Exercises

13.27 [16F] For each of the following functions, say if it is continuous, uniformly continuous, Hölder (and with which exponent), or Lipschitz.

- $f : (0,1) \to \mathbb{R}$, $f(x) = \sin(1/x)$.
- $f : (0,1) \to \mathbb{R}$, $f(x) = x^{1/x}$.
- $f : (1,\infty) \to \mathbb{R}$, $f(x) = \sin(x^2)/x$
- $f : [-1,1] \to \mathbb{R}$, $f(x) = |x|^\beta$ with $\beta > 0$.
- $f : (0,\infty) \to \mathbb{R}$, $f(x) = \sin(x^\beta)$ with $\beta > 0$.

Solution 1. *[16H]*