

STA205 Homework 6

Due: Oct 20 2009

Problems from 'A Probability Path' by Sidney I. Resnick

Chapter 6: 1.(a)(b), 13, 21, 30

Let $(\Omega, \mathcal{F}, P) = ((0, 1], \mathcal{B}(0, 1], \lambda)$ be the unit interval with Lebesgue measure, and define $X_n(\omega) = \omega^n, \omega \in \Omega$. For what $p \in [1, \infty]$, does the sequence $\{X_n\}$ converge in L_p ? If it does converge for some $p \in [1, \infty]$, find the limiting random variable. Explain your answer.