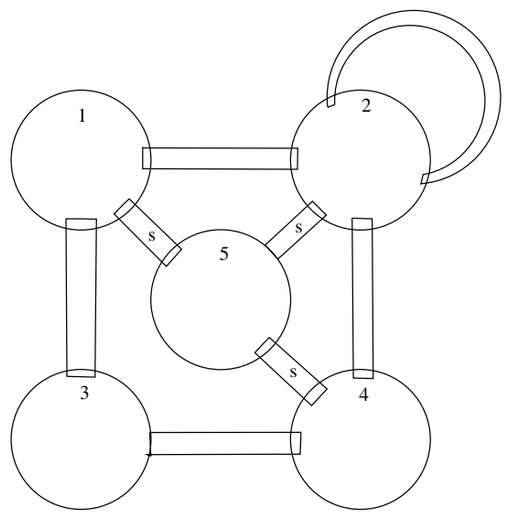
Worksheet 4

Name: _____

Student ID: _____

1. Bob has a hamster named Euler, and built Euler a hamster habitat, as seen here. If Euler is put into the habitat, he will wander about from room to room (rooms are numbered $1 \ldots 5$). When in a room, he is twice as likely to take an opening to a short path (labelled s) as an opening to a longer path, and he is equally likely to take any of the openings of the same length.
   For example, if Euler were in room 1, he would take the path to room 5 half the time and either of paths to rooms 2 or 3 a quarter of the time (each).



[4] (a) Find the Markov chain given that Euler was placed in room labelled 3.

[2] (b) Find the associated adjacency matrix.

[2] (c) Is the Markov chain from part (a) irreducible? (Explain)