

## Math 762 Homework 2

1. Let  $f \in C(\mathbf{R})$ . Prove that

$$\lim_{h \rightarrow \infty} \int_0^1 |f(x+h) - f(x)| dx = 0.$$

2. Let  $f \in L^1_{\text{loc}}(\mathbf{R})$ . Prove that

$$\lim_{h \rightarrow \infty} \int_0^1 |f(x+h) - f(x)| dx = 0.$$