

Real Analysis I

Fall 2019

Homework 2

Exercise session: Wed 18 September, 10:15 - 12:00, Exactum CK111; Emil Airta, emil.airta@helsinki.fi.

2. Is this easier for some functions that are dense?
4. Use some form of Hölder's inequality in the same spirit as in the proof of Proposition 3.4 of the Fall 2019 lecture notes. This time you will eventually want to use e.g. that

$$\int_{\mathbb{R}^n} \int_{\mathbb{R}^n} |f(y)|^p |g(x-y)|^q dy dx = \|f\|_p^p \|g\|_q^q.$$

5. Induction: $h^{(m)}(t) = P_m(1/t) \exp(-1/t)$ for $t > 0$, where P_m is some polynomial. Use this to conclude.