Stat 134: Section 23

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Conceptual Review

Please discuss these short questions with those around you in section. These problems are intended to highlight concepts from lecture that will be relevant for today?s problems.

a. Suppose $X_1 + X_2 + \ldots + X_k$ is a constant, where X_i's are identically distributed. What is $Corr(X_i, X_j)$, $0 < i < j < k$?

Problem 1

Let Y have exponential distribution with mean 0.5. Let X be such that, conditional on $Y = y$, X has exponential distribution with mean y. Find:

a. $\mathbb{E}(X)$;

b. $Corr(X, Y)$.

Ex 6.rev.8 in Pitman's Probability

Problem 2

Let X and Y be the minimum and maximum of 8 independent uniform $(0,1)$ random variables respectively. Find $Corr(X,Y)$.