Math 12240: Advanced Theory of Statistics II   Homework 1
Due: March 14, 2017

1. Show that $D[a, b]$ is not separable for the uniform norm.

2. Show that every function in $D[a, b]$ is bounded.

3. Prove Theorem 19.4 (Glivenko–Cantelli with bracketing entropy) of van der Vaart.

4. In the proof of Theorem 19.5 (Donsker with bracketing entropy) of van der Vaart, show that

$$J_{[]}(\varepsilon, \mathcal{G}, L_2(P)) \leq 2\sqrt{2} J_{[]}(\varepsilon, \mathcal{F}, L_2(P)).$$