

This first quiz is for practice and does not count. However, you need to practice working in teams. Make a team of 2-4 people. Rules for auditors: There must be at least two people registered in the class in each team. There can be at most one person not registered in the class on each team. Furthermore, this unofficial person is only allowed to make suggestions. He/she cannot work out the answer to the question!!

You can also talk to other teams to get help. But each team need to do its own work!!

MATH 56A, PRACTICE QUIZ I

1. Convert the following second order difference equation into a first order matrix equation (including the initial conditions). Don't solve it.

$$f(n) = 2f(n - 1) + 3f(n - 2), \quad f(0) = 5, f(1) = 6.$$

2. Find the invariant probability distribution for

$$P = \begin{pmatrix} 1/2 & 1/2 & 0 \\ 0 & 1/2 & 1/2 \\ 0 & 1/4 & 3/4 \end{pmatrix}$$

3. Make a Markov chain model for the following problem.

Every morning you get up and think about loosing weight. You want to skip some meals. Half the time you skip breakfast and go to class hungry. Half the time you get breakfast. When you go to breakfast, you often (with probability 0.6 meet someone and make plans for dinner). You always skip lunch. If you skipped breakfast, you always go for dinner. If you ate breakfast and didn't make plans for dinner, then you skip dinner. If you made plans with someone, then you don't forget and you go for dinner. If you eat twice, then the next day, you skip breakfast. Otherwise, you follow the same plan the next day.

What are the states? What is the transition matrix? What is the initial probability distribution?