

ECE 343 - Homework #22

Properties of z-Transforms - Summer 2018

Markov Chains

Assume two teams are playing a game. Player A has a 70% chance of winning any given game.

- 1) What is the probability that player A will win the match if the match is best of 5 games (first to win 3 games)?
- 2) What is the probability that player A will win the match if it's win by 3 games?

Moment Generating Functions

- 3) Suppose you're playing a game of dice. It costs you \$20 to play and you get back \$1 every time you roll the dice.
 - You first roll a 6-sided die N times until you roll a one. ($p = 1/6$)
 - You then roll a 6-sided die M times until you roll N ones or twos. ($p = 2/6$)

For example, if it takes you 3 times to roll a one ($N = 1$), you then keep rolling until you roll a one or two 3 more times.

What is the probability of winning M dollars?