

HOMEWORK 3 (18.05, SPRING 2003)

Read: *Hogg and Tanis*, Sections 3.1, 3.2

Solve: Problems 3.1-8, 3.1-10, 3.2-2, 3.2-6, 3.2-14, 3.2-12, H3-1, H3-2 (see below)

H3-1) Consider a sequence of independent coin flips with a biased coin (with probability p of Heads). Let X be the first time when the last flip was Heads, while the one right before was Tails. Compute $E(X)$.

H3-2) Two players have biased coins: the first with probability p_1 of Heads, the second with probability p_2 of Heads, $1 > p_1 > p_2 > 0$. They flip their coins at once. If one gets Heads, while the other gets Tails, the one with Heads wins. If they have the same coin outcome – they try again.

- a) Compute the probability that the first player wins.
- b) Compute the expected number of coin flips they need to make until one of the players wins.

This Homework is due Friday Feb 28 at 10:55 am.
Hand in after class or on Thursday in 2-108 (UMO)