Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Important Instructions
- Multiple select questions are with 4 options and may have more than one correct answer.
- For a particular question, any of the selection is an incorrect answer, zero marks would be awarded for that question.
- If for a particular question, a candidate does not select any incorrect option, she gets marks in proportion to right answers chosen.

1) Consider \( B_t \) be a standard Brownian Motion. For \( n \geq 1 \), \( \frac{1}{2^k} B_{2^k} \), is equal to

\[
\frac{B^{n}}{n + 1} - \frac{1}{2} \int_{0}^{n} n_{n - 1} dB
\]

No, the answer is incorrect.
Score: 0

Accepted Answers:

\[
\frac{B^{n}}{n + 1} - \frac{1}{2} \int_{0}^{n} n_{n - 1} dB
\]

2) Consider \( f(x) = x^n \), then which of the following is equal to \( f(B_t) \)

\[
\int_{B_t} x^n \, ds
\]

No, the answer is incorrect.
Score: 0

Accepted Answers:

\[
\int_{B_t} x^n \, ds
\]

3) If \( E \) denotes the expectation wrt. the probability measure, \( E(\cos(B_t)) \) is equal to

- 0
- \( e^{(1/2)} \)
- \( 1/2 \)
- none of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:

- 0
- \( e^{(1/2)} \)
- \( 1/2 \)
- none of the above

4) \( E\int_{B_t} \cos(B_s) \, ds \) is equal to

- \( 0 \)
- \( 1 - E(\cos(B_t)) \)
- \( 1 \)
- \( E(\cos(B_t)) \)

No, the answer is incorrect.
Score: 0

Accepted Answers:

- \( 0 \)
- \( 1 - E(\cos(B_t)) \)
- \( 1 \)
- \( E(\cos(B_t)) \)

5) Which of the following are martingale ?

\[
\int_{0}^{B_t} x \, dB_t
\]

No, the answer is incorrect.
Score: 0

Accepted Answers:

\[
\int_{0}^{B_t} x \, dB_t
\]