

Homework 14

Do the problems on **Webwork**. You don't need to turn in the problems below, I'll post the solutions to blackboard soon.

Problem 1. Use the moment generating function to show the sum of r independent geometric random variables with parameter p is a negative binomial random variable with parameters r and p .

Problem 2. Let X_1, X_2, \dots, X_{10} be independent random variables, each with pdf

$$f_X(x) = \begin{cases} \frac{x}{2}, & \text{for } 0 \leq x \leq 2 \\ 0, & \text{otherwise} \end{cases}.$$

- (a) Compute the pdf of $X_{(1)} = \min(X_1, X_2, \dots, X_{10})$.
- (b) Compute $\mathbb{E}[X_{(1)}]$.