

Homework 2

Do the problems on webwork and turn the following problems in class on Feb. 8th.

Homework should be written neatly and clearly explained. If it requires more than one sheet, the sheets must be stapled. Include your name and id number in the top right corner of your homework.

Problem 1. Assume the probability it snows on a given day is determined by the following rule: If it did not snow on the previous day it will snow with probability $1/3$, on the other hand if it snowed on the k previous days, but not the $k + 1^{st}$ day, then the probability it doesn't snow is $\frac{2}{2k+1}$. If today it doesn't snow, what is the probability that the next n days will all be snowy?

Problem 2. A friend of yours plays a game with his opponent. The game goes as follows: your friend draws two cards from a well shuffled deck of twenty cards marked with numbers 1 to 20 and their opponent then draws two cards from the rest of the deck. The winner is the person who has the highest card. After dealing the cards, both players have the option to withdraw from the game. Your friend asks if it is more likely to lose (in which case they will want to withdraw) or win (in which case they will not withdraw). After receiving their cards, they tell you that the higher of the two cards is k . For which values of k would you advise them to withdraw?