



Exercise sheet 10

Submission: 18.06.2019

Problem 1

(3 Points)

Let $(B_t)_{t \geq 0}$ be a Brownian motion and $\alpha, \beta, \gamma \in \mathbb{R}$. Let $X_t = B_t^2 + \alpha t$, $Y_t = B_t + \beta t^2$ and $Z_t = \gamma(1 + t^2)$, $t \in \mathbb{R}_{\geq 0}$.

- (a) Compute $\langle X, Y \rangle_t := \frac{1}{4} (\langle X + Y, X + Y \rangle_t - \langle X - Y, X - Y \rangle_t)$ for $t \in \mathbb{R}_{\geq 0}$.
- (b) Determine the diffusion and drift parts of the Itô processes $G_t := X_t Y_t$ and $H_t := Y_t Z_t$.

Total: 3 Points

Terms of submission:

- Solutions can be submitted in groups of at most 2 students.
- Please submit at the beginning of the lecture or until 9:50 a.m. in room 3523, Ernst-Abbe-Platz 2.