4. Let \( B_\lambda = \lambda B (\lambda - B)^{-1} \), \( \lambda > 0 \), be the operators described in Lemma 5.3 of our text.
   (a) Show that for each \( \lambda > 0 \) and \( \mu > 0 \) we have \( \lambda - B_\mu \) is onto the space \( H \).
   (b) Show that each \( \lambda (\lambda - B_\mu)^{-1} \) is a contraction. Thus, in the Hilbert space \( H \), the
   operators \( -B_\mu, \mu > 0 \), are m-accretive.

5. If \( \{S(t) : t \geq 0\} \) is a contraction semigroup with generator \( B \), show that \( \{e^{-\lambda} S(t) : t \geq 0\} \)
   is a contraction semigroup for \( \lambda > 0 \), and that its generator is \( B - \lambda \).

6. Let \( B : D(B) \to H \) be linear and suppose \( (\lambda - B)^{-1} \) is continuous.
   (a) Show \( B(\lambda - B)^{-1} = (\lambda - B)^{-1}B \) on \( D(B) \).
   (b) If \( C : D(C) \to H \) is linear and closed, with \( D(B) \subset D(C) \), show that \( C(\lambda - B)^{-1} \) is
   closed. Note: It then follows from the closed graph theorem that \( C(\lambda - B)^{-1} \) is continuous.