

SM 316 – Spring 2019

### Homework 3

Due: Monday 04 FEB 2019

PLEASE READ THE INSTRUCTIONS/SUGGESTIONS ON THE COURSE WEBPAGE.

#### Hand in the following problems:

1. From the text book, 3.8, 3.11, 3.13, 3.14, 3.29
2. When a certain basketball player takes his first shot in a game he succeeds with probability  $1/2$ . If he misses his first shot, he loses confidence and his second shot will go in with probability  $1/3$ . If he misses his first 2 shots then his third shot will go in with probability  $1/4$ . His success probability goes down further to  $1/5$  after he misses his first 3 shots. If he misses his first 4 shots then the coach will remove him from the game. Assume that the player keeps shooting until he succeeds or he is removed from the game. Let  $X$  denote the number of shots he misses until his first success or until he is removed from the game. Calculate the probability mass function of  $X$ .
3. Let  $X$  be the number of coin flips needed until you see the first tails. Find the probability mass function, and cumulative distribution function. Graph the CDF.