

MEMORIAL UNIVERSITY  
DEPARTMENT OF MATHEMATICS

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2019

Assignment 2, Stochastic DE

SEP 25, 2019

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**Last Name:**

First name:

**Student ID:**

Read the text book. Let  $W_t$  be the Brownian motion.

- [6] 1. Prove from the definition of the Ito integral that

$$\int_0^t s dW_s = tW_t - \int_0^t W_s ds.$$

- [6] 2. Prove from the definition of the Ito integral that

$$\int_0^t W_s dW_s = \frac{1}{2}W_t^2 - \frac{t}{2}.$$

- [8] 3. Follow the definition 3.2.2 and Example 3.2.3 in the text book. check if

$$X_t = W_t + 4t$$

and

$$X_t = W_t^2$$

are martingales.