Matematiikan ja tilastotieteen laitos
Topics in geometric Fourier analysis
Exercise 1
2.2.2012

1. Prove Riemann-Lebesgue lemma.

2. Prove formulas (1.10) and (1.11).

3. Prove the assertion (1.9).

4. What is the Fourier transform of the sign function $sgn; sgn(x) = 1$, when $x \geq 0$, $sgn; sgn(x) = -1$, when $x < 0$?

5. Prove formulas (1.18)-(1.20).

6. Show that if μ is a finite Borel measure on $\{x, 0) \in \mathbb{R}^2 : x \in \mathbb{R}\}$, then $\hat{\mu}(\xi)$ does not tend to 0 as $|\xi| \to \infty$.