

Exercises

E16.6 [19Y] Say which of these functions $f : [0, 1] \rightarrow \mathbb{R}$ are Riemann integrable:

1. the characteristic function of the Cantor set.
2. $f(0) = 0, f(x) = \sin(1/x)$
3. $f(0) = 0$ and

$$f(x) = \frac{1 - \cos(x)}{x^2 + |\sin(1/x)|}$$

4. $f(x) = 0$ if x is irrational, $f(x) = \cos(1/m)$ if $x = n/m$ with n, m coprime. [[19Z]]
5. $f(x) = 0$ if x is irrational, $f(x) = \sin(1/m)$ if $x = n/m$ with n, m coprime.