

Math 5800
Homework # 8
More on Integrable Functions

1. Let $f : \mathbb{R} \rightarrow \mathbb{R}$ where

$$f(x) = \begin{cases} 0 & \text{if } x \leq 1 \\ 1/x & \text{if } x > 1 \end{cases}$$

Determine if f is Lebesgue integrable or not.

2. Let $f : \mathbb{R} \rightarrow \mathbb{R}$ where

$$f(x) = \begin{cases} 1 & \text{if } x \in [0, 1) \\ x + 1 & \text{if } x \in [1, 2) \\ x^2 & \text{if } x \in [2, 3) \\ \ln(x) & \text{if } x \in [3, 4) \\ 0 & \text{otherwise} \end{cases}$$

Determine if f is Lebesgue integrable or not. Determine if $f \in L^1([0, 4))$.
