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Financial Mathematics 2 - Fall term 2015

Exercise sheet no.1 (11.9.2015)

Exercise 1: Let $n \in \mathbb{N}$. Show that (cf. proof of Proposition 3.43 of the lecture)

$$T_n := \inf\{t > 0 \,|\, |X_t - Y_t| \vee |B_t| > n\},$$

is a stopping time that is P-a.s. finite. Here $a \vee b := \max(a, b)$. Show further that $T_n \nearrow \infty$ P-a.s.

Exercise 2: Using ingredients of the proof of Theorem 3.45 show the last part of Theorem 3.45, i.e. show that the unique solution (X_t) satisfies

$$E[\sup_{s \leq T} |X_s|^2] < \infty.$$

Please drop the solutions into the homework box of the lecture until 17.9.2015, 6 pm