Exercises

E16.3 [19Q] Note:*Similar to point [8] from exercise [1J3].*Suppose $f_n : [a,b] \to \mathbb{R}$ are Riemann-integrable, and $f : [a,b] \to \mathbb{R}$ a generic function.

Find an example where $f_n \to_n f$ pointwise, f is bounded, but f is not Riemann integrable.

Show that, if the convergence is uniform, then f is Riemann integrable and

$$\lim_{n\to\infty} \int_a^b f_n \, \mathbb{d}x = \int_a^b f \, \mathbb{d}x \quad .$$

Solution 1. [19R]