Math 425–4, Fall 1997
Prof. Hochster

Extra Credit Problems VII

EC#24. Does the expected value of the zeta distribution defined in Ross exist for all $\alpha > 0$? Specifically, for which values of α is it finite? (Here, for $n \geq 1$, $P(X = n) = \frac{1}{\zeta(\alpha+1)} \frac{1}{n^{\alpha+1}}$, where $\zeta(s) = \sum_{n=1}^{\infty} \frac{1}{n^s}$.) [10/29]

EC#25. More generally, given a zeta distribution for a certain $\alpha > 0$, which moments are finite? [10/29]

EC#26. Let X be a uniform random variable on the interval from 0 to 1. Compute the value of $E[X^n]$ using Proposition 2.1 in the text and then compare this result with a calculation directly from the definition. [10/31]