LIST OF ERRORS IN TMA4170 NOTES AND EXERCISES

1. ERRORS IN THE WEEKLY EXERCISES

1. page 51, Exercise set 2, exercise 2, remove "and for ...."

2. page 56, Week 5-1, Exercise 2, 1):

$$I_N(x_0) = \frac{1}{2\pi} \int_{-\pi}^{\pi} (f(x + x_0) - f(x_0)) \frac{1}{N} \frac{\sin^2(Nx/2)}{\sin^2(x/2)} \, dx.$$

3. page 57, Week 5-2, the remark after Exercise 1,

$$\sum_{k \in \mathbb{Z}^n} e^{-t\pi|k|^2} e^{2\pi i k \cdot x} = \sum_{k \in \mathbb{Z}^n} t^{-\frac{n}{2}} e^{-\frac{\pi|\gamma + k|^2}{t}}.$$

2. ERRORS IN THE LECTURE NOTES

1. page 30, proof of Lemma 2.2

$$|x^k \hat{f}^{(l)}(x)| = (2\pi)^{l-k} |\widehat{(y^l f)^{(k)}}(x)| \leq \pi(2\pi)^N ||f||_{N+2}, \ \forall \, k, l \leq N.$$

2. page 36, proof of Theorem 2.10,

$$|u(x)| \leq C_2 e^{-2\pi x b + 2\pi R|b|} \int_{\mathbb{R}} (1 + |y|)^2 \, dy.$$

3. page 37, line 1, the remark is not true. The correct one is: a distribution lies in $\mathcal{E}'(K)$ if and only if for $\varepsilon > 0$ there exist constant $C(\varepsilon)$ and $k(\varepsilon)$ such that

$$|T(f)| \leq C(\varepsilon) \sum_{x \in K_\varepsilon, 0 \leq n \leq k(\varepsilon)} |f^{(n)}(x)|, \ \forall \, f \in C^\infty(\mathbb{R}),$$

where K_ε denotes the ε neighborhood of K defined by

$$K_\varepsilon := \{x + y \in \mathbb{R} : x \in K, |y| \leq \varepsilon\}.$$

In general, we cannot replace K_ε by K (we can do this when K is a closed interval, see Week 7, exercise 2 and 3).

4. page 38, line 3, remove "A".

5. page 39, line 4 and 5, $\sup_{z \in \partial D} |f(z)|$.

6. page 39, the end of the proof of Theorem 2.15, $z = re^{i\theta} \in \overline{D}$.

7. page 41, the right hand side of the oversampling formula should be $\hat{f}(\frac{n}{\lambda})$.