## LECTURE 8 EXERCISES

**1**: Do exercises 5.2.10, 5.2.11 b) and 5.2.12 and 5.2.14 on pages 187 and 188 respectively of the Dembo and Zeitouni book.

## Hints/Comments:

- (1) In 5.2.10 use the fact that the unit ball in any Hilbert space is weakly compact.
- (2) In 5.2.11 b) first consider the case when  $\phi \in H_1 \cap C^2((0,1))$  with  $\dot{\phi}(0) = 0 = \dot{\phi}(1)$ . Then use a approximation argument to say this case suffices.
- (3) There is no need to do exercise 4.2.32 when completing problem 5.2.12.