

MATH 338: Discrete and Probabilistic Methods in Biology

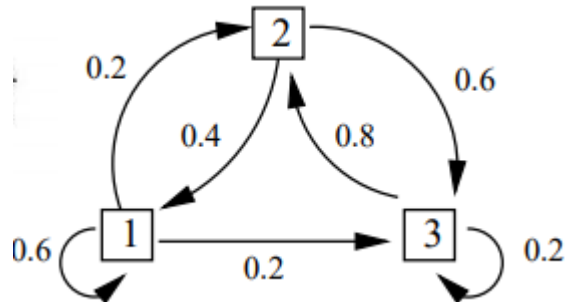
Quiz 2

NAME: \_\_\_\_\_

Date: March 28, 2019

Answer the following question on this sheet of paper. No calculators or other electronic devices are permitted.

1. (10 points) Let  $X(t)$  be a Markov chain with state transition diagram



- (a) Find the transition matrix  $A$  corresponding to  $X(t)$ .
- (b) Find  $\mathbb{P}(X(2) = 1 \mid X(0) = 1)$ .
- (c) Suppose that the process is twice as likely to be in state 1 as states 2 and 3, **initially**. Find the probability distribution of  $X(1)$ .