Ito Integration

15. Define
$$M_t \stackrel{\text{def}}{=} \int_{s=0}^{t} e^{-s} dW_s.$$

For each $t > 0$, compute

  (a) $\mathbb{E}[M_t]$.

  (b) $\mathbb{E}[M_t^2]$

16. Define
$$A_t \stackrel{\text{def}}{=} \int_{s=0}^{t} W_s^3 dW_s$$

Compute

  (a) $\mathbb{E}[A_t]$

  (b) $\langle A \rangle_t$.

  (c) $\mathbb{E}[A_t^2]$.