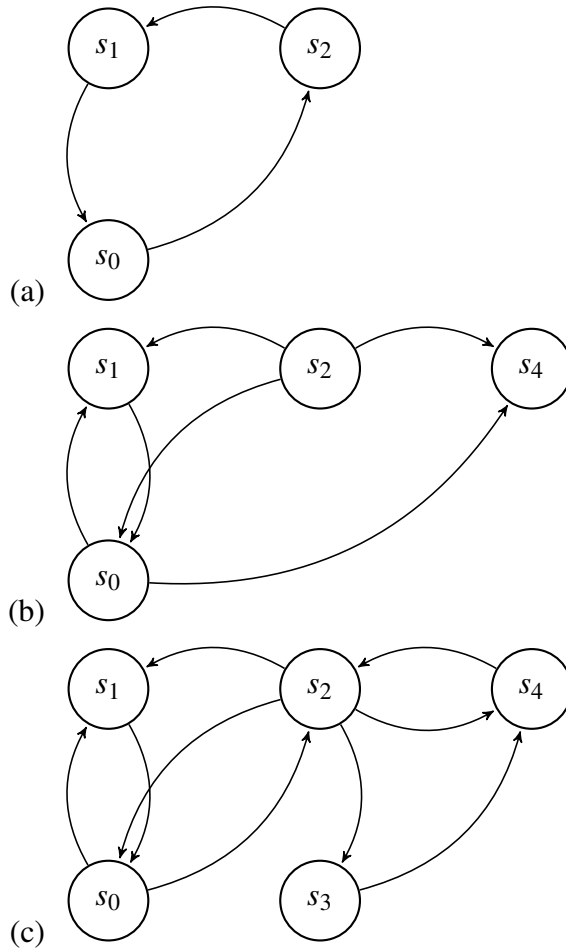


1. Markov Chain Terminology Test

For each of the following Markov chains, determine if it is (a) periodic and/or (b) reducible.



2. Number of Ones

In this problem, we will revisit dice-rolling, except with conditional expectation.

- (a) If we roll a die until we see a 6, how many ones should we expect to see?
- (b) If we roll a die until we see a number greater than 3, how many ones should we expect to see?
- (c) We add r red marbles, b blue marbles and g green marbles to the same bag. If we sample balls, with replacement, until we get 3 red marbles (not necessarily consecutively), how many blue marbles should we expect to see?