

## 1 Hints for Homework 2

4 Use the following lemma proved in class

**Lemma 1.1**  $\eta_i$  i.i.d  $S_n = \sum_1^n \eta_i$   $a, b$  greater than 0.  $E(\eta_i) = 0$

Then

$$P(S_n \geq a + nb \text{ for some } n) \leq e^{-\theta a}$$

Where  $\theta$  solves the eqn

$$E(e^{\theta\eta}) = e^{\theta b}$$